

**U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination**

Applicant Information

Name:	Region: III
Date: December 21, 2001	Facility/Unit: Palisades
License Level: RO	Reactor Type: CE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

Examination Value	_____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

Reactor Operator

Question No. 1

During a LOCA recovery, which one of the following conditions would allow commencing a cooldown of the Primary Coolant System (PCS) PRIOR to verifying Shutdown Margin requirements?

- a. ALL four (4) Primary Coolant Pumps are operating.
- b. at least two (2) Primary Coolant Pumps are operating.
- c. emergency boration is in progress.
- d. ALL control rods are fully inserted.

Reactor Operator

Question No. 2

During a Station Blackout, the ALLOWABLE discharge rate for each Station Battery becomes the LOWEST after what period of time?

- a. 4 hours
- b. 2 hours
- c. 30 minutes
- d. 10 minutes

Reactor Operator

Question No. 3

A loss of which ONE of the following DC panels will result in the majority of the Control Room alarm panels losing power?

- a. D11-1
- b. D11-2
- c. D21-1
- d. D21-2

Reactor Operator

Question No. 4

The solenoid valve on D/G 1-1 belly tank fill line has failed in the closed position, and the D/G is running. Per ONP-20, "Diesel Generator Manual Control", the fuel oil level in the belly tank can still be controlled by ...

- a. throttling the valve upstream of the solenoid valve.
- b. installing a red rubber hose from the day tank directly to the belly tank.
- c. manual readjustment of the level setpoint in order to force the solenoid valve open.
- d. throttling the solenoid valve manual bypass valve.

Reactor Operator

Question No. 5

When unloading and stopping a diesel generator, the MINIMUM load allowed before opening the output breaker is approximately 50 kW. What is the reason for this load limitation?

- a. D/G trip circuit is energized below 25 kW.
- b. generator may motor if load is any LOWER.
- c. engine may overspeed if load is any HIGHER.
- d. breaker has a manual interlock above 75 kW.

Reactor Operator

Question No. 6

A tornado has just been visually sighted approaching the site.

Which ONE of the following Diesel Generator operating strategies is employed for this condition?

- a. DG 1-1 should be paralleled to off-site power in PARALLEL mode. DG 1-2 should be running unloaded in UNIT mode.
- b. Both DGs should be paralleled to off-site power in PARALLEL mode.
- c. DG 1-1 should be running unloaded in UNIT mode. DG 1-2 should be paralleled to off-site power in PARALLEL mode.
- d. Both DGs should be running unloaded in UNIT mode.

Reactor Operator

Question No. 7

Given the following conditions:

- Reactor at 100% power.
- Channel "A" RPS bistables trip.
- Channel "A" PZR Level Control in service.
- "A" TMM channel is deenergized.
- NI-05 is deenergized.
- Charging flow raises to 133 gpm.
- Letdown flow reduces to 0 gpm.
- Pressurizer Spray valves close.

Which ONE of the following events has occurred?

- a. Loss of Y-10.
- b. Loss of Y-20.
- c. Loss of Y-30.
- d. Loss of Y-40.

Reactor Operator

Question No. 8

Given the following conditions:

- Preferred AC Bus Y-30 is being supplied by the Bypass Regulator.
- Following a seismic event, Vital Instrument Bus Y-01 de-energizes and isolates.
- Due to a loss of coolant accident, pressurizer pressure is at 1610 psia and lowering.

What is the effect of these events on the actuation capability of SIAS?

- a. Right Channel SIAS will automatically actuate.
Left Channel SIAS must be actuated by depressing PB1-1, INJECTION INITIATE, push button on C-13.
- b. Right Channel SIAS will automatically actuate.
Left Channel SIAS equipment must be manually started.
- c. Right Channel SIAS must be actuated by depressing PB1-2, INJECTION INITIATE, push button on C-13.
Left Channel SIAS will automatically actuate.
- d. Right Channel SIAS equipment must be manually started.
Left Channel SIAS will automatically actuate.

Reactor Operator

Question No. 9

Given the following conditions:

- The plant is in MODE 3.
- Primary Coolant System (PCS) temperature is 450°F.
- Pressurizer pressure is 1200 psia.
- Charging Pump P-55A is operating.
- Charging Pumps P-55B and P-55C are in AUTO.
- Letdown flow is 40 gpm.
- Pressurizer level is at program level.
- VCT level is normal.

A loss of DC Bus D11-1 occurs and the following conditions are noted:

- Pressurizer level remains constant.
- Charging Pump operation remains the same.
- VCT level is lowering.
- Letdown flow indicates 0 gpm.
- Quench tank level is rising.

Which of the following actions should be taken and why?

- a. Close Letdown Stop Valves (CV-2003, CV-2004, CV-2005) to maintain containment integrity.
- b. Close Letdown Stop Valves (CV-2003, CV-2004, CV-2005) to isolate loss of inventory via Letdown Heat Exchanger Relief RV-2006.
- c. Close Letdown Containment Isolation Valve CV-2009 to maintain containment integrity.
- d. Close Letdown Containment Isolation Valve CV-2009 to isolate loss of inventory via Letdown Heat Exchanger Relief RV-2006.

Reactor Operator

Question No. 10

Which of the following is the power supply breaker for the Containment Iodine Removal Fans?

- a. 52-131
- b. 52-211
- c. 52-945
- d. 52-1208

Reactor Operator

Question No. 11

With the Y-50 ABT Bypass Handle in the "Emergency" position, what will happen upon a Loss of Bus 1D?

- a. The Instrument AC Bus (Y-01) will automatically receive power via the Bypass Regulator.
- b. The Instrument AC Bus (Y-01) will automatically swap back to the normal source.
- c. The Y-50 ABT will not reposition and the Instrument AC Bus (Y-01) will remain energized.
- d. The Y-50 ABT will not reposition and the Instrument AC Bus (Y-01) will de-energize.

(Refer to attached drawing of Y-50 ABT.)

Reactor Operator

Question No. 12

Which of the following describes the power supplies for Service Water Pumps P-7A and P-7B?

- | | P-7A | P-7B |
|----|-------------|-------------|
| a. | Bus 1D | Bus 1D |
| b. | Bus 1C | Bus 1C |
| c. | Bus 1D | Bus 1C |
| d. | Bus 1C | Bus 1D |

Reactor Operator

Question No. 13

Given the following conditions:

- P-7A and P-7C Service Water Pumps are operating
- P-7B is in Standby

Which ONE of the following conditions would result in P-7B automatically starting?

- a. 'A' Service Water pump discharge pressure lowers to 35 psig; then stabilizes at 38 psig.
- b. "B" Critical Service Water header pressure lowers to 35 psig; then stabilizes at 41 psig.
- c. 'C' Service Water pump discharge pressure lowers to 41 psig; then stabilizes at 45 psig.
- d. "A" Critical Service Water header pressure lowers to 41 psig; then stabilizes at 45 psig.

Reactor Operator

Question No. 14

Given the following conditions:

- The plant is operating at 100% power.
- Service Water Pump P-7A is tagged out for maintenance.
- P-7B is in service with running amps = 80 amps.
- P-7C is in service with running amps = 83 amps.
- All systems are functioning normally for plant conditions.

A problem develops with the Service Water System. The NCO then notes the following indications:

- P-7B Service Water Pump amps indicates 86 amps.
- P-7C Service Water Pump amps indicates 93 amps.

NO operator actions have been taken.

Referring to attached Operator Aid OA-136 (Service Water System), which one of the following accounts for the above conditions?

- a. A pipe break between P-7C discharge and CV-0844.
- b. A loss of instrument air to CV-0844.
- c. A loss of instrument air to CV-1359.
- d. A partially plugged basket strainer at P-7C discharge.

Reactor Operator

Question No. 15

Refer to the attached drawing.

If Service Water Flow Switch FS-0885 reaches its trip setting, this would be an indication of which one of the following?

- a. One of the Shield Cooling Heat Exchangers (tube side) has a leak.
- b. Recirculation Actuation Signal (RAS) has occurred after a large break LOCA inside containment.
- c. A Main Steam Line Break has occurred inside containment.
- d. At least one of the Containment Air Coolers has a leak in its Service Water cooling tubes.

Reactor Operator

Question No. 16

Following a loss of Component Cooling Water while operating on Shutdown Cooling, explicit instructions are given to stop Charging Pump P-55A, if running. No instructions are given regarding the operation of P-55B and P-55C. (Assume NO Primary Coolant Pumps in service.)

Why is P-55A specifically mentioned?

- a. P-55A is the only Charging Pump permitted to be operated while on Shutdown Cooling.
- b. P-55B and P-55C have NO interface with Component Cooling Water.
- c. P-55B or P-55C operation will NOT result in overfilling the pressurizer when PCP bleedoff is isolated.
- d. P-55A fluid drive is cooled by Component Cooling Water and has a high temperature trip.

Reactor Operator

Question No. 17

The plant is operating at full power with the following indications:

- P-55B - in manual control
- P-55C - in auto control
- Charging flow - 40 gpm
- Letdown flow - 40 gpm
- Pressurizer level cycling between 57% to 55% approximately every 30 minutes

Which ONE of the following conditions would account for the above indications?

- a. Anti Pump breaker lockout of P-55C has not been reset.
- b. Backpressure CV PIC-0202 improperly calibrated.
- c. Charging Pump P-55A is out of service.
- d. Backup PZR level control signal malfunction.

Reactor Operator

Question No. 18

Given the following conditions:

- Reactor power is 8%.
- While performing a 50 gallon dilution, the operator mistakenly enters a value of 500 gallons on FIC-0210A, Primary Makeup Water Controller.
- Several minutes later, while the dilution is still occurring, the operator notes the error.
- Reactor power is rising.
- Primary Coolant System (PCS) temperatures are rising.

Which actions should be immediately performed?

Close CV-2165, Primary Makeup Water Control, and ...

- a. trip the Reactor.
- b. trip the Primary Makeup Water Pumps.
- c. commence emergency boration.
- d. stabilize power using control rods.

Reactor Operator

Question No. 19

Given the following:

- The plant is at 100% power
- CVCS charging and letdown has been secured for approximately 1 hour to perform maintenance.
- Tave is maintained constant

Over the next hour (assuming NO additional operator action), which ONE of the following trends will be noted during this period?

	PZR Level	VCT Level
a.	LOWERS	RISES
b.	RISES	RISES
c.	LOWERS	LOWERS
d.	RISES	LOWERS

Reactor Operator

Question No. 20

The plant is operating at full power with the following Pressurizer Level Control configuration:

- HS 1/LIC-0101, Heater Control Selector, is in the "A and B" position
- LIC-0101A is the IN SERVICE controller, selected for CASCADE mode
- LIC-0101B is in MANUAL, with its output set for 50%
- Charging Pump P-55A is operating, with P-55B and P-55C in AUTO
- All orifice block valves are in AUTO
- Backup Heaters are in MANUAL
- Pressurizer level is at program level

WITH NO OPERATOR ACTION, what is the effect of the diaphragm rupturing on LT-0101A?

- a. P-55A will lower to minimum speed, P-55B and P-55C will NOT be running, all orifice block valves will be open, and backup heaters will remain ON.
- b. P-55A will raise to maximum speed, P-55B and P-55C will be running, all orifice block valves will be closed, and backup heaters will remain ON.
- c. P-55A will raise to maximum speed, P-55B and P-55C will be running, only #1 orifice block valve will be open, and backup heaters will trip OFF.
- d. P-55A will lower to minimum speed, P-55B and P-55C will NOT be running, only #1 orifice block valve will be open, and backup heaters will trip OFF.

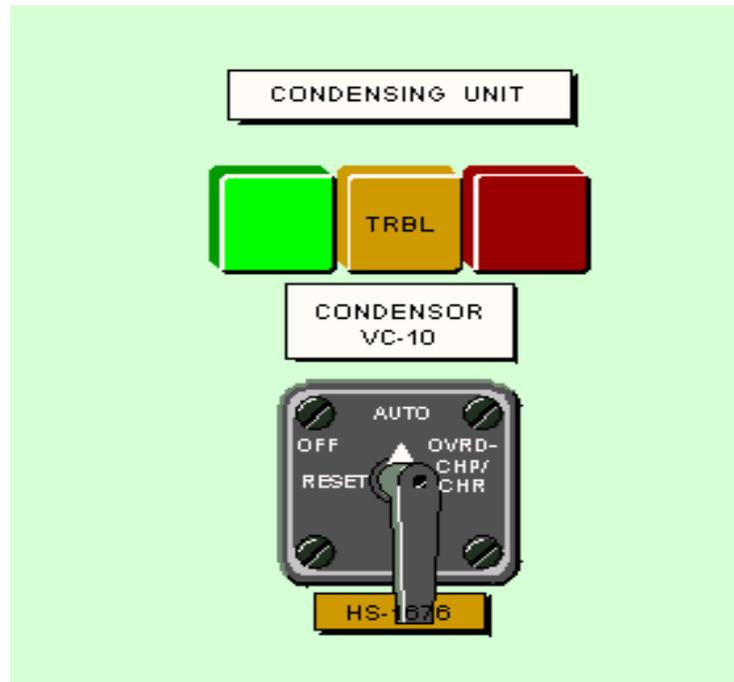
Reactor Operator

Question No. 21

Refer to the drawing of the control switch for Control Room HVAC Condensing Unit VC-10.

What is the function of the “OVRD-CHP/CHR” position?

- Allows VC-10 to automatically start on a CHP or CHR signal.
- Overrides a CHP or CHR signal and allows VC-10 to run.
- Overrides load shed circuitry so that VC-10 can be manually started.
- Allows VC-10 to be manually started only if Air Handler V-95 is running.



Reactor Operator

Question No. 22

Radiological Services personnel are responding to a Control Room HVAC (RIA-1818A/1818B) alarm. Which ONE of the following describes the required actions for the Control Room area?

- a. Area must be evacuated immediately and until the alarm is proven to be spurious.
- b. Area is evacuated after a gamma survey is performed that confirms alarm validity.
- c. For a valid alarm, NO action is required if an airborne survey has been performed in the last 30 days.
- d. For a valid alarm, action may be taken ONLY after consultation involving the Shift Supervisor and Duty HP person.

Reactor Operator

Question No. 23

During the course of a major fire in the plant, the Shift Supervisor has ordered the Control Room evacuated.

- Actions are being taken outside the Control Room in accordance with ONP-25.2, Alternate Safe Shutdown Procedure.
- Neither Bus 1C or 1D is capable of being energized.
- The SS has ordered Auxiliary Feed Water Pump P-8B started per EOP Supplement 19, Alternate Auxiliary Feedwater Methods.
- SG 'A' level is stable at 25% with no feed flow.
- SG 'B' level is stable at 28% with no feed flow.

At what rate should the SGs be fed AND which concern is addressed by using this rate?

<u>FEED RATE</u>	<u>CONCERN</u>
a. Maximum available	potentially limited feedwater supply
b. Maximum available	ensuring adequate PCS subcooling
c. Gradually	pressurizer insurges and outsurges
d. Gradually	thermal stresses on the SG tube bundle

Reactor Operator

Question No. 24

Given the following plant conditions:

- The plant is at full power.
- P-8A Aux Feedwater (AFW) Pump is out of service.
- "A" Steam Generator level lowers to 20% on all four safety channels.

Based on the above plant conditions, which of the following describes the operation of P-8C Aux Feedwater Pump and associated AFW flow controllers? (Assume no operator action.)

	Flow Controller Mode	AFW Flow to EACH S/G
a.	AUTO	100 GPM
b.	CASCADE	165 GPM
c.	AUTO	165 GPM
d.	CASCADE	100 GPM

Reactor Operator

Question No. 25

Given the following plant conditions:

- Steady state operation at 100% power
- Primary Coolant System (PCS) pressure is 2061 psia
- The PZR pressure selected controller set point is inadvertently changed to 2240 psia (step change)
- Pressurizer pressure control is in automatic

Which ONE of the following will be the IMMEDIATE response of the system?

- a. Pressurizer spray valves open.
- b. Pressurizer spray valves close.
- c. Proportional heaters go to minimum output.
- d. Backup heaters deenergize.

Reactor Operator

Question No. 26

On lowering Main Condenser vacuum, the Turbine Bypass Valve is prohibited from opening in order to ...

- a. maintain adequate vacuum to keep the turbine on line.
- b. protect the condenser from an overpressure condition.
- c. maintain adequate vacuum to keep the Main Feed Pumps on line.
- d. minimize the use of turbine exhaust hood spray.

Reactor Operator

Question No. 27

Given the following conditions:

- A reactor trip has occurred from 100% power.
- Tave is currently 536 °F and lowering.
- Main steam pressure is 930 psia and lowering.
- The Turbine Bypass Valve (TBV) and Atmospheric Dump Valves (ADVs) have responded properly.

What is the expected positions of the TBV and ADVs under these conditions?

	<u>TBV</u>	<u>ADVs</u>
a.	Full Open	Modulating
b.	Full Open	Full Open
c.	Modulating	Full Open
d.	Modulating	Modulating

Reactor Operator

Question No. 28

During a Steam Generator Tube Leak/Rupture, why do we use the turbine bypass valve (TBV) instead of the atmospheric dump valves?

- a. Minimizes the release of radioactivity.
- b. Ensures availability of Steam Driven Aux Fd. Pp. P-8B.
- c. Minimizes PCS shrinkage due to excess cooldown.
- d. Ensures finer control over PCS temperature and pressure.

Reactor Operator

Question No. 29

Given the following plant conditions:

- The plant was at full power when the Reactor tripped.
- Atmospheric Dump Valve (ADV) controller, HIC-0780A, is in AUTO.
- Turbine Bypass Valve (TBV) controller, PIC-0511, is in AUTO.
- Main Condenser vacuum has reduced to 4".
- Instrument Air system pressure has reduced to 20 psig and is stable.

Which one of the following describes the response of the ADVs and the TBV, and what action will the operators take for PCS heat removal?

- a. BOTH the TBV and the ADVs will close; operators will take action to remove PCS heat using the Hogging Air Ejector.
- b. BOTH the TBV and the ADVs will close; operators will take action to remove PCS heat using the once-through-cooling-method.
- c. ONLY the TBV will close; operators will take action to remove PCS heat using the ADVs.
- d. ONLY the ADVs will close; operators will take action to remove PCS heat using the TBV.

Reactor Operator

Question No. 30

Given the following plant conditions:

- The plant was at full power when a loss of offsite power occurred.

During the performance of EOP-1.0 which ONE of the resulting conditions would require closing the Main Steam Isolation Valves ?

- a. All PCPs have tripped.
- b. 'A' S/G pressure is at 745 psi.
- c. Both Cooling Tower pumps are running.
- d. Both Main Feed Pumps have tripped.

Reactor Operator

Question No. 31

Observing RIA-0833 on the back of panel C-11, you note the following indication on the Bargraph Display:

ONLY an AMBER bar is lit.

This indication means that the dose rate through the monitor is ...

- a. out of monitor range.
- b. approaching the WARNING setpoint.
- c. expected and below any alarm setpoint.
- d. between the WARNING and HIGH setpoint.

Reactor Operator

Question No. 32

Prior to performing a Waste Gas batch release, the Waste Gas Monitor, RIA-1113, is purged to ...

- a. lower its activity to background levels.
- b. remove potentially explosive hydrogen.
- c. reset the high radiation alarm setpoint.
- d. test the high radiation alarm.

Reactor Operator

Question No. 33

Which of the following radiation monitors will TRIP the associated area supply fan upon receipt of a VALID high radiation condition?

- a. RIA-5712, Fuel Handling Area Ventilation Monitor
- b. RIA-2327, High Range Noble Gas Monitor
- c. RIA-2302, Radwaste Control Area
- d. RIA-5706, Controlled Lab Corridor

Reactor Operator

Question No. 34

What is the result of removing from service (key operated bypass switch to OUT position) the containment refueling area radiation monitors (RIA-2316 and RIA-2317)?

- a. Lowers the trip setpoints of the four containment high radiation monitors to 25R/hr.
- b. The containment isolation function of the monitors would be bypassed.
- c. Allows either refueling area radiation monitor to cause containment isolation on a high alarm.
- d. Allows a containment isolation signal to change the Spent Fuel Pool ventilation flowpath.

Reactor Operator

Question No. 35

You have just received a "COMPONENT COOLING WATER MONITOR" RIA-0915 alarm. What automatic action is initiated by this condition?

- a. Isolates the Regenerative Heat Exchanger from the CCW system.
- b. Starts the standby CCW pump to raise flow in the system.
- c. Automatic fill to the CCW surge tank is automatically terminated.
- d. CCW Surge Tank Vent shifts to the vent gas collection header.

Reactor Operator

Question No. 36

A catastrophic failure of the Utility Water Storage Tank T-91 occurs such that a large volume of radiologically contaminated water is suddenly released. NO planned radwaste release is in progress.

Which pair of radiation monitors would be useful to aid in diagnosing that the release has occurred?

- a. RIA-1323, Circulating Water Discharge Monitor AND RIA-0833, Service Water Monitor.
- b. RIA-1323, Circulating Water Discharge Monitor AND RIA-5211, Turbine Bldg Sump Disch.
- c. RIA-5211, Turbine Bldg Sump Disch AND RIA-0833, Service Water Monitor.
- d. RIA-5704, Evaporator Control Panel Area AND RIA-0833, Service Water Monitor

Reactor Operator

Question No. 37

Which ONE of the following would be a symptom of a fuel cladding failure?
(Assume NO other off-normal conditions.)

- a. S/G Blowdown Hi Radiation alarm
- b. CCW Hi radiation alarm
- c. Stack Gas Hi radiation alarm
- d. Service Water Hi radiation alarm

Reactor Operator

Question No. 38

Given the following:

- A liquid radwaste batch is being released.
- The following alarm then annunciates:

EK-1365, "PROCESS LIQ MONITORING HIGH RADIATION"

- The NCO verifies RIA-1049 in alarm.

Which ONE of the following automatic actions will occur?

- a. Sends a CLOSE signal to both CV-1049 (3" discharge isolation valve) and CV-1051 (1" discharge isolation valve).
- b. Starts P-76A Canal Sample Pump so determination can be made for manual termination of the batch by closing MV-CRW172 (Discharge to Lake).
- c. Trips the in-service Main Exhaust Fan (V-6A/V-6B) and associated dampers.
- d. Trips V-10 (Radwaste Area Supply Fan) and associated dampers.

Reactor Operator

Question No. 39

Which ONE of the following describes the effect of a Waste Gas Decay Tank (WGDT) pressure rising to 135 psig?

- a. A rupture disc will relieve pressure to containment.
- b. A rupture disc will relieve pressure to the Waste Gas Surge Tank.
- c. A relief valve will relieve pressure to containment.
- d. A relief valve will relieve pressure to the Waste Gas Surge Tank.

Reactor Operator

Question No. 40

Given the attached drawing of the Gaseous Effluent Monitor RGEM, RE-2325 (RGEM Iodine Monitor), RE-2326 (RGEM Noble Gas Monitor) and RE-2327 (RGEM Noble Gas Monitor - high range) and the following conditions:

- The controls on both the RGEM unit and on C-11A are aligned properly.
- The Range Selector switch is in NORMAL.
- The Grab Sample Selector switch in OFF.

Which of the following will have automatically occurred once an ALERT and subsequent HIGH ALARM condition has been sensed by RE-2326?

- a. RE-2326 sends trip signal to in-service Main Exhaust Fan (V-6A or B).
- b. RE-2326 initiates a Containment Isolation Signal.
- c. RE-2327 will be placed in service, and a grab sample WILL have been drawn.
- d. RE-2327 will be placed in service; NO grab sample will have been drawn.

Reactor Operator

Question No. 41

Source/Wide Range NI - 1/3A must be taken out of service.

Prior to removing NI - 1/3A from service, which of the following conditions regarding the High SUR Trip RPS channels would be acceptable? (Assume all other Technical Specification requirements are met.)

	RPS 'A'	'RPS 'B'	RPS 'C'	RPS 'D'
a.	NORMAL	BYPASS	NORMAL	TRIP
b.	BYPASS	NORMAL	TRIP	NORMAL
c.	TRIP	NORMAL	NORMAL	BYPASS
d.	NORMAL	TRIP	BYPASS	NORMAL

Reactor Operator

Question No. 42

During refueling operations both Source Range NIs become inoperable. Which one of the following is **NOT** an immediate action required by Technical Specifications?

- a. Suspend core alterations.
- b. Suspend positive reactivity additions.
- c. Initiate actions to restore one (1) Source Range operable.
- d. Provide alternate means of Control Room audible indication.

Reactor Operator

Question No. 43

Given the following indications:

- Delta T power indicates 68%.
- Nuclear power (NI) indicates 66.5%

Which ONE of the following are the new Variable High Power (VHP) Pre-trip and Trip setpoints when the VHPT RESET button is depressed on Panel C-02?

	VHP Pre-trip	VHP Trip
a.	80%	81.5%
b.	79.5%	81.5%
c.	81%	83%
d.	81.5%	83%

Reactor Operator

Question No. 44

The ATWS Pressure Switch Alarm (PSA) relays protect the Primary Coolant System (PCS) from overpressure due to a loss of load that does not cause a direct reactor trip. Upon receiving a high PCS pressure signal, the ATWS PSA relays:

- a. De-energize the RPS matrix relays and send an open signal to pressurizer PORV 1043B.
- b. De-energize the RPS matrix relays and pressurizer spray valves.
- c. Open CRD clutch power supply breakers and send an open signal to pressurizer PORV 1043B.
- d. Open CRD clutch power supply breakers and pressurizer spray valves.

Reactor Operator

Question No. 45

Given the following conditions:

- The plant is in MODE 6.
- The NCO is operating the Refueling Machine and has just grappled Control Rod #12.
- Rod 12 is to be transferred immediately to the Spent Fuel Pool.

Which ONE of the following conditions WOULD allow the NCO to continue and complete removal of the rod from the core?

- a. Only one (1) Source Range NI becomes inoperable.
- b. The Control Room Popper malfunctions and is inaudible.
- c. Only one (1) Wide Range NI becomes inoperable.
- d. The Spent Fuel Pool low level alarm annunciates.

Reactor Operator

Question No. 46

Given the following conditions:

- A LOCA has occurred inside Containment.
- A Recirculation Actuation Signal (RAS) has been received.
- 2400 V Bus 1C is de-energized and isolated due to a fault.
- HPSI Pump P-66A is operating.
- The operators are aligning for recirculation in accordance with EOP-4.0, Loss of Coolant Accident Recovery.

Which of the following alignments would provide the MAXIMUM permissible spray flow and subcooling flow?

- a. ONE Containment Spray Valve open
ONE HPSI Subcooling Valve open
- b. ONE Containment Spray Valve open
BOTH HPSI Subcooling Valves open
- c. BOTH Containment Spray Valves open
ONE HPSI Subcooling Valve open
- d. BOTH Containment Spray Valves open
BOTH HPSI Subcooling Valves open

Reactor Operator

Question No. 47

Which ONE of the following Safety Injection Tanks (SIT) is capable of delivering its required volume (by design) of borated water to the Primary Coolant System (PCS) for a large break LOCA?

	SIT	LEVEL (narrow range)	PRESSURE
a.	T-82A	80%	202 psig
b.	T-82B	20%	195 psig
c.	T-82C	60%	224 psig
d.	T-82D	40%	181 psig

Reactor Operator

Question No. 48

Which of the following sets of Pressurizer pressures will result in a Safety Injection, assuming NO blocks are enabled and NO actions have been taken?

	PIA-0102ALL	PIA-0102BLL	PIA-0102CLL	PIA-0102DLL
a.	1595 psia	1610 psia	1609 psia	1615 psia
b.	1621 psia	1609 psia	1609 psia	1603 psia
c.	1602 psia	1615 psia	1598 psia	FAILED HIGH
d.	FAILED HIGH	1611 psia	1611 psia	1602 psia

Reactor Operator

Question No. 49

Given the following conditions:

- The plant was at full power when a loss of all offsite power occurred.
- A SIAS actuated only on Pressurizer low pressure.
- Offsite power has NOT been restored.
- All other equipment functioned as designed.

For the above conditions, which one of the following actions either must be taken or will automatically occur?

- a. The VCT outlet valve must be manually closed.
- b. HPSI Pump P-66A automatically starts.
- c. Boric Acid Gravity Feed Valves must be manually opened.
- d. Containment Spray Pump P-54C starts immediately.

Reactor Operator

Question No. 50

Given the following conditions:

- A small break LOCA has occurred.
- EOP-4.0, Loss of Coolant Accident Recovery, is being performed.
- Containment pressure is 11 psig.
- Average qualified CET temperature is 505°F and rising slowly.
- Pressurizer pressure is 1010 psia and stable.
- Corrected pressurizer level is 24% and rising slowly.
- Corrected SG level is 63% and stable.
- RVLMS indicates 128" above the bottom of the fuel alignment plate.

The CRS has requested a report of whether Safety Injection can be throttled. You should report that there is a problem with

- a. PCS subcooling
- b. Pressurizer level
- c. SG level
- d. Reactor vessel level

Reactor Operator

Question No. 51

Given the following conditions:

- The plant is on Shutdown Cooling using LPSI Pump P-67B.
- A loss of ALL offsite power has occurred.
- Diesel Generator (DG) 1-1 has started and the Normal Shutdown Sequencer has actuated and loaded the associated bus.

Which of the following describes the operation of LPSI Pump P-67B?

- a. P-67B should have restarted as soon as DG 1-1 output breaker closed.
- b. P-67B should have restarted 13 seconds after DG 1-1 output breaker closed.
- c. P-67B is NOT running. It will restart automatically when NSD Sequencer is reset.
- d. P-67B is NOT running. Manual restarting of the pump would be necessary.

Reactor Operator

Question No. 52

When performing a depressurization of Containment, the operator is directed to make an entry in the Control Room Logbook when the Containment Purge Exhaust Isolation Valves (CV-1805 / 1806 / 1807 / 1808) are opened and closed.

The reason for recording this information is to ...

- a. supply data for EM-09-10, Palisades ILRT/LLRT Program.
- b. track the length of time entry has been made into TS 3.6.3, Containment Isolation Valves.
- c. determine the amount of radioactivity released from Containment.
- d. ensure that the valves are open for no more than one hour.

Reactor Operator

Question No. 53

Given the following conditions:

- Plant is in MODE 4 with Primary Coolant System (PCS) temperature at 250°F.
- PCS boron concentration is being raised.

Which of the following could be performed without violating Containment Integrity requirements?

- a. A Maintenance repair worker removes a blind flange on a length of Containment penetration piping.
- b. Entering through outer Containment airlock door to repair the inoperable inner Containment airlock door.
- c. Manually opening an inoperable automatic Containment isolation valve to pump Primary System Drain Tank.
- d. Removing all but four bolts on the Containment equipment hatch.

Reactor Operator

Question No. 54

The plant is in a heatup from MODE 4 to MODE 3 and drawing a bubble in the Pressurizer. What is the pressure requirement for the Quench Tank?

- a. less than 10 psig.
- b. greater than 10 psig.
- c. less than 25 psig.
- d. greater than 25 psig.

Reactor Operator

Question No. 55

Given the following conditions:

- A reactor startup is being performed.
- The Estimated Critical Position calls for Group 4 rods to be at 30 inches at criticality.
- Criticality is actually achieved with Group 3 rods at 6 inches.

Which of the following actions is required?

- a. Maintain current rod position and commence emergency boration.
- b. Insert all regulating rods to the lower electrical limit and commence emergency boration.
- c. Trip the reactor and commence emergency boration.
- d. Withdraw regulating rods to the Estimated Critical Position while borating the PCS.

Reactor Operator

Question No. 56

Given the following conditions:

- A plant startup is in progress.
- Main Turbine speed is at 1800 RPM.
- Both Main Generator output breakers are OPEN.
- Reactor power is at approximately 5%.
- The NCO starts withdrawing Group 4 control rods to raise Tave and to establish Turbine Bypass Valve opening per SOP-8, "Main Turbine and Generating Systems".

If Group 4 rods CONTINUE to withdraw after the NCO releases the "Raise-Lower" rod control (joystick), which ONE of the following actions should be used to mitigate this event?

- a. Place "Rod Control Group Select" switch from position "4" to "OFF".
- b. Commence Emergency Boration using the pumped feed method.
- c. Ensure the Reactor trips automatically on Variable High Power Trip.
- d. Place "Rod Control Mode Select switch from "MS" to "EM OFF".

Reactor Operator

Question No. 57

Given the following conditions:

- The plant is operating at 48% power.
- A regulating rod drops to the bottom of the core.
- The reactor does NOT trip.

One of the required actions involves adjusting Main Turbine load.

In response to this event, the reason for adjusting Main Turbine load is to ...

- a. ensure Tave is within 3°F of Tref.
- b. maintain Tave stable at its post-event (i.e., current) value.
- c. restore Tave to its pre-event value.
- d. ensure Tave remains 3°F lower than Tref.

Reactor Operator

Question No. 58

Given the following conditions:

- A reactor startup is being performed.
- Core Matrix Shutdown Rod lights all have the RED and BLUE lights lit.
- Regulating Group 1 Rods are currently at 100"
- The Rod Control Mode Select is in MANUAL SEQUENTIAL (MS).
- When Regulating Group 1 Rods are at 130", MANUAL INDIVIDUAL (MI) is selected to withdraw them to 131".

As Group 1 Rods are withdrawn from 100" to 131", which of the following describes the response of the Core Matrix lights for the Regulating Group 1 and Regulating Group 2 rods?

- a. Group 1 lights will go from WHITE to AMBER to RED.
Group 2 lights will remain WHITE.
- b. Group 1 lights will go from WHITE to AMBER to RED.
Group 2 lights will go from WHITE to AMBER.
- c. Group 1 lights will go from WHITE to RED to AMBER.
Group 2 lights will remain WHITE.
- d. Group 1 lights will go from WHITE to RED to AMBER.
Group 2 lights will go from WHITE to AMBER.

Reactor Operator

Question No. 59

Control rod insertion limits are power-level dependent. The reason for this is because as power level rises

- a. control rod worth reduces.
- b. Doppler coefficient lowers.
- c. power defect rises.
- d. MTC rises.

Reactor Operator

Question No. 60

During a refueling outage several control rod drive packages were electrically disconnected and have subsequently been reconnected. Verification that the cable reconnections were made to the correct drive packages must be performed. Which ONE of the following methods of verification is NOT acceptable?

- a. An electrician takes an amp reading on the power cable to the motor that has been selected for operation. If adequate amps are indicated, proper connection is confirmed.
- b. An electrician disconnects the power cable to the selected motor. The Control Room then attempts to move the rod; movement of any control rod indicates improper connection.
- c. An operator with a CRDM location map goes out on the Reactor head, and places hand on package to be tested. Operator should feel clutch pickup and vibration when rod is moved.
- d. Control Room attempts to move the rod. As long as the SPI stalks are still connected, proper connection can be confirmed by verifying agreement between PIP and SPI indication.

Reactor Operator

Question No. 61

The Plant is on Shutdown Cooling. You have been directed to start Primary Coolant Pump P-50B during plant startup. After starting the AC Lift Oil Pump associated with P-50B you note that the WHITE light labeled "PUMP START OIL PERMISSIVE" just above the handswitch for P-50B does NOT illuminate. (Assume all bulbs are good.)

Which of the following is the alternate method of satisfying the required oil permissive interlock?

- a. Start P-50B without delay.
- b. Start the DC Lift Oil pump.
- c. Notify Maintenance to prime the Oil Lift Pumps.
- d. Wait two minutes and then attempt to start P-50B.

Reactor Operator

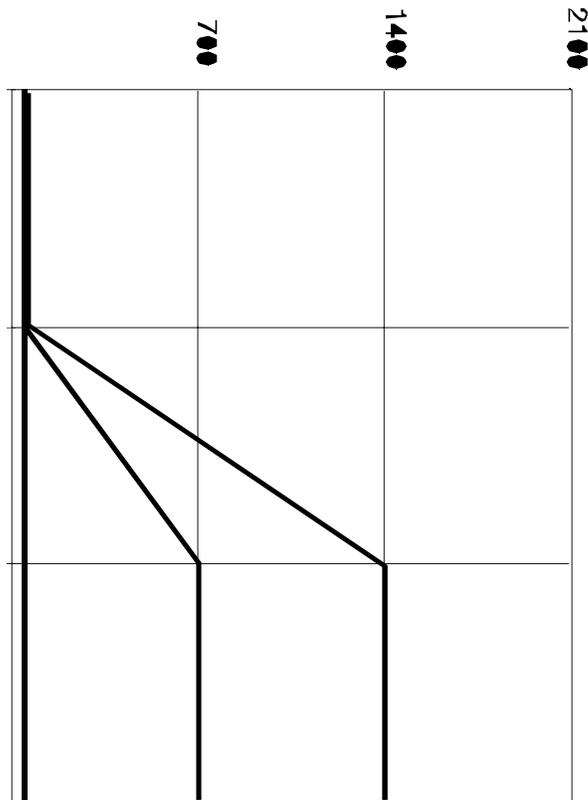
Question No. 62

Refer to the below drawing of Primary Coolant Pump seal pressure drops and the following conditions:

- Pressurizer pressure is 2060 psia.
- Controlled Bleed Off flow is 5.6 gpm.

Which of the following Primary Coolant Pump seal stages have failed?

- a. 1st (lower) and 2nd (middle)
- b. 1st (lower) and 4th (vapor)
- c. 2nd (middle) and 3rd (upper)
- d. 3rd (upper) and 4th (vapor)



Reactor Operator

Question No. 63

During a loss of feedwater event, which ONE of the following describes the reason for the Immediate Action to manually RAISE feed pump speed using the individual feed pump speed controller?

- a. The speed will rise faster with the individual feed pump speed controller than with the combined speed controller.
- b. The speed will rise more slowly with the individual feed pump speed controller than with the combined speed controller.
- c. The combined speed controller will not raise the speed of the remaining pump if one is tripped.
- d. The feed pump speed will rise too rapidly if the combined feed pump speed controller is used.

Reactor Operator

Question No. 64

Given the following conditions:

- The plant is operating at 100% power when Condensate Pumps P-2A and P-2B trip.

What is the effect of the Condensate Pumps tripping, and what actions should be taken?

- a. BOTH Main Feedwater Pumps ramp to minimum speed; take manual control to raise speed of both pumps to stabilize Steam Generator levels.
- b. BOTH Main Feedwater Pumps ramp to minimum speed; manually trip the reactor and perform post-trip Immediate Actions.
- c. Both Main Feedwater Pumps will trip; commence a rapid downpower to avoid a Steam Generator Low Level Reactor trip.
- d. Both Main Feedwater Pumps will trip; manually trip the reactor and perform post-trip Immediate Actions.

Reactor Operator

Question No. 65

Given the following:

- The plant is operating at full power for 38 days when a faulty Main Generator protection relay causes a Main Generator trip.
- ALL other equipment functions as designed.

During the performance of EOP-1.0, "Standard Post-Trip Actions," if the NCO-Turbine does NOT manually ramp down the speed of the Main Feed Pumps to MINIMUM speed, which ONE of the following would be a consequence?

- a. Main Feed pump turbine damage due to steam generator water carryover.
- b. Primary Coolant System (PCS) overcooling transient due to steam generator overfeeding.
- c. MSIVs will automatically close, resulting in loss of PCS heat removal capability.
- d. Reactor return to criticality due to negative moderator temperature coefficient.

Reactor Operator

Question No. 66

Which ONE of the following describes the interrelationship between the Condensate System and the Main Feedwater System?

The Condensate System ...

- a. allows subcooled preheating of main condensate and provides cooling for the Main Feed Pump gland seal condenser.
- b. provides a suction boost to the Heater Drain Pumps to prevent low suction on the Main Feed Pumps.
- c. allows subcooled preheating of main condensate and provides cooling for the Main Feed Pump seals.
- d. provides cooling AND seal water for the Main Feed Pump turbine seals.

Reactor Operator

Question No. 67

Which of the following conditions will automatically de-energize ALL pressurizer proportional heaters?

- a. Pressurizer level of 30% and lowering.
- b. Pressurizer level deviation of +3%.
- c. Safety Injection Actuation Signal.
- d. Loss of Instrument AC Bus Y-01.

Reactor Operator

Question No. 68

Which ONE of the following is NOT a direct Control Room indication of pressurizer PORV position?

- a. PORV position indicating RED and GREEN lights
- b. Quench Tank parameters
- c. An acoustic monitor
- d. PORV tail pipe temperature

Reactor Operator

Question No. 69

Given the following conditions:

- The plant is being heated up and is currently at 510°F.
- An attempt to cycle PRV-1043B, Pressurizer Power Operated Relief, has just been performed.
- The PORV indicates that it FAILED to close.

The crew must ...

- a. cooldown the plant to less than 200°F.
- b. cooldown the plant to between 200°F and 430°F.
- c. close the associated block valve within one (1) hour.
- d. ensure associated LTOP channel in DEFEAT within one hour.

Reactor Operator

Question No. 70

The plant is at 100% power and the following alarms have annunciated:

- EK-1101, "CONTAINMENT INSTR AIR LO PRESS"
- EK-1102, "INSTRUMENT AIR LO PRESS"
- EK-1103, "SERVICE AIR LO PRESS"

You have entered the appropriate procedure and verified auto actions. Instrument air pressure reads 42 psig. Which ONE of the following conditions is used to determine if the Reactor should be manually tripped?

- a. Any of the plant deluge or sprinkler systems are operating.
- b. CV-2083 closes and PCP Controlled Bleedoff to the VCT is lost.
- c. CV-1359 (Non-Critical Service Water Isolation) starts closing.
- d. Service Air has isolated.

Reactor Operator

Question No. 71

Given the following conditions:

- The plant is at full power.
- A fire drill is in progress in the area next to T-939 (Demineralized Water Storage Tank) and is being attended by all Auxiliary Operators.
- The following alarm annunciates:

EK-1111, "INSTRUMENT AIR DRYER TROUBLE"

- The NCO immediately checks Instrument Air System pressure on PIA-1210 on Panel C-13 and notes it is at 92 psig and slowly lowering.
- The NCO quickly leaves the Control Room and monitors the local M-2 air dryer panel and notes that ONLY the Switching Failure light is ON.

Which local action should the NCO perform?

- a. manually swap drying towers.
- b. open MV-CA677 (Air Dryer Bypass).
- c. open breaker 52-315 (M-2 power).
- d. open upstream filter blowdown valves.

Reactor Operator

Question No. 72

Which one of the following combinations describes which system pressure is sensed by CV-1212 (Service Air to Instrument Air cross-connect) AND the action this valve takes on LOWERING system pressure?

	SYSTEM PRESSURE SENSED	CV-1212 RESPONSE
a.	Instrument Air	CLOSES
b.	Instrument Air	OPENS
c.	Service Air	CLOSES
d.	Service Air	OPENS

Reactor Operator

Question No. 73

Refer to the attached drawing and locate the component labeled "ST-0523".

For which ONE of the following events would a malfunctioning (stuck closed) ST-0523 be a concern?
(Assume only ONE of the following events.)

- a. Steam Generator Tube Rupture
- b. Small Break LOCA
- c. Loss of Forced Circulation
- d. Station Blackout

Reactor Operator

Question No. 74

Given the following conditions:

- The plant is operating at 100% power.
- Annunciator EK-1309, SPENT FUEL POOL LO LEVEL, goes into alarm.
- An Auxiliary Operator confirms that the level of the pool has appeared to drop approximately 2" since last checked, but CANNOT determine where the water has gone.
- Spent Fuel Pool temperature is stable.
- Spent Fuel Pool boron concentration is 1810 ppm.

Makeup to the Spent Fuel Pool should be provided from the ...

- a. Safety Injection Refueling Water Tank.
- b. Fire Water System.
- c. Utility Water Storage Tank.
- d. Primary Makeup Water Tank.

Reactor Operator

Question No. 75

Given the following conditions:

- The plant is at full power
- The crew notes that Main Condenser vacuum has lowered slightly (from 29.5" to 28.7").
- No alarms are annunciating.
- ONP-14, "Loss of Condenser Vacuum" is consulted for guidance.
- It is believed that the Steam Jet Air Ejectors are malfunctioning.

Which additional conditions would result from the malfunctioning Steam Jet Air Ejectors?

- a. Rising Off-Gas count rate.
- b. More condensate depression.
- c. Lowering condenser hotwell level.
- d. Rising pressure in Gland Seal steam header.

Reactor Operator

Question No. 76

Given the following conditions:

- At full power a fire occurs which requires manually tripping the Reactor and evacuating the Control Room.
- Alternate Safe Shutdown Panels C-150/C-150A are to be placed in service.

No one on the operating crew remembers the position that the AVG TEMP DISPLAY SELECT SWITCH was left in prior to evacuation. Which ONE of the following would be an indication that the switch had been left in the "LOOP 2" position?

- a. When Panels C-150/C-150A are placed in service, Steam Generator pressures are noted to remain STABLE by observing Steam Generator pressure indicators on Panel C-150A.
- b. An operator stationed at Panel C-33 observes that Steam Generator pressures remain STABLE when Panels C-150/C-150A are placed in service.
- c. When Panels C-150/C-150A are placed in service, Steam Generator pressures are noted to be LOWERING by observing Steam Generator pressure indicators on Panel C-150A.
- d. An operator stationed at Panel C-33 observes that Steam Generator pressures begin LOWERING when Panels C-150/C-150A are placed in service.

Reactor Operator

Question No. 77

After latching the Main Turbine, which indication would you expect to see on the DEH (Digital Electro-Hydraulic) CRT screen?

- a. Main Stop Valves OPEN.
- b. Main Governor Valves OPEN.
- c. Reheat Stop Valves CLOSED.
- d. Reheat Intercept Valves CLOSED.

Reactor Operator

Question No. 78

Given the following parameter values:

INDICATION	VALUE
Average Qualified CETs	582°F
Loop 1 Th (TE-0112HC)	576°F
Loop 1 Th (TE-0112HD)	578°F
Loop 1A Tc (TE-0112CC)	536°F
Loop 1B Tc (TE-0112CD)	538°F
PZR Pressure (PT-0105A)	2060 psia

If you select Subcooling Margin Monitor SMM-0114 to PRESS, the indication will read ...

- a. 713 psia
- b. 754 psia
- c. 945 psia
- d. 1113 psia

Reactor Operator

Question No. 79

Given the following conditions:

- Plant is at End of Core life (EOC) conditions
- Power has been lowered to accommodate AFW pump testing.
- Group 4 rods are at 120"
- A xenon oscillation is in progress
- ASI is at +0.01 and approaching the upper dampening limit

What effect would the Xenon oscillation have on the Power Range NI detectors, AND what actions would dampen the Xenon oscillation?

- a. The indicated value on the Lower (A) AND the Upper (B) detectors would vary as power production moved in the core. Borating and withdrawing control rods would dampen the oscillation.
- b. The indicated value on the Lower (A) AND the Upper (B) detectors would vary as power production moved in the core. Diluting and withdrawing control rods would dampen the oscillation.
- c. The Power Range NI detectors would not detect a Xenon oscillation at the End of Core life. Borating and withdrawing control rods would dampen the oscillation.
- d. The Power Range NI detectors would not detect a Xenon oscillation at the End of Core life. Borating and inserting control rods would dampen the oscillation.

Reactor Operator

Question No. 80

A reactor trip and loss of offsite power have occurred. Natural circulation has been established. If the rate of steaming were RAISED, how would natural circulation flow be affected?

Natural Circulation flow would ...

- a. REDUCE due to the reduction in subcooling.
- b. RISE due to the reduction in decay heat rate.
- c. RISE due to the higher thermal gradient.
- d. REDUCE due to the higher density of the cold leg.

Reactor Operator

Question No. 81

Given the following conditions:

- While operating at 100% power, a loss of offsite power occurs.
- A transition has been made from EOP-1.0 to EOP-8.0, Loss of Offsite Power/Forced Circulation Recovery.

Assuming adequate subcooling exists and loop temperatures are lowering, which ONE of the following sets of parameters would indicate that Natural Circulation has been established?

	T-COLD	T-HOT	CET AVG
a.	534° F	555° F	568° F
b.	520° F	528° F	555° F
c.	510° F	555° F	565° F
d.	535° F	552°F	570° F

Reactor Operator

Question No. 82

What effect (if any) does a Small Break LOCA have on the Steam Generators (S/G) AND what actions will help mitigate the event? (Assume degraded containment conditions.)

- a. Due to changing containment conditions, some decalibration of S/G level indications may occur. S/G levels should be maintained between 60% and 70%.
- b. The Steam Generators are not affected, since adequate Primary Coolant System (PCS) heat removal occurs through the pipe break.
- c. Nitrogen gas from the Safety Injection Tanks would cause the S/G tubes to become gas bound. S/G pressures should be maintained high in the control band to avoid this condition.
- d. Void formation in the S/G U-tubes may occur if there are no Primary Coolant Pumps operating. S/G pressures should be maintained HIGHER than PCS pressure to avoid this condition.

Reactor Operator

Question No. 83

Given the following plant conditions:

- From full power, the plant has had a LOCA.

Considering ONLY the heat removal mechanism listed, which one of the following represents adequate core heat removal?

- a. For a Small Break LOCA, reflux boiling provides adequate heat removal.
- b. For a Small Break LOCA, fluid flow out the break provides adequate heat removal.
- c. For a Large Break LOCA, reflux boiling provides adequate heat removal.
- d. For a Large Break LOCA, fluid flow out the break provides adequate heat removal.

Reactor Operator

Question No. 84

The Reactor Operator notes the following parameters and trends:

- Reactor power is stable at 90%.
- Primary Coolant System (PCS) hot and cold leg temperatures are stable at normal values.
- Pressurizer pressure is 2005 psia and lowering.
- Pressurizer level is 59% and rising.
- Containment pressure is 0.2 psig and rising slowly.
- Charging Pump P-55A speed is lowering.
- Charging Pumps P-55B and P-55C are in automatic and NOT running.
- One (1) letdown orifice is in service.

A leak in which ONE of the following locations inside containment would result in these conditions?

- a. Pressurizer steam space
- b. PCS cold leg
- c. Reactor vessel head
- d. Main steam line

Reactor Operator

Question No. 85

The plant is operating at power and the following conditions exist:

- Reactor power = 56%
- Primary Coolant System (PCS) pressure = 2060 psia
- Tave = 547°F
- S/G levels = 67%
- Turbine load = 440 MW
- Steam pressure = 795 psia
- Containment pressure = 0.2 psi

Five minutes later, the plant conditions are as follows:

- Reactor power = 58% and continuing to rise.
- PCS pressure = 2051 psia and continuing to lower.
- Tave = 542°F and continuing to lower.
- S/G levels = 69% and continuing to rise.
- Turbine power = 440 MW and steady.
- Steam pressure = 775 psia and continuing to lower.
- Containment pressure = approximately 1.8 psig and continuing to rise.

Based on the indications listed above, which event is in progress?

- a. PCS leak inside containment.
- b. Feed line break outside containment.
- c. Steam line break inside containment.
- d. Steam line break outside containment.

Reactor Operator

Question No. 86

Given the following plant conditions:

- A steam line break has occurred on 'A' SG inside containment.
- The crew is responding in accordance with EOP-6.0, Excess Steam Demand Event.
- The MSIVs have been closed.
- All Primary Coolant Pumps are stopped.

Which one of the following is the required means of minimizing the overcooling AND Pressurized Thermal Shock (PTS) concerns in the Primary Coolant System?

- a. Maintain 'B' SG within 50 psid above 'A' SG until 'A' SG reaches < - 125%, then control the steaming and feeding rate of 'B' SG.
- b. Maintain 'B' SG within 50 psid above 'A' SG until 'A' loop T-colds stabilize, then control the steaming and feeding rate of 'B' SG.
- c. Delay steaming 'B' SG until 'A' SG reaches < - 125%, then control the steaming and feeding rate of 'B' SG.
- d. Delay steaming 'B' SG until 'A' loop T-colds stabilize, then control the steaming and feeding rate of 'B' SG.

Reactor Operator

Question No. 87

Given the following conditions:

- The plant shut down on November 2.
- Today is November 23 and the plant is in MODE 6.
- LPSI Pump P-67A is in service.
- Reactor Vessel head has been removed.
- Primary Coolant System (PCS) has been drained to the level of the vessel flange (624' 6")
- PCS temperature is 95°F

Per the supplied reference, if P-67A trips, how long will it take for the PCS temperature to rise to 200°F?

- a. 40 minutes
- b. 50 minutes
- c. 60 minutes
- d. 70 minutes

Reactor Operator

Question No. 88

Given the following conditions:

- Operators are responding to a Steam Generator Tube Leak in accordance with ONP-23.2, implemented 15 minutes ago.
- Reactor power is stable at 99.6%; a power reduction has NOT been initiated.
- PZR level is stable at programmed value.
- RIA-0707 , Steam Generator Blowdown Monitor is in alarm.
- RIA-0631, Condenser Off-gas Monitor indication has risen from an initial value of 5.00E+02 CPM to 7.00E+3 CPM and is stable.
- Air ejector flowrate is 4 CFM.
- PCS Gas Total Isotope is 6.0E-2 $\mu\text{Ci/cc}$ and stable as indicated by latest Chemistry sample.

What action is required?

- a. Maintain power level and wait for confirmations of a tube leak.
- b. Shutdown per GOP-8 at a rate determined by the SS, up to 30% per hour.
- c. Shutdown at >30% per hour per GOP-8.
- d. Trip the reactor and followup with EOP-5.0.

Reactor Operator

Question No. 89

The plant was at 99.8% power when a Steam Generator Tube Rupture developed.

- The reactor was tripped and EOP-1.0, "Standard Post-Trip Actions" is completed.
- EOP-5.0, "Steam Generator Tube Rupture Recovery" is in progress.
- It has been determined that the affected S/G must be cooled down by draining it to the Primary Coolant System (PCS) via backflow.
- The operators are to determine if the resulting PCS dilution from the backflow will cause final PCS boron concentration to be less than the Required Shutdown Boron concentration.

Given these plant conditions:

- Required PCS Shutdown Boron concentration = 428 ppm
- Current level in the affected S/G = 90%
- Desired level in the affected S/G = 50%

What is the MINIMUM PCS boron concentration that must be present PRIOR TO draining the steam generator to ensure the Required Shutdown Boron concentration is maintained?

- a. 951 ppm
- b. 570 ppm
- c. 535 ppm
- d. 428 ppm

Reactor Operator

Question No. 90

During plant operation, if "A" Steam Generator level reaches approximately 85%, the Steam Generator high level override will actuate. What would be the consequences if the Steam Generator high level override failed to actuate when it was required?

- a. PCS overcooling and failure to anticipate a turbine trip.
- b. Main Steam line damage from water weight in the steam lines.
- c. Moisture carryover and possible damage to the Main Turbine.
- d. Main Feed Pumps operating in a runout condition.

Reactor Operator

Question No. 91

Given the following conditions:

- The Primary Coolant System (PCS) is being heated up with Primary Coolant Pumps P-50A and P-50C in service.
- All required checklists have been completed.
- PCS cold leg temperatures are 222°F.
- Pressurizer water temperature is 250°F.
- All pressurizer heaters are energized.
- PCS heatup rate is 25°F/hour.

Which of the following actions should be taken?

- a. Slow the PCS heatup until the pressurizer is at least 50°F above PCS temperature.
- b. Slow the Pressurizer heatup until the PCS is within 25°F of the Pressurizer temperature.
- c. Secure the PCS heatup and notify the Shift Supervisor of the PCS heatup rate violation.
- d. Continue heatups, maintaining PCS temperature between 25°F and 50°F below Pressurizer temperature.

Reactor Operator

Question No. 92

What is the Safety Limit for PCS pressure for the plant in MODE 4?

- a. 2235 psia
- b. 2375 psia
- c. 2650 psia
- d. 2750 psia

Reactor Operator

Question No. 93

Following a plant transient, EOP-9.0, "Functional Recovery Procedure" is entered. The following Safety Functions are determined to be JEOPARDIZED:

- Heat Removal (HR)
- Containment Atmosphere (CA)
- Pressure Control (PC)
- Inventory Control (IC)

All other Safety Functions are satisfied. The crew should first address ...

- a. Heat Removal (HR)
- b. Containment Atmosphere (CA)
- c. Pressure Control (PC)
- d. Inventory Control (IC)

Reactor Operator

Question No. 94

A Main Steam Line Break outside of containment and upstream of the MSIV for "A" S/G has occurred and the "A" S/G has blown dry. An Auxiliary Operator has been directed to perform the actions outside the Control Room necessary for isolation of "**A**" S/G.

If the Auxiliary Operator mistakenly isolates "**B**" S/G, what effect will this action have on the Control Room's ability to mitigate this event?

- a. No effect due to the crosstie line between "A" and "B" main steam lines.
- b. No effect since the Control Room can use the Turbine Bypass Valve for PCS Heat Removal.
- c. The Control Room has lost the ability to control PCS temperature using the ADVs.
- d. The Control Room can no longer control PCS pressure.

Reactor Operator

Question No. 95

A point source in the auxiliary building is reading 500 mrem/hr at distance of two (2) feet. Two options exist to complete rework on a valve near this radiation source.

Option 1: Operator X can perform the assignment in thirty (30) minutes working at a distance of four (4) feet from the point source.

Option 2: Operators Y and Z, who have been trained in the use of a special extension tool can perform the same task in seventy-five (75) minutes at a distance of eight (8) feet from the point source.

Which of the following options is preferable and consistent with the ALARA program?

- a. Option 1 since X' s exposure is 31.25 mrem.
- b. Option 1 since X' s exposure is 62.50 mrem.
- c. Option 2 since the exposure per person is 39.06 mrem.
- d. Option 2 since the exposure per person is 78.12 mrem.

Reactor Operator

Question No. 96

When the top two (2) feet of the Reactor Core becomes uncovered ...

- a. CETs will indicate that saturated conditions exist.
- b. CETs will indicate that superheated conditions exist.
- c. incore NI readings will indicate abnormally low.
- d. excore NI readings will indicate abnormally low.

Reactor Operator

Question No. 97

The purpose of the fusible link on a fire door is to ...

- a. allow opening and closing of the fire door without setting off the sprinklers.
- b. hold the fire door closed under normal conditions, but allow door to be opened during a fire.
- c. hold the fire door open under normal conditions, but allow door to close during a fire.
- d. ensure the fire door remains open for personnel escape during a fire in the area.

Reactor Operator

Question No. 98

Which of the following evolutions would be considered a "Core Alteration" by Technical Specifications?

- a. Removing the Upper Guide Structure from the Reactor Vessel.
- b. Removing the incore detectors from the Reactor vessel.
- c. Uncoupling all control rods in Shutdown Rod Group "B".
- d. Transferring a control rod between the Reactor vessel and Spent Fuel Pool.

Reactor Operator

Question No. 99

Given the following conditions:

- A RESTORE TO SERVICE Switching and Tagging Order (STO) has been issued.
- The AO performing the STO reports that two (2) of the tags are inside a contaminated area.

Which of the following methods is prescribed by AP-4.10, Personnel Protective Tagging, to ensure that the correct tags have been removed?

- a. A second AO shall enter the contaminated area and verify tag removed from component.
- b. The tags shall be bagged and cleared out of the RCA for verification.
- c. The AO should read each removed tag verbatim to the NCO over the telephone.
- d. A Radiation Service Technician should enter the contaminated area and verify the tag removal.

Reactor Operator

Question No. 100

An operator in the RCA exits via the SIRW roof to the Turbine Deck.

What are the normal contamination monitoring requirements when using this exit?

- a. Perform a hand and foot frisk AND proceed to Access Control to use the PCM-1B.
- b. Don shoe covers and gloves AND proceed to Access Control to use the PCM-1B.
- c. A frisk is NOT required, but proceed to Access Control to use the PCM-1B.
- d. Perform a whole body frisk when exiting and notify Health Physics technician.

WRITTEN QUESTION DATA SHEET

Question Number: 1

Tier/Group: SRO RO

K/A: 000024 Emergency Boration / 1 K3.02
 Knowledge of the reasons for the following responses as they apply to the Emergency Boration:
 Actions contained in EOP for emergency boration.

Importance Rating: SRO 4.4 RO 4.2

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions and references, determine if the criteria of the in-use EOP Safety Function status check sheets are satisfied and any additional actions that would be required. (TBAA0A2.03)

References: EM-04-08, 7.6, rev 24 LP-TBAA LP-TBAF

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Plausible since there are Shutdown Margin restrictions based on the number of Primary Coolant Pumps operating. There are specific restrictions if less than four PCPs are operating.
- b. Plausible since there are Shutdown Margin restrictions based on the number of Primary Coolant Pumps operating. Candidate may believe that the "trip two, leave two" applies here.
- c. **Correct** - There are several locations in the EOPS that specifically allow commencing a cooldown only IF emergency boration is in progress, and even though SDM has not been verified.
- d. Plausible since control rods are a key factor in Reactivity Control. Candidate may believe that if all control rods are in, this would be the most appropriate verification of SDM.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 2

Tier/Group: SRO RO

K/A: 000055 Station Blackout / 6 (PRA) K1.01
 Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Effects of battery disch rates on capacity

Importance Rating: SRO 3.7 RO 3.3

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, determine what actions are necessary to maintain the Station Batteries IAW EOP Supplements 7 and 8. (TBARG28.01)

References: EOP-3.0 Basis DBD-4.01

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly selects 4 hours, possibly due to 4 hours being the design time limit for batteries to provide power to required equipment.
- b. Candidate incorrectly selects 2 hours, possibly due to 2 hours being a time parameter given in EOP-3.0 for heat removal capability using a non-electrically powered means.
- c. **Correct**
- d. Candidate incorrectly selects 10 minutes, possibly due to 10 minutes being a decision point in EOP-3.0 on when and how to restore Diesel Generators.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 3

Tier/Group: SRO RO

K/A: 063 DC Electrical Distribution K3.02
Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: Components using DC control power.

Importance Rating: SRO 3.7 RO 3.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, identify the expected plant responses for the following: (TBAQG10.01)
c. Loss of DC Power

References: ONP-2.3

Source of Question: Palisades Bank 5335 (direct)

DISTRACTOR ANALYSIS

- a. May select since D-11-1 is one of the six vital DC buses.
- b. May select since D-11-2 is one of the six vital DC buses.
- c. May select since D-21-1 is one of the six vital DC buses.
- d. **Correct** - Most CR alarms are powered from this DC bus.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 4

Tier/Group: SRO RO

K/A: 064 Emergency Diesel Generator K4.08
 Knowledge of ED/G system design feature(s) and/or interlock(s) which provide for the following:
 ED/G fuel isolation valves.

Importance Rating: SRO 3.5 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a diagram of the diesel generator fuel oil system with the status of the valves indicated, determine if the belly tank level is being controlled manually or automatically IAW SOP-22. (ISBBG12.02)

References: M-214, sh. 1 SOP-22, Att. 8 LP-ISBB, 6.3

Source of Question: Palisades Bank 1483 Direct

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes throttling (closing or opening) a valve upstream may somehow correct the problem.
- b. While this method is physically possible, it is not procedurally allowed, nor would it provide a positive means of controlling level.
- c. Manual readjustment of the setpoint may be possible, however, it is not procedurally prescribed, nor would it provide a means of controlling level at the prescribed setpoint.
- d. **Correct** - A design feature that allows bypassing level control valve.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 5

Tier/Group: SRO RO

K/A: 062 AC Electrical Distribution A1.01
 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: Significance of D/G load limits.

Importance Rating: SRO 3.8 RO 3.4

10CFR55 Content: SRO RO

Palisades Training Objective:
 Determine the consequences of failing to comply with SOP-22 Precaution and Limitation, or Plant Requirement section item. (ASAC0G7.09)

References: SOP-22, Caution on p. 33, rev 31 DBD-501, 3.2.1.1, DBD 5.06, 3.2.1, 3.2.5

Source of Question: Palisades Bank 9093 (direct)

DISTRACTOR ANALYSIS

- a. May select since trip circuitry does require power, however candidate incorrectly believes the diesel generator is the source of that power.
- b. **Correct** - Per SOP-22 CAUTION, generator may motor if load is any lower than 50 kW.
- c. Overspeed is a concern when unloading the diesel generator, however, candidate incorrectly concludes it is always a concern when above 50kW load.
- d. Candidate correctly understands there are interlocks associated with the diesel generator output breaker, but incorrectly applies them here.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 6

Tier/Group: SRO RO

K/A: 2.4.11 Knowledge of abnormal condition procedures

Importance Rating: SRO 3.6 RO 3.4

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a visual tornado sighting, visible sign of rising lake level or other communicated alert, respond IAW ONP-12. (TBAKT00.02) (IOTFT.46)
 Given symptoms associated with a specific Off Normal event, describe the mitigating strategy and the basis for the mitigating strategy IAW the Off Normal Procedure. (IOTFK.05)

References: ONP-12, 4.2

Source of Question: Palisades Bank PR2-29 (direct)

DISTRACTOR ANALYSIS

- a. Neither should be paralleled.
- b. Neither should be paralleled.
- c. DGs should be ready to load in UNIT mode.
- d. **Correct** - DGs should be ready to load in UNIT mode, but not paralleled.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 7

Tier/Group: SRO RO

K/A: 004 Chemical and Volume Control K2.06
 Knowledge of bus power supplies to the following: Control instrumentation.

Importance Rating: SRO 2.7 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given various plant conditions, one or more of the following annunciators in the alarmed condition. (ASAB0G9.01)

- a. Identify the alternate 125 VDC, Preferred AC and Instrument AC System annunciators that can be used to verify a given alarm
- b. Describe the effect of valid alarm conditions on the operation of the 125 VDC, Preferred AC and Instrument AC System

Draw the Instrument and Preferred AC/DC Electrical System and Interfaces. (ASAB0K1.01)

References: ONP-24.1

Source of Question: Palisades Bank 5284 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - Y-10 loss would result in all these indications.
- b. Candidate improperly diagnoses failure of a Preferred AC Bus.
- c. Candidate improperly diagnoses failure of a Preferred AC Bus.
- d. Candidate improperly diagnoses failure of a Preferred AC Bus.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 8

Tier/Group: SRO RO

K/A: 013 Engineered Safety Features Actuation A2.04

Ability to:

- a. predict the impacts of the following malfunctions or operations of the ESFAS and
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions. Loss of Instrument Bus

Importance Rating: SRO 4.2 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions and a failure, malfunction, or incorrect operation of any given Safety Injection System component, predict the impact on the operation of the Safety Injection System. ASHA0A2.01

References: ONP-24.3

Source of Question: Palisades Bank 2000CERT Q64 (direct)

DISTRACTOR ANALYSIS

- a. Left channel equipment must be manually operated. Select since depressing the left channel initiate pushbutton will work as long as power is available.
- b. **Correct** - SIAS actuation relays are energized to actuate. Since Y-30 supplies power to the left channel, these relays will not actuate automatically nor when the left channel initiate pushbutton is depressed.
- c. Y-30 supplies left channel. Select since this is similar to choice "a" except the opposite train.
- d. Y-30 supplies left channel. Select since this would be correct except for the opposite train.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 9

Tier/Group: SRO RO

K/A: 000058 Loss of DC Power / 6 K3.02
 knowledge of the reasons for the following response as they apply to the Loss of DC Power:
 Actions contained in EOP for loss of dc power.

Importance Rating: SRO 4.2 RO 4.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, determine the consequences of failing to perform any step or complying with any Caution within the applicable procedure for the following: (TBAQ0K6.01)
 c. Loss of DC Power

References: ONP-2.3, 4.1.c M-201, sh. 1, sh. 1B

Source of Question: Palisades Bank PR1-C50 (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly thinks containment isolation is the primary concern, when actually the containment isolation valve (CV-2009) has already isolated.
- b. **Correct** - The Letdown Stop Valves are upstream of RV-2006 and will isolate the RV.
- c. Candidate correctly recalls that CV-2009 is a containment isolation; however it has already failed closed on loss of DC. Further, a manual action to close CV-2009 (IF it were open) would only exacerbate this problem since RV-2009 is upstream of CV-2009.
- d. Candidate incorrectly believes that CV-2009 is upstream of RV-2006.

Difficulty Rating: 3

Cognitive Level: High Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 10

Tier/Group: SRO RO

K/A: 027 Containment Iodine Removal K2.01
 Knowledge of the bus power supplies to the following: Fans.

Importance Rating: SRO 3.4 RO 3.1

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a loss of AC power, DC power or Instrument Air to any given Purge and Ventilation System component and P&IDs and/or electrical schematics, predict the effects on the Purge and Ventilation System. (ASDB0K4.17)

References: SOP-24 E-4, sh. 1

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that Iodine Removal Fans must be powered from the Left Channel safeguards power. (52-131 = the digit "1" indicates 480V left channel power.)
- b. Candidate incorrectly believes that Iodine Removal Fans must be powered from the Right Channel safeguards power. (52-211 = the digit "2" indicates 480V right channel power.)
- c. **Correct** - Candidate understands that this can be the only correct answer by recalling that a digit "9" indicates breakers on MCC-9 which is in containment. The Iodine Removal Fans are located in containment.
- d. Candidate incorrectly believes that Iodine Removal Fans are powered from a safety bus which does power some containment fans, but these are Containment Air Cooler fans (large motors which require 2400V system to operate). Iodine Removal Fans are smaller motors and require only 480V to operate.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 11

Tier/Group: RO

K/A: 000057 Loss of Vital AC Elec. Inst. Bus / 6 G 2.1.28
Knowledge of the purpose and function of major system components and controls

Importance Rating: SRO 3.3 RO 3.2

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a loss of power to MCC-1 or MCC-2, explain how the Instrument AC bus Y-01 would remain powered. (ISBA0G4.07)

References: DBD 3.02, 3.2.4 SOP-30, 7.6.2 and Attachment 1

Source of Question: Palisades Bank 11747 Direct

DISTRACTOR ANALYSIS

- a. There is a "power-seeking" function on the Y-50 ABT, but the alternate power sought is NOT from the bypass regulator.
- b. There is a "power-seeking" function on the Y-50 ABT, but it is not functional in "Emergency" mode.
- c. Candidate incorrectly believes the "Emergency" power source is from the left channel (Bus 1C) safeguards power.
- d. **Correct** - "Emergency" power source is lost when Bus 1D de-energizes.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: SOP-30, Attachment 1 (drawing of Y-50 Automatic Transfer Sw.)

WRITTEN QUESTION DATA SHEET

Question Number: 12

Tier/Group: SRO RO

K/A: 075 Circulating Water K2.03
 Knowledge of bus power supplies to emergency/essential SWS pumps

Importance Rating: SRO 2.7 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

List the power supplies for the following: (ISDA0K2.01)

- a. Service Water Pumps P-7A/B/C.
- b. Seal Oil Service Water Booster Pump P-44 (references allowed).
- c. Service Water Booster Pumps P-25A/B/C (references allowed).

References: P&ID, E-1, sh.1

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly recalls power supplies.
- b. Candidate incorrectly recalls power supplies.
- c. **Correct** - P-7A is powered from Safety Bus 1D; P-7B is powered from the other train of safeguards power: Bus 1C.
- d. Candidate incorrectly recalls power supplies.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 13

Tier/Group: SRO RO

K/A: 076 Service Water A2.02

Ability to:

- a. predict the impacts of the following malfunctions or operations on the SWS
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: service water header pressure.

Importance Rating: SRO 3.1 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a loss of Service Water and Control Room references, determine the cause of the loss including the location of any Service Water leaks, if applicable. 2AA2.03/02 (IOTFK.10)

References: ARP-7, 49 DBD-1.02, 3.3.6.2

Source of Question: Palisades Bank 10820 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Standby pump starts at 40 psig at pump discharge pressure.
- b. Candidate recognizes that 35 psig is below the Standby start pressure, however, with a header pressure of 35 psig, the pressure at the discharge of each running Service Water pump would be above the Standby auto start pressure.
- c. Candidate recognizes that 35 psig is below the Standby start pressure, however, with a header pressure of 35 psig, the pressure at the discharge of each running Service Water pump would be above the Standby auto start pressure.
- d. May select due to incorrect belief that this is the sensing location for the low pressure.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 14

Tier/Group: SRO RO

K/A: 000062 Loss of Nuclear Service Water / 4 A2.02
Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water:
The cause of possible SWS loss

Importance Rating: SRO 3.6 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions involving a loss of Service Water, CCW, or Instrument Air (including system leaks) and Control Room references, determine: (TBA10K6.01)
The probable cause (including the location of the leak if applicable)

References: ONP-6.1, 4.2.b Operator Aid OA-136

Source of Question: Palisades Bank 8058 (significantly modified)

DISTRACTOR ANALYSIS

- a. **Correct** - This scenario was actually run using the Simulator and the amps match the break location.
- b. CV-0844 is the isolation valve for one of the SW critical headers, and is ALREADY open. Candidate may select thinking because the valve fails open on loss of air (fails safe), this would cause higher amps indication.
- c. CV-1359 fails closed on loss of instrument air. The effect, if any, would mean LESS work for the inservice Service Water pumps, and therefore reduced amps. Candidate may select mistakenly thinking this valve fails open on loss of air.
- d. A partially plugged basket strainer would mean reduced flow (and less work) through the pump, therefore fewer amps. Candidate may select incorrectly believing the pump is "having to do more work" due to a partially plugged strainer.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: Operator Aid OA-136

WRITTEN QUESTION DATA SHEET

Question Number: 15

Tier/Group: SRO RO

K/A: 022 Containment Cooling K1.02
 Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems: SEC/remote monitoring systems.

Importance Rating: SRO 3.5 RO 3.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given various Plant conditions and one or more of the following annunciators in the alarmed condition:
 (ASBB0G9.02)

- a. Identify any alternate SW system indications that can be used to verify a given alarm.
- b. Describe the effect of valid alarm conditions on the operation of the SW System.
- c. Use applicable Control Room references to determine the required actions.

References: ARP-8, window 47 M-208, sh. 1A, 1B

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate correctly selects a component inside containment, however Shield Cooling is NOT cooled by Service Water.
- b. Candidate correctly selects a condition that requires more Service Water flow, however the flow is NOT in and out of containment (it is through the CCW Heat Exchangers).
- c. Candidate reasons that the Containment Air Coolers (which use Service Water) are designed to limit containment pressure during a MSLB, and therefore flow must be greater. However the function of FS-0885 is for leak detection (delta flow in and out of containment), not total system flow detection alone.
- d. **Correct** - This instrument compares SW flow going in to Containment to going out.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: M-208, sh. 1A, 1B (excerpts) *Ensure FS-0885 is highlighted on the provided P&ID.*

WRITTEN QUESTION DATA SHEET

Question Number: 16

Tier/Group: SRO RO

K/A: 000026 Loss of Component Cooling Water / 8 (PRA) G 2.4.24
Knowledge of loss of cooling water procedures

Importance Rating: SRO 3.7 RO 3.3

10CFR55 Content: SRO 55.43(b) RO 55.41(b)

Palisades Training Objective:

Given Plant conditions involving the symptoms of a Loss of CCW, respond IAW ONP-6.2. TBAIT00.02

References: ONP-6.2 LP-TBAI DBD-1.04, 5.2.2

Source of Question: Palisades Bank 2000CERT28 (direct)

DISTRACTOR ANALYSIS

- Any charging pump can be operated. Plausible since P-55A is the charging pump normally used if plant is on Shutdown Cooling.
- P-55B and P-55C oil coolers are cooled by CCW. Select since only 5 gpm CCW flow is required.
- P-55A trips on high temperature. Select since pumps will cycle on and off to maintain level if in auto and level lowers.
- Correct** - P-55A will trip on high fluid drive temperature of 150°F.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 17

Tier/Group: SRO RO

K/A: 011 Pressurizer Level Control A4.01
 Ability to manually operate and/or monitor in the control room: Charging pump and flow controls.

Importance Rating: SRO 3.2 RO 3.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the two modes of CVCS operation for maintaining PZR level when the variable speed charging pump is out of service. (ASFAG12.04)

References: GOP-13, Att. 1 FSAR 9.10-12 & 13 SOP-2A, 7.3.5, Att. 2 DBD 1.04, p. 19-20

Source of Question: Palisades Bank 4944 Direct

DISTRACTOR ANALYSIS

- a. Candidate may select with an incorrect understanding of the anti-pump function, believing that P-55C is cycling on and off (which it is); however, if an anti-pump lockout has not been reset, then the pump would not run at all.
- b. Candidate may select, since PIC-0202 does affect letdown pressure/flow, but incorrectly applies it here. The distractor information is not specific enough to apply to the regular cycling of Pressurizer level given in the stem conditions.
- c. **Correct** - This is also known as Option 1 CVCS operation.
- d. Candidate may select, since the backup PZR level control program does affect Pressurizer level; however, the backup signal malfunction information is not specific enough to apply to the regular cycling of Pressurizer level given in the stem conditions.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 18

Tier/Group: SRO RO

K/A: 004 Chemical and Volume Control K6.13
Knowledge of the effect of a loss or malfunction on the following CVCS components: Purpose and function of the boration/dilution batch controller.

Importance Rating: SRO 3.3 RO 3.1

10CFR55 Content: SRO RO

Palisades Training Objective:

State the Immediate Actions for an uncontrolled primary coolant dilution as specified in ONP/BANG11.01

References: ONP-8

Source of Question: Palisades Bank PRAC1 55 Direct

DISTRACTOR ANALYSIS

- Reactor trip is not required and is not an immediate action.
- Stopping pumps is only performed if closing CV-2165 fails to stop dilution and is not an immediate action.
- Emergency boration is not required and is not an immediate action.
- Correct** - Immediate actions per ONP-18 are to close CV-2165 and stabilize power with rods.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 19

Tier/Group: SRO RO

K/A: 000022 Loss of Reactor Coolant Makeup / 2 A1.03
 Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: PZR level trend.

Importance Rating: SRO 3.2 RO 3.2

10CFR55 Content: SRO RO

Palisades Training Objective: ASFA0A2.01
 Given Plant conditions and a failure, malfunction, or incorrect operation of any given CVCS System component, predict the impact on the operation of the CVCS System. (ASFA0A2.01)

References: SOP-2A, 7.3.1

Source of Question: Palisades Bank 12129 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - PCP bleedoff goes into VCT, and exits PCS.
- b. Candidate incorrectly believes that since there is no charging and no letdown, Pressurizer level should remain stable. However, there is approximately 4 gpm leaving the PCS through Primary Coolant Pump seal bleedoff.
- c. Candidate correctly believes that inventory is leaving the PCS, but is incorrect in where that inventory is going.
- d. Candidate is correctly believes that the VCT is receiving inventory, but fails to make the connection that this inventory is coming from the PCS.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 20

Tier/Group: SRO RO

K/A: 000028 Pressurizer Level Malfunction / 2 K3.02
 Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: Relationships between PZR pressure increase and reactor makeup/letdown imbalance.

Importance Rating: SRO 3.2 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions involving a malfunction of the Pressurizer Level Control System or its inputs: (ASFD0A2.02)

- a. Determine the effect on Pressurizer level.
- b. Describe the actions required to maintain/control Pressurizer level.

References: SOP-2A ARP-4, window 61

Source of Question: Palisades Bank 99NRC - 2 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Must determine that a ruptured diaphragm on LT-0101A results in indicated level going high. This will cause indicated level to be greater than program, causing an increase in letdown and a decrease in charging. Backup heaters only receive a signal if in AUTO.
- b. Candidate incorrectly determines that pressurizer level will fail low with the ruptured diaphragm and selects the correct response to a low failure.
- c. Candidate incorrectly determines that pressurizer level will fail low and fails to recognize that if level failed low all orifice valves would close.
- d. Candidate incorrectly determines status of orifice block valves despite determining correct response of level to diaphragm failure.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 21

Tier/Group: SRO RO

K/A: 072 Area Radiation Monitoring K1.04
 Knowledge of the physical connections and/or cause-effect relationships between the ARM system and the following systems: control room ventilation.

Importance Rating: SRO 3.5 RO 3.3

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a picture of the Control Room HVAC controls, describe the operation/function of any given Control Room HVAC System control. (ASHF0G4.03)

References: DBD 1.06, 3.3.14.1 SOP-24, p. 49-50, rev 32 LP-ASHF, p.13-14, rev 10

Source of Question: Palisades Bank 8066 Direct

DISTRACTOR ANALYSIS

- a. The most incorrect of all the distractors. Candidate may select, however, since there is a functional relationship between accidents resulting in a CHP or CHR, and the function of the Control Room HVAC system. Candidate misapplies this relationship.
- b. **Correct** - For CR HVAC and cooling.
- c. Candidate may select since the function of "override" given in the distractor is correct, and that a manual start is then available; however, candidate incorrectly believes that it is a load shed signal that caused VC-10 to trip.
- d. Candidate correctly determines the switch overrides a CHP/CHR signal, but applies an interlock requirement that does not exist.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 22

Tier/Group: SRO RO

K/A: 000061 ARM System Alarms / 7 A2.05
 Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Need for area evacuation; check against existing limits.

Importance Rating: SRO 4.2 RO 3.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Given various plant conditions and one or more of the following annunciators in the alarmed condition:
 (ASDC0G9.01)
 EK-1366, Plant Area Monitoring High Radiation

References: HP-2.8, Sect. 5.7.2

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly applies what appears to be a conservative action.
- b. Candidate selects because a gamma survey appears to be a viable action, along with confirming the validity of an alarm.
- c. Candidate incorrectly applies an action that may apply for other plant situations, but fails to realize that conditions could change significantly in a period of 30 days.
- d. **Correct** - Must consult with SS and Duty HP before taking such drastic action as evacuating the Control Room.

Difficulty Rating: 4

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 23

Tier/Group: SRO RO

K/A: 000067 Plant Fire On-site / 9 K3.04
 Knowledge of the reasons for the following responses as they apply to the Plant Fire on Site:
 Actions contained in EOP for plant fire on site

Importance Rating: SRO 4.1 RO 3.3

10CFR55 Content: SRO 55.43(b) RO 55.41(b)

Palisades Training Objective:

Given plant conditions involving an Alternate Safe Shutdown, determine the consequences of failing to perform any given step contained within ONP-25.2. TBAMOK6.02

References: LP-TBAM ONP-25.2 EOP Supplement 19

Source of Question: Palisades Bank 99NRC6 (direct)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that station concerns with limited supplies of feedwater would be minimized if water was put in S/G as soon as possible.
- b. Candidate incorrectly believes that subcooling may become an issue due to natural circulation condition.
- c. **Correct** Pressurizer insurges and outsurges, due to feeding at maximum rates and then minimum rates when the S/G reaches the upper end of its level range (causing temperature swings in the PCS) would make PCS inventory and pressure control difficult.
- d. Candidate incorrectly believes that thermal stresses on the S/G are an issue, when they are more likely to be an issue only if a S/G had been allowed to dry out.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 24

Tier/Group: SRO RO

K/A: 061 Auxiliary/Emergency Feedwater A3.03
 Ability to monitor automatic operation of the AFW, including: AFW S/G level control on automatic start.

Importance Rating: SRO 3.9 RO 3.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the function and operation of the following AFW controllers. (ASLDG12.09)
 a. FIC-0727, 0749, 0736A, 0737A (C-01 panel)

References: LP-ASLD SOP-12, 4.7, 7.3.3 SOP-12, Attachment 2, 1.e DBD-1.03, p. 64

Source of Question: Palisades Bank 8837 (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate believes "AUTO" function will control a set Aux Feed flow, but incorrectly selects 100 gpm as the amount of flow. May select since 100 gpm is a low flow auto start setpoint for the steam driven Aux Feed Pp.
- b. **Correct** - Design of the system controllers.
- c. Candidate selects the correct amount of design flow (165 gpm), but fails to realize the importance of having 165 gpm immediately and automatically selected as the auto flow control setpoint..
- d. Candidate correctly selects "CASCADE" as the mode of auto flow control, but incorrectly believes 100 gpm is adequate design Aux Feed flow. May select since 100 gpm is a low flow auto start setpoint for the steam driven Aux Feed Pp.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 25

Tier/Group: SRO RO

K/A: 010 Pressurizer Pressure Control A4.01
 Ability to manually operate and/or monitor in the control room: PZR spray valve.

Importance Rating: SRO 3.5 RO 3.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions, determine the response of the Pressurizer Pressure Control System to control PCS pressure at set point. (ASFE0A4.01)

References: FSAR 4.3.7

Source of Question: Palisades Bank 8813 Direct

DISTRACTOR ANALYSIS

- a. Candidate reverses the relationship between spray function and pressure response. Also may select, believing that since the setpoint is now 2240 psia, more spray is needed to reduce pressure.
- b. **Correct** - A higher pressure setpoint would cause the controller to call for less spray.
- c. May select, believing since the setpoint is now high (and pressure will be rising), that less heater input is required.
- d. May select, believing since the setpoint is now high (and pressure will be rising), that less heater input is required.

Difficulty Rating: 2

Cognitive Level: High Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 26

Tier/Group: SRO 1/1 RO 1/1

K/A: 000051 Loss of Condenser Vacuum / 4 K3.01
 Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum

Importance Rating: SRO 3.1 RO 2.8

10CFR55 Content: SRO 55.43(b) RO 55.41(b)

Palisades Training Objective:

State the purpose for the connection/relationship between the Main Steam System and the following:
 e. Main Condenser Vacuum ASJB0K1.01

References: SOP-7, 7.4.7 note prior to step a, rev 39 DBD 1.09, p. 15, 44, rev 2
 LP-ASJB, rev 10

Source of Question: Palisades Bank PR1 - 45 (direct)

DISTRACTOR ANALYSIS

- a. Turbine trips at pressure of approximately 21" Hg vac. TBV is still available.
- b. **Correct** Setpoint of 5" Hg vac protects the condenser from an overpressure condition.
- c. Feed pump trips at pressure of approximately 15" Hg vac. TBV is still available.
- d. Hood sprays are normally aligned. Not operated by condenser vacuum.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 27

Tier/Group: SRO RO

K/A: 039 Main and Reheat Steam K4.04
 Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following:
 Utilization of steam pressure program control when steam dumping through atmospheric relief/dump valves, including Tave limits.

Importance Rating: SRO 3.1 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions and available Control Room references (when applicable): (ASJB0K4.04)

- a. Determine which of the following valves will open to relieve secondary steam pressure:
 1. steam dump valves 2. turbine bypass valve 3. secondary code safeties

References: FSAR 7.5.1.5 LP-ASJB

Source of Question: Palisades Bank PRAC1-89 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - TBV will be full open, lowering SG pressure to 900 psia. ADVs will be modulating closed as Tave approaches 535 oF.
- b. ADVs will be modulating due to being near 535 oF.
- c. TBV will be full open, lowering SG pressure to 900 psia.
- d. TBV will be full open, lowering SG pressure to 900 psia.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 28

Tier/Group: SRO RO

K/A: 2.3.11 Ability to Control radiation releases

Importance Rating: SRO 3.2 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a SGTR, identify those factors which are to be considered when establishing priorities for mitigating the consequences of the event. (TBAFG31.01)

References: EOP-5.0 Basis, p. 64

Source of Question: Palisades Bank 4009 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - TBV dumps steam to the condenser.
- b. Candidate is correct that this method would conserve condensate inventory, but incorrectly determines that this concern would override radiological release concerns.
- c. Candidate reasons that the TBV permits a “finer” control of cooldown, but incorrectly concludes that design of the ADVs is inadequate for a controlled cooldown, and incorrectly concludes these concerns would override any radiological release concerns.
- d. May select since this is similar to distractor “c”, but more complete since it also includes finer control over PCS pressure. However, candidate incorrectly applies this, and incorrectly concludes that these perceived benefits override any radiological release concerns.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 29

Tier/Group: SRO RO

K/A: 041A2.03 Steam Dump/Turbine Bypass Control

Ability to:

- a. predict the impacts of loss of Instrument Air on the Steam Dump System
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of the loss of air

Importance Rating: RO 2.8

10CFR55 Content: RO

Palisades Training Objective:

Given Plant conditions and available Control Room references (when applicable): (ASJB0K4.04)

- a. Determine which of the following valves will open to relieve secondary steam pressure:
 - 1. steam dump valves
 - 2. turbine bypass valve
 - 3. secondary code safeties

References: ONP-7.1

Source of Question: Palisades Bank 10714 (significantly modified)

DISTRACTOR ANALYSIS

- a. ADVs have nitrogen backup supply.
- b. ADVs have nitrogen backup supply.
- c. **Correct** - TBV fails closed on loss of air, and does not operate if condenser vacuum is less than 5".
- d. ADVs have nitrogen backup supply.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 30

Tier/Group: SRO RO

K/A: 002A2.03 Reactor Coolant

Ability to:

- a. predict the impacts of loss of forced circulation on the PCS
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of loss of forced circulation.

Importance Rating: RO 4.1

10CFR55 Content: RO

Palisades Training Objective:

Given conditions involving a reactor trip, determine any required EOP 1.0 right-hand contingency action(s). (TBABG10.02)

References: EOP-1.0, 5.1.b

Source of Question: Palisades Bank 92NRC (significantly modified)

DISTRACTOR ANALYSIS

- a. Not a condition for closing MSIVs.
- b. **Correct** - Must close both MSIVs if either S/G pressure is less than 800 psia.
- c. Not a condition for closing MSIVs.
- d. Not a condition for closing MSIVs.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 31

Tier/Group: SRO RO

K/A: 068K5.03 Liquid Radwaste

Knowledge of the operational implication of the following concepts as they apply to the Liquid Radwaste System: Units of radiation, dose, and dose rate.

Importance Rating: RO 2.6

10CFR55 Content: RO

Palisades Training Objective:

Given a diagram of an area or process monitor linear/log analog rate meter, state the function any given control or indicator. (ASDC0G4.03)

References: SOP-37, 7.2

Source of Question: Palisades Bank 8798 (direct)

DISTRACTOR ANALYSIS

- Monitor bargraph would indicate RED for this condition.
- May select since the color AMBER is sometimes used to indicate an approaching setpoint, however, for this equipment the AMBER light only comes on after reaching the WARNING setpoint.
- Candidate incorrectly reasons that the color AMBER (used in other plant monitoring systems) a normal condition and not a HIGH or a WARNING point.
- Correct** - AMBER is an indication of higher than warning but less than HIGH.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 32

Tier/Group: SRO RO

K/A: 071 2.3.11 Waste Gas Disposal
Ability to control radiation releases

Importance Rating: RO 2.7

10CFR55 Content: RO

Palisades Training Objective:

State the purpose for flushing or purging a radiation monitor.

ISEB0G4.08

References: SOP-18A, p. 13 LP-ISEB, p.38

Source of Question: Palisades Bank PR1-59 (direct)

DISTRACTOR ANALYSIS

- a. **CORRECT** - Purging will remove any radioactive gases which have been trapped in the monitor.
- b. Purging is to reduce monitor to background.
- c. Purging is to reduce monitor to background.
- d. Purging is to reduce monitor to background.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate NONE

WRITTEN QUESTION DATA SHEET

Question Number: 33

Tier/Group: SRO RO

K/A: 072 A1.01 Area Radiation Monitoring
Ability to predict/monitor changes in parameters (to prevent exceeding design limits) associated with operating the ARM system controls including: Radiation levels.

Importance Rating: RO 3.4

10CFR55 Content: RO

Palisades Training Objective:

Describe the automatic actions initiated by each of the following process monitors upon receipt of a high alarm: j. RIA-5712 (Fuel Handling Area Ventilation Monitor) ASDCG12.02

References: SOP-24

Source of Question: Palisades Bank PR2-86 (direct)

DISTRACTOR ANALYSIS

- a. **CORRECT** Trips Fuel Handling Area Supply Fan V-69.
- b. Alarm function only.
- c. Alarm function only.
- d. Alarm function only.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 34

Tier/Group: SRO RO

K/A: 034 Fuel Handling Equipment K6.02
 Knowledge of the effect of a loss or malfunction on the following will have on the Fuel Handling System: Radiation monitoring systems.

Importance Rating: SRO 3.3 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the automatic action initiated by the refueling area Monitors RIA-2316 and RIA-2317.
 (ASDC0A3.02)

References: SOP-39, p. 10 LP-ASDC

Source of Question: Palisades Bank 91NRC (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes there is some type of interlock between the monitors. May select, since both monitors perform a function in similar areas of the plant.
- b. **Correct** - When not refueling (cut OUT) a high alarm on these monitors will NOT cause a containment isolation.
- c. When not refueling (cut OUT) a high alarm on these monitors will NOT cause a containment isolation.
- d. Candidate may select and correctly apply a relationship between containment isolation and high radiation while refueling; however, the relationship is incorrectly limited to only Spent Fuel Pool ventilation.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 35

Tier/Group: SRO RO

K/A: 073 Process Radiation Monitoring K1.01
 Knowledge of the physical connections and/or cause-effect relationships between the PRM system and those systems served by PRMs.

Importance Rating: SRO 3.9 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the automatic actions initiated by each of the following process monitors upon receipt of a high alarm. (ASDCG12.02)

- b. RIA-0915 (Component Cooling Water Monitor)

References: ARP-8, 65

Source of Question: Palisades Bank 7735 Direct

DISTRACTOR ANALYSIS

- a. Candidate may select since the regen heat exchanger is a potential source of contaminated water; however, the cooling medium is NOT CCW (it is charging flow).
- b. Candidate incorrectly believes a higher flow may flush the monitor to restore normal reading.
- c. Candidate incorrectly assumes the makeup source may be responsible for the condition.
- d. **Correct** - Swaps in order to prevent release.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 36

Tier/Group: SRO RO

K/A: 000059 K2.01 Accidental Liquid RadWaste Rel. / 9
 Knowledge of the interrelations between the Accidental Liquid Radwaste Release and Radioactive liquid monitors.

Importance Rating: SRO 2.8

10CFR55 Content: SRO 43(b).5

Palisades Training Objective:

Given various plant conditions and one or more of the following annunciators in the alarmed condition:
 (ASDC0G9.01)

- 1) RIA-08332) RIA-1323
- a. Identify any alternate radiation monitoring indications which can be used to verify the validity of the alarm.
- b. Describe the effect of a valid alarm on the Radiation Monitoring System or plant components.

References: FSAR 14.20 M-208, sh. 1A M-653, sh. 3

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. May select since Service Water discharge is into the Discharge Canal area, however, the RE-0833 is upstream and does not directly interface with canal liquids.
- b. **Correct** - Both monitors are located such that water spillage (and activity) would be detected.
- c. May select since Service Water discharge is into the Discharge Canal area, however, the RE-0833 is upstream and does not directly interface with canal liquids.
- d. Candidate may select due to recalling that there is an interface between T-91 and the Aux. Bldg. Sump (which is very near the Evap Control Panel area). However, the interface is only that T-91 has an internal overflow which goes to the Aux Bldg Sump.

Difficulty Rating: 2

Cognitive Level: High Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 37

Tier/Group: SRO RO

K/A: 000076 High Reactor Coolant Activity / 9 K2.01
 Knowledge of the interrelations between the High Reactor Coolant Activity and the following:
 Process radiation monitors

Importance Rating: SRO 3.0 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, identify the expected plant responses for the following: (TBALG33.01)
 c. High coolant activity

References: ONP-11.1 ARP-4, window 71 LP-TBAL

Source of Question: Palisades Bank 5888 Direct

DISTRACTOR ANALYSIS

- a. Candidate incorrectly concludes PCS activity has entered the secondary system. Given conditions specify NO other off-normal conditions.
- b. Candidate may select since CCW interfaces with several PCS boundary systems. However, given conditions specify NO other off-normal conditions.
- c. **Correct** - Containment and other ventilation would be monitored through the Stack Gas.
- d. Candidate may select since Service Water provides a major load inside containment. However, given conditions specify NO other off-normal conditions.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 38

Tier/Group: SRO RO

K/A: 068 Liquid Radwaste A4.03
 Ability to manually operate and/or monitor in the control room: Stoppage of release if limits exceeded.

Importance Rating: SRO 3.8 RO 3.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given various plant conditions and one or more of the following annunciators in the alarmed condition:
 (ASDC0G9.01)

- 6) RIA-1049
 - a. Identify any alternate radiation monitoring indications which can be used to verify the validity of the alarm.
 - b. Describe the effect of a valid alarm on the Radiation Monitoring System or plant components.

References: ARP-8, 65

Source of Question: Palisades Bank 7736 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - Terminates the batch release.
- b. Candidate incorrectly believes a manual sample is required prior to the decision for terminating the batch.
- c. Candidate may select while recalling there is an interrelationship between the Main Exhaust system and radwaste release; however, it is procedural (certain batch release must be procedurally terminated if Main Exhaust fans trip), and not an interlock.
- d. Candidate may select since there is an automatic trip of V-10, but it is from an Area Radiation Monitor, and NOT from the process radiation monitor RIA-1049.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 39

Tier/Group: SRO RO

K/A: 071 Waste Gas Disposal K4.06
Knowledge of design feature(s) and/or interlock(s) which provide for the following: sampling and monitoring of waste gas release tanks.

Importance Rating: SRO 3.5 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

State the function of the Waste Gas Processing System. (ISEB0G4.01)

References: SOP-18A M-211, sh. 3

Source of Question: Palisades Bank 12138 Direct

DISTRACTOR ANALYSIS

- a. Numerous tanks throughout the plant do have rupture discs, but this does not apply to the Waste Gas Decay Tanks.
- b. Numerous tanks throughout the plant do have rupture discs, but this does not apply to the Waste Gas Decay Tanks.
- c. Candidate correctly selects the type of relieving device, but incorrectly believes the pressure is relieved to containment. There is a portion of the Waste Gas System that does interface with Containment, but not on the Waste Gas Decay Tanks themselves.
- d. **Correct** - There is a relief valve on the tank.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 40

Tier/Group: SRO RO

K/A: 000060 Accidental Gaseous Radwaste Rel. / 9 K2.01
 Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the following: ARM system, including the normal radiation level indications and operability status.

Importance Rating: SRO 2.9 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a diagram of the RGEM Control Panel, state the function of any given control switch or indicator.
 (ASDC0G4.06)

References: SOP-38

Source of Question: Palisades Bank PRAC1 - C12 Direct

DISTRACTOR ANALYSIS

- a. Plant exhaust fans continue to operate.
- b. RGEM is not relied upon to generate a Containment Isolation.
- c. **Correct** - RE-2325 and RE-2326 do not isolate.
- d. A high alarm on RE-2326 automatically aligns nearly all the flow through RE-2327 via a splitter, though some flow is maintained through RE-2324 and RE-2326, and a grab sample is automatically take for 15 seconds.

Difficulty Rating: 4

Cognitive Level: High Low ✓

References Supplied to Candidate: SOP-38, Attachment 4 (drawing of RGEM panel)

WRITTEN QUESTION DATA SHEET

Question Number: 41

Tier/Group: SRO RO

K/A: 000032 Loss of Source Range NI / 7 K2.01
 Knowledge of the interrelations between the Loss of Source Range Nuclear Instrumentation and the following: Power supplies, including proper switch positions.

Importance Rating: SRO 3.1 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:
 Remove an excore NI channel from operation IAW SOP-35. (ASGAT00.03)

References: SOP-35, 7.1.2

Source of Question: Palisades Bank 2000CERTC72 (direct)

DISTRACTOR ANALYSIS

- a. NI-3A inputs RPS channels 'A' and 'C'. Select since a channel is placed in trip and a channel is placed in bypass.
- b. **Correct** - NI-3A inputs RPS channels 'A' and 'C'. One must be placed in trip and the other in bypass.
- c. NI-3A inputs RPS channels 'A' and 'C'. Select since a channel is placed in trip and a channel is placed in bypass.
- d. NI-3A inputs RPS channels 'A' and 'C'. Select since a channel is placed in trip and a channel is placed in bypass.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: Provide T.S. Page 3.9.2-1

WRITTEN QUESTION DATA SHEET

Question Number: 42

Tier/Group: SRO RO

K/A: 000033 Loss of Intermediate Range NI / 7 G 2.2.30
 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area, communication with fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation

Importance Rating: SRO 3.3 RO 3.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Given available Control Room references and conditions involving Nuclear Instrumentation (includes Quadrant Power Tilt), SELECT the required action(s) and surveillance(s) IAW the following (ASGA0G8.01)

- a. LCO 3.2.3 b. LCO 3.3.7 c. LCO 3.3.8 d. LCO 3.3.9
- e. LCO 3.9.2 f. ORM Table 3.17.6 items 12 and 15
- g. ORM Table 4.17.6 items 12 and 15

References: Tech Spec 3.9.1.1, 3.9.2

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. This action is required immediately by Tech Specs.
- b. This action is required immediately by Tech Specs.
- c. This action is required immediately by Tech Specs.
- d. **Correct** - This action is NOT required by Tech Specs.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 43

Tier/Group: SRO RO

K/A: 012 Reactor Protection A1.01
 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including: Trip setpoint adjustment.

Importance Rating: SRO 3.4 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

List the eleven automatic reactor trips and actual trip set points. (ASGC0G4.02)

References: SOP-36 ARP-21, Rack A #1

Source of Question: Palisades Bank 12148 (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate may select since the VHP Pre-Trip setpoint is correctly 13.5% above reactor power and VHP Trip setpoint is correctly 15% above power, however, candidate selects the incorrect power indication used.
- b. Candidate may select since one of relationships between a value in the distractor (VHP Trip) and one of the reactor power levels given in the stem is a correct number (13.5%); however, the relationship is not applied correctly.
- c. Candidate may select since the VHP Trip value is 15% above the correct reactor power level indication to be used; however, candidate fails to determine the correct VHP Pre-Trip setpoint.
- d. **Correct** - VHP Pre-Trip setpoint is 13.5% above NI power OR delta T (whichever is higher), and the VHP Trip setpoint is 15% above NI power OR delta T (whichever is higher).

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 44

Tier/Group: SRO RO

K/A: 000029 K2.06 Anticipated Transient w/o Scram / 1
 Knowledge of the interrelations between the ATWS and breakers, relays, and disconnects following an ATWS.

Importance Rating: RO 2.9

10CFR55 Content: RO

Palisades Training Objective:

Describe the function and operation of the ATWS trip system. (ASGC0A2.10)

References: Drawing 6, "Clutch Power Supply" SH-ASGC, p. 55-56, Drawing 14, "ATWS Circuitry"
 DBD 2.05, p. 2, 24, 40 ARP-21, Rack D #5 SOP-36, 7.5.1.a
 LP-ASGC

Source of Question: Palisades Bank 6926 (direct)

DISTRACTOR ANALYSIS

- a. May select due to correct recognition that the ATWS PSA relays send an open signal to PORV 1043B, but fails to understand that the purpose of the ATWS circuitry is to bypass all the RPS relays.
- b. May select due to a recognition of an effect that ATWS has on Pressurizer pressure control, but selects the incorrect effect. Candidate further fails to understand that the purpose of the ATWS circuitry is to bypass all the RPS relays.
- c. **Correct** - ATWS relays perform the listed actions.
- d. May select due to correct recognition that the ATWS PSA relays bypass the RPS matrix and go directly to the CRD clutch power supply breakers, but further recognizes there is an additional effect on PZR pressure control; however, candidate selects the incorrect effect on pressure control.

Difficulty Rating: 4

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 45**Tier/Group:** SRO RO**K/A:** 015 K3.03 Nuclear Instrumentation

Knowledge of the effect that a loss or malfunction of the NIS will have on the Fuel Handling system.

Importance Rating: RO 2.7**10CFR55 Content:** RO**Palisades Training Objective:**

Describe the function and operation for the following nuclear instrumentation components:(ASGA0K5.03)

- a. source range and wide range -fission chambers

References: GOP-11 Tech Spec 3.9.2**Source of Question:** NEW**DISTRACTOR ANALYSIS**

- a. BOTH source range NIs must be operable for refueling.
- b. Candidate incorrectly believes that the audible indication is not that important, and would allow refueling to continue.
- c. **Correct** - This condition would not preclude the action.
- d. SFP low level alarm requires stopping refueling ops.

Difficulty Rating: 4**Cognitive Level:** High ✓ Low**References Supplied to Candidate:** NONE

WRITTEN QUESTION DATA SHEET

Question Number: 46

Tier/Group: SRO RO

K/A: 026 Containment Spray K1.02
 Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: Cooling water.

Importance Rating: SRO 4.1 RO 4.1

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions which require a Containment isolation from CHP, ensure proper actuation and then perform component verification IAW the in-use EOP and EOP Supplement 6. (ASHBT00.01)

References: EOP-4.0, step 50, including basis, rev 11

Source of Question: Palisades Bank PR2-6 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - With only 1 CS Pump and 1 HPSI Pump capable of operating, only 1 CS valve and 1 HPSI subcooling valve are permitted to be open.
- b. Only 1 HPSI subcooling valve can be open.
- c. Only 1 CS valve can be open.
- d. Only 1 CS valve and 1 HPSI subcooling valve are permitted to be open.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 47

Tier/Group: SRO RO

K/A: 006 Emergency Core Cooling A3.01
Ability to monitor automatic operation of the ECCS, including: Accumulators.

Importance Rating: SRO 3.9 RO 4.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, predict the status of any specified SIS train or component. ASHAG12.02

References: SHO-1, 5.1.16, 17 and Attachment 1, items 16 and 17

Source of Question: Palisades Bank 2000CERT 21 (direct)

DISTRACTOR ANALYSIS

- a. Level is too high. Pressure is too low.
- b. Level is too low. Pressure is too low.
- c. **Correct** - Requirement is level between 174 and 200 inches (18%-62%), pressure above 200 psig.
- d. Level is too low. Pressure is too low.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 48

Tier/Group: SRO RO

K/A: 013 K1.01 Engineered Safety Features Actuation
Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the initiation signals for ESF circuit logic.

Importance Rating: RO 4.2

10CFR55 Content: RO

Palisades Training Objective:

State the initiating parameters, including setpoints and logics for: a. Safety Injection Actuation Signal.
ASHA0A3.01

References: ARP-4, window 55, 56

Source of Question: Palisades Bank PR2-70 (direct)

DISTRACTOR ANALYSIS

- a. Only 1 channel below 1605 psia
- b. Only 1 channel below 1605 psia
- c. CORRECT Pressurizer low pressure SI setpoint is 2/4 below 1605 psia
- d. Only 1 channel below 1605 psia

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 49

Tier/Group: SRO RO

K/A: 000056 2.4.48 Loss of Off-site Power / 6
 Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: RO 3.5

10CFR55 Content: RO

Palisades Training Objective:

Describe the purpose of the normal shutdown and DBA sequencers IAW with FSAR, Chapter 3.7.2.
 (ASAC0G4.01)

References: LP-ASFA, rev 10

Source of Question: Palisades Bank 92NRC (significantly modified)

DISTRACTOR ANALYSIS

- a. May select since a loss of offsite power also means a loss of Instrument AC Bus Y-01. Candidate recognizes a condition which affects the VCT outlet valve; however, misapplies the concept, since the effect seen is that the outlet valve automatically closes.
- b. **Correct** - All Safety Injection pumps start on an SIAS.
- c. Candidate fails to recognize that since all other equipment functions as designed, the DBA sequencers will operate and, since an SIAS is present, the Boric Acid Gravity Feed Valves will open.
- d. Containment Spray Pumps start only on a CHP; no CHP condition was given in conditions.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 50

Tier/Group: SRO RO

K/A: 000009 A2.15 Small Break LOCA / 3
 Ability to determine or interpret PCS parameters as they apply to a small break LOCA

Importance Rating: RO 3.3

10CFR55 Content: RO

Palisades Training Objective:

Given plant conditions involving a Safety Injection actuation determine: a. If Safety Injection can be throttled (TBAG0G7.06)

References: EOP-4.0 EOP Supp 1

Source of Question: Palisades Bank 2000CERT 61 (direct)

DISTRACTOR ANALYSIS

- a. PCS subcooling adequate. Select if data from EOP Supplement 1 is misinterpreted.
- b. **Correct** - Corrected pressurizer level must be at least 40% for degraded containment.
- c. Corrected SG level is sufficient. Select if upper end of level band (70%) used as minimum required level.
- d. RVLMS is adequate. Select if knowledge of required level is inadequate.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: EOP Supp 1

WRITTEN QUESTION DATA SHEET

Question Number: 51

Tier/Group: SRO RO

K/A: 005K2.01 Residual Heat Removal
Knowledge Of bus power supplies to the SDC pumps (LPSIs).

Importance Rating: RO 3.0

10CFR55 Content: RO

Palisades Training Objective:

Describe the purpose of the normal shutdown and DBA sequencers IAW with FSAR, Chapter 3.7.2.
ASAC0G4.01

References: E-17, sh. 4 Design Basis Document 5.05, 3.2

Source of Question: Palisades Bank 2000NRC 38 (direct)

DISTRACTOR ANALYSIS

- a. Plausible since power is available to the bus immediately. The bus load sheds before the DG breaker will close and the LPSI pump is not sequenced on.
- b. Plausible since the DBA sequencer starts pump. The NSD sequencer does not automatically restart the LPSI pumps. The pump must be manually started.
- c. Plausible since the DBA sequencer starts pump. The LPSI pumps only start automatically as a result of the DBA sequencer.
- d. **Correct** -The NSD sequencer does not automatically restart the LPSI pumps. The pump must be manually started.

Difficulty Rating: 4

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 52

Tier/Group: SRO RO

K/A: 029 Containment Purge G 2.3.9
 Knowledge of the process for performing a Containment Purge

Importance Rating: SRO 3.4 RO 2.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the basis for any given SOP-24 (HVAC) Plant Requirement, Precaution or Limitation, Caution, or Note. ASDB0G7.02

References: SOP-24 LP-ASDB

Source of Question: Palisades Bank PR1-74 (direct)

DISTRACTOR ANALYSIS

- a. Used as part of calculation for release.
- b. Valves can only be opened when this TS is not applicable.
- c. **Correct** - Used as part of calculation for release
- d. SOP-24 specifies that the time be tracked, but does NOT specify that it be less than one hour.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 53

Tier/Group: SRO RO

K/A: 000069 (W/E14) Loss of CTMT Integrity / 5 K2.03
 Knowledge of the interrelations between the Loss of Containment Integrity and the following:
 Personnel access hatch and emergency access hatch.

Importance Rating: SRO 2.9 RO 2.8

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving Containment Air Locks and Isolation valves , SELECT the conditions that would require an LCO action IAW the following: (ASHB0G5.01)
 LCO 3.6.2 LCO 3.6.3 LCO 3.9.3

References: Tech Spec 3.6.2, 3.6.3, 3.9.3

Source of Question: Palisades Bank Prac2 - 11 Direct

DISTRACTOR ANALYSIS

- a. All nonautomatic containment isolation valves and blind flanges must be closed.
- b. **Correct** Entry and exit is permissible through a "locked" air lock door to perform repair on other air lock components.
- c. All automatic containment isolation valves must be operable or locked closed.
- d. The equipment hatch must be properly closed and sealed.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 54

Tier/Group: SRO RO

K/A: 007K5.02 Pressurizer Relief/Quench Tank
 Knowledge of the operational implications of method of forming a steam bubble in the PZR as they apply to the Quench Tank System.

Importance Rating: RO 3.1

10CFR55 Content: RO

Palisades Training Objective:

Given various Plant conditions, and one or more of the following annunciators in the alarmed condition:
 (ASFE0G9.01)

- a. Identify any alternate indications that can be used to verify a given.
- b. Describe the effect of valid alarm conditions on the operation of the PPCS.
- c. Use applicable control room references to determine the actions required.
 - EK-1373 SV and/or PORV open

References: SOP-1, 4.5.3.b

Source of Question: Palisades Bank PR1-44 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Per SOP-1, the Quench Tank is to be maintained less than 10 psig in MODE 3 and 4.
- b. Candidate incorrectly recalls the pressure requirement.
- c. Candidate incorrectly applies a pressure requirement relating to the Quench Tank (25 psig) relating to Fill and Purge evolution.
- d. Candidate incorrectly applies a pressure requirement relating to the Quench Tank (25 psig) relating to Fill and Purge evolution.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: Steam Tables

WRITTEN QUESTION DATA SHEET

Question Number: 55

Tier/Group: SRO RO

K/A: 2.2.1 Ability to perform Pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Importance Rating: SRO 3.6 RO 3.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving premature criticality during a critical approach, determine the actions needed IAW EM-04-24. (RTA00A1.05)

References: EM-04-24

Source of Question: Palisades Bank PR1-24 (direct)

DISTRACTOR ANALYSIS

- a. Inadequate SDM may exist due to being below PDIL. Rods must be inserted.
- b. **Correct** - Rod insertion of the control rods to the lower electrical limit and emergency boration is required.
- c. Reactor trip is not procedurally required.
- d. Inadequate SDM may exist due to being below PDIL. Rods must be inserted.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: Tech Data Book curve 1.9, "Power Dependent Insertion Limits"
(This reference is also required for another Question Number:.)

WRITTEN QUESTION DATA SHEET

Question Number: 56

Tier/Group: SRO RO

K/A: 000001 Continuous Rod Withdrawal / G 2.4.49
 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Importance Rating: SRO 4.0 RO 4.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Given various Plant conditions, one or more of the following annunciators in the alarmed condition:
 (ASEE0G9.01)

- a. Identify any alternate system indications that can be used to verify a given alarm.
- b. Describe the effect of a valid alarm condition on the operation of the CRD System.
- c. Use applicable control room references to determine the actions required.
 EK-0947 Emergency Rod Drive Power Interrupt

References: FSAR 14.2.1 ARP-5, #47 LP-TBAN, Sect. 6.10.A, rev 5 LP-ASEE

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that "Rod Control Group Select" switch will STOP rod motion, when it actually is used which rod group is selected for movement.
- b. Emergency boration would add negative reactivity to the core; however, this action is NOT the expeditious manual action that would be expected of the operator.
- c. The reactor would eventually trip on either VHPT or TM/LP per FSAR analysis, however, this is NOT the expeditious manual action that would be expected of the operator.
- d. **Correct** - EM OFF is a feature of the rod control system that would be appropriate for this situation, since it immediately stops all rod motion.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 57

Tier/Group: SRO RO

K/A: 000003 K3.02 Dropped Control Rod / 1
 Knowledge of the reason for “reactor runback” with a dropped control rod.

Importance Rating: RO 3.3

10CFR55 Content: RO

Palisades Training Objective:

Given symptoms associated with a specific Off Normal event, describe the mitigating strategy and the basis for the mitigating strategy IAW the Off Normal Procedure. (IOTFK.05)

References: ONP-5.1, 4.3

Source of Question: Palisades Bank PR2-31 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Tave is to be maintained within 3 degrees of Tref.
- b. Candidate incorrectly believes it is required to maintain Tave stable at whatever value it becomes after the rod drop.
- c. Candidate reasons that the pre-event Tave value is desired.
- d. Tave is to be maintained closely matched with Tref, not 3 degrees less.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 58**Tier/Group:** SRO RO**K/A:** 014K4.04 Rod Position Indication

Knowledge of RPIS design features and/or interlocks which provide for Zone reference lights.

Importance Rating: RO 2.6**10CFR55 Content:** RO**Palisades Training Objective:**

Given Control Room , determine the function of the green, red, amber, blue and white core matrix lights for each type control rod as applicable. (ASEE0G4.08)

References: SOP-6 FSAR 7.5**Source of Question:** Palisades Bank PR2-1 (direct)**DISTRACTOR ANALYSIS**

- a. CORRECT Group 1 - At 130" (URS), amber light comes on and white light goes out. At 131" (UEL), red light comes on and white light goes out. Group 2 - 80" below the Group 1 rods, so between 20" and 51". White light only.
- b. Group 2 amber remains off.
- c. Group 1 amber on before red.
- d. Group 1 amber on before red. Group 2 amber remain off.

Difficulty Rating: 3**Cognitive Level:** High ✓ Low**References Supplied to Candidate:** NONE

WRITTEN QUESTION DATA SHEET

Question Number: 59

Tier/Group: SRO RO

K/A: 001K5.36 Control Rod Drive
Knowledge of the significance of sign (always minus) of a calculated power defect as it applies to the CRDS.

Importance Rating: RO 3.1

10CFR55 Content: RO

Palisades Training Objective:

Explain the basis of any given Control Rod Drive System (SOP 6) system operation procedure Plant Requirement, Precaution and Limitation, and Caution/Note. (ASEE0G7.09)

References: FSAR 3.3 GFES Exam Bank, Ref. 61

Source of Question: GFES 1989 Rods Q. #40 (Direct)

DISTRACTOR ANALYSIS

- a. May select due to misapplication of rod worth concepts. Rod worth actually rises as rods are pulled to raise power.
- b. Incorrect application of the effect of Doppler.
- c. **Correct** - The magnitude of the total power defect increases with power, requiring a higher rod insertion limit.
- d. Incorrect application of the concept of MTC.

Difficulty Rating: 4

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 60

Tier/Group: SRO RO

K/A: 001 Control Rod Drive A4.06
Ability to manually operate and/or monitor in the control room: Control rod drive disconnect/connect.

Importance Rating: SRO 3.2 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:
Given Plant conditions, determine if the CRDM motors have power. (ASEE0K2.01)

References: SOP-6, Att. 2, Section 5.0 Tech Spec Surveillance RO-19

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. **Correct** - This is the method used for this condition.
- b. Candidate incorrectly believes that movement of any rod is not specific enough to verify a particular rod.
- c. Candidate believes this method is not rigorous enough, since no sensing equipment or ammeter is used.
- d. Candidate fails to recall the relationship between PIP and SPI systems for rod indication.

Difficulty Rating: 4

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 61

Tier/Group: SRO RO

K/A: 003A3.05 Reactor Coolant Pump System (RCPS)
 Ability to monitor automatic operation of the RCPS, including RCP lube oil and bearing lift pumps.

Importance Rating: RO 2.7

10CFR55 Content: RO

Palisades Training Objective:

Given plant conditions (including the status of Oil Lift pressure and CCW low flow annunciator window), determine if a given PCP can be started. (ASED0K4.04)

References: SOP-1, 7.2.3.p (page 93, 94)

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes the WHITE light off is normal indication for given conditions.
- b. **Correct** - the WHITE light indicates that lift oil is adequate for PCP start. If the light is not on, operator is directed to try the alternate lift oil pump, the DC Lift Oil Pp. to see if this will function to satisfy the permissive.
- c. Candidate may select since this is an action associated with this task; however, candidate misapplies the action, since the action is only required if NEITHER lift oil pump functions properly to satisfy the oil start permissive.
- d. Candidate may select since two minutes is a time frame associated with this task; however, candidate misapplies the time, since two minutes is actually the amount of time prescribed for allowing the lift oil pump which is running and functioning properly (i.e., satisfying the oil start permissive) to run before starting the Primary Coolant Pump.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET**Question Number:** 62**Tier/Group:** SRO RO**K/A:** 016A4.02 Non-nuclear Instrumentation
Ability to manually operate/monitor recorders in the Control Room.**Importance Rating:** RO 2.7**10CFR55 Content:** RO**Palisades Training Objective:**

Given traces of PCP seal pressures, identify which seal(s) has(have) failed

ASED0A5.01

References: ARP-5, Attachment 2**Source of Question:** Palisades Bank PR1-32 (direct)**DISTRACTOR ANALYSIS**

- Pressures downstream of first and second stage would indicate PCS pressure.
- Pressure downstream of first stage would indicate PCS pressure, downstream of second stage would indicate $\frac{1}{2}$ PCS pressure.
- CORRECT** The entire pressure breakdown is across first stage, so all pressures downstream of first stage will indicate VCT pressure.
- Pressure downstream of first stage would indicate $\frac{1}{2}$ PCS pressure, downstream of second stage would indicate VCT pressure.

Difficulty Rating: 3**Cognitive Level:** High ✓ Low**References Supplied to Candidate:** Seal drawing - *Ensure drawing orientation matches procedure.*

WRITTEN QUESTION DATA SHEET

Question Number: 63

Tier/Group: SRO RO

K/A: 000054 (CE/E06) Loss of Main Feedwater / 4 G 2.1.2
Knowledge of operator responsibilities during all modes of plant operation

Importance Rating: SRO 4.0 RO 3.0

10CFR55 Content: SRO RO

Palisades Training Objective:

State the immediate actions of a Loss of Feedwater event IAW ONP 3. (TBAEG11.01)

References: ONP-3

Source of Question: Palisades Bank 4146 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - Design of the feed pump speed controllers
- b. Candidate fails to recall the function of the individual speed controller, and incorrectly believes that a slow restoration of feed flow is desired.
- c. Candidate fails to recall the function of the combined speed controller.
- d. Candidate concludes that raising feed flow too quickly is undesirable (overcooling), but incorrectly recalls the response of the individual speed controllers.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 64

Tier/Group: SRO RO

K/A: 056 Condensate A2.04
Loss of Cond. Pumps effects on system
Ability to:

- a. predict the impacts of the following malfunctions or operations on the Condensate System, and
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations. Loss of Condensate Pumps.

Importance Rating: SRO 2.8 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions, determine the status of the Main Condensate and Feedwater System (ASLB0A3.01)

References: ARP-1, window 48, 60, rev 51 ONP-3, p. 1, 3, rev 18

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that the effect is that feed pps. ramp to minimum speed.
- b. Candidate correctly understands that the reactor should be tripped; however, incorrectly determines that the feed pps. ramp to minimum speed.
- c. Correctly determines that both feed pps. will trip; but incorrectly determines the action to take in response.
- d. **Correct** - When both Condensate Pps. trip, both Main Feed Pps. will trip on low suction pressure, and the reactor must be manually tripped.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 65

Tier/Group: SRO RO

K/A: 000007 (BW/E02&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1 K2.02
 Knowledge of the interrelations between the Reactor Trip Recovery and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Importance Rating: SRO 4.0 RO 3.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Given conditions involving a reactor trip, determine the consequences of failing to perform any given EOP- 1.0 Action. (TBAB0A2.03)

References: EOP-1.0 EOP-1.0 Basis Step 2.b, c

Source of Question: Palisades Bank 4873 Direct

DISTRACTOR ANALYSIS

- a. Candidate may select thinking that steam generator levels will rise, which is true. However, the concern is due to PCS overcooling. The turbine will already have been tripped.
- b. **Correct** - Higher S/G levels means more cooling to PCS.
- c. Candidate may select thinking that due to the overcooling a SIAS will occur and then incorrectly concludes that a Containment Isolation signal occurs, which would close the MSIVs.
- d. Candidate may select, correctly concluding an overcooling will occur. However, Reactivity Control is addressed in a different Safety Function check, and the real concern is overcooling/depressurizing the PCS to the point of SIAS.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 66

Tier/Group: SRO RO

K/A: 056 K1.03 Condensate
 Knowledge of the physical connections and/or cause effect relationships between the Condensate System and MFW.

Importance Rating: RO 2.6

10CFR55 Content: RO

Palisades Training Objective:

Describe the function of the following listed systems/equipment as regards their interface with the Main Condensate or Main Feedwater System. (ISID0K1.02)

- a. Main Condenser
- b. Main Feedwater System
- c. Air Ejector System
- d. Gland Sealing Steam System

References: SOP-12 LP-ISDA LP-ISID

Source of Question: Palisades Bank 8706 (direct)

DISTRACTOR ANALYSIS

- a. Candidate may select believing cool condensate also provides cooling for the Main Feed Pump gland seal condenser. This cooling is actually provided by Non-Critical Service Water.
- b. The Heater Drain Pumps take suction on the MSR Drain Tank T-5.
- c. **Correct** - Provides cooling for feed pump seals, and subcooled preheating of condensate.
- d. Main Feed Pump turbine seals are steam seals. Candidate may select recalling that condensate does provide cooling to Main Feed Pump Gland *cooling*.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 67

Tier/Group: SRO RO

K/A: 000027A1.01 Pressurizer Pressure Control System Malfunction / 3
 Ability to operate/monitor PZR heaters, sprays, and PORVs as they apply to the PPCS malfunctions.

Importance Rating: RO 4.0

10CFR55 Content: RO

Palisades Training Objective:
 Given Plant conditions, determine if the Pressurizer heaters still have power. (ASFE0K2.01)

References: ARP-4, windows 63, 64

Source of Question: INPO Bank San Onofre Sept 2000 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - At this level all PZR heaters will be automatically de-energized as a protective interlock.
- b. May select by incorrectly believing an insurge is in progress which would require de-energizing ALL PZR proportional heaters.
- c. Candidate may select and apply the fact that Bus 1E (which provides power to one half of the PZR heaters) de-energizes on an SIAS; however, candidate is incorrect in concluding that an SIAS removes power from ALL PZR proportional heaters, since power is still available for half the proportionals from a safety bus (Bus 1D).
- d. May select since Y-01 provides power to many control functions and indications throughout the plant. However, a loss of Y-01 actually disables the automatic trip of PZR heaters.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 68

Tier/Group: SRO RO

K/A: 000074 (W/E06&E07) Inad. Core Cooling / 4 K3.06
 Knowledge of the reasons for the following responses as they apply to the Inadequate Core Cooling: Confirming that the PORV cycles open at the specified setpoint.

Importance Rating: SRO 4.2 RO 3.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given normally available Control Room references, describe the normal operation of the LTOP system including: (ASFE0K6.02)
 d. Actuation of the PORV

References: FSAR Section 7.4.2.1, item 2

Source of Question: Palisades Bank 12144 Direct

DISTRACTOR ANALYSIS

- a. Valve indicating lights is one viable verification of PORV position.
- b. **Correct** - Due to the fact that other systems discharge into the Quench Tank, certain parameters would NOT be a positive means of verifying PORV position.
- c. The acoustic monitor is listed in the FSAR as one of the more positive means of verifying PORV position. Candidate may select because for other valves, indicating lights (run from limit switches) are considered a positive method of verifying valve position.
- d. Tail pipe temperature is considered a viable means of verifying PORV position.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 69

Tier/Group: SRO RO

K/A: 2.1.11 Knowledge of Less than one hour Tech Spec actions for systems.

Importance Rating: SRO 3.8 RO 3.0

10CFR55 Content: SRO RO

Palisades Training Objective: ASFE0G8.01 - One hour T.S.

References: T.S. 3.4.11

Source of Question: Palisades Bank 99NRC-8 (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that cold shutdown conditions must be established to allow restoring the valve to operable.
- b. Candidate incorrectly believes that the plant must be cooled down due to the inoperable valve.
- c. **Correct** - Entry into Hot Standby conditions is not permitted per TS 3.0.4, but the plant is not to be cooled down to below 430°F since the PORV would be required for LTOP operations.
- d. Candidate incorrectly believes that entry into a higher operating condition is permitted, provided power operations are not entered.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 70

Tier/Group: SRO RO

K/A: 000065 Loss of Instrument Air / 8 A2.06
 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is decreasing.

Importance Rating: SRO 4.2 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions, analyze the data to determine if a loss of SW, loss of CCW, or loss of Instrument Air has occurred. (TBAIG10.01)

References: ONP-6.1, 7.1 ARP-7, window 1, 2, 3

Source of Question: Palisades Bank 419 (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate recalls that certain sprinkler systems may wet down electrical busses. However, this is not reactor trip criteria for the given plant conditions.
- b. Candidate is correct in noting a concern for Primary Coolant Pumps, but incorrectly applies a design feature of controlled bleedoff (relief valve) that ensures bleedoff flow when the normal control valve loses operating air.
- c. **Correct** - The Exciter Air Coolers for the Main Generator is of primary concern.
- d. Candidate is correct in noting a concern for the Cooling Tower Pumps (which use Service Air in a bubbler level indicating system), but fails to recall a design feature (an accumulator) which ensures operating air for a significant period of time.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 71

Tier/Group: SRO RO

K/A: 078 2.1.30 Instrument Air
Ability to locate and operate components, including local controls.

Importance Rating: RO 3.9

10CFR55 Content: RO

Palisades Training Objective:

Given Plant conditions involving the symptoms of Loss of Instrument Air, respond IAW ONP-7.1.
(TBAIT00.03) (IOTFT.03)

References: ARP-7, #11 SOP-19, 4.0, Att. 1

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. This may seem like an appropriate action, however, the most expedient (and expediency is important in this situation) action (and the one prescribed by procedure) is to bypass the dryer. Troubleshooting and remedial action can take place afterwards.
- b. **Correct** - This action must be expeditiously performed.
- c. This action will not correct the problem, and is not procedural.
- d. This may seem like an appropriate action, since debris may have caused the problem, however, the most expedient (and expediency is important in this situation) action (and the one prescribed by procedure) is to bypass the dryer. Troubleshooting and remedial action can take place afterwards.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 72

Tier/Group: SRO RO

K/A: 079K4.01 Station Air

Knowledge of Station Air design features/interlocks which provide for cross-connecting with the Instrument Air System.

Importance Rating: RO 2.9

10CFR55 Content: RO

Palisades Training Objective:

Describe the interlock associated with the Service Air Header Isolation Control Valve. (ASBC0K4.05)

References: ARP-7, #3 M-212, sh.1

Source of Question: Palisades Bank 12160 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - The design is to provide indication that the auto isolation has occurred.
- b. May select by incorrectly reasoning that if CV-1212 were to open, that would provide a backup source of air, when in reality, the auto closing of CV-1212 is to isolate non-essential loads.
- c. Since the air system that is being protected is the Instrument Air System, the pressure being sensed is for THAT system. Candidate fails to recognize this important design feature.
- d. May select by incorrectly reasoning that if CV-1212 were to open, that would provide a backup source of air, when in reality, the auto closing of CV-1212 is to isolate non-essential loads.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 73

Tier/Group: SRO RO

K/A: 061 Auxiliary/Emergency Feedwater K1.11
 Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: AFW turbine exhaust drains.

Importance Rating: SRO 2.8 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Monitor the AFW system and its components under any plant condition IAW plant Administrative Procedures, AO Rounds Sheets, Watch Standing Practices and SOP-12. (ISJET00.04)

References: M-205, sh. 2 DBD-1.03 SOP-12, Att. 15, p. 5 QO-21, p. 13, 74
 FSAR, 9.7

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. Candidate misapplies a concern for a release to the atmosphere, believing that a stuck steam trap would pass contaminated steam; but fails to recall a more significant design feature of the steam driven Aux Fd Pump (all exhaust steam exhausts to the atmosphere).
- b. Candidate reasons that the plant would become contaminated, incorrectly extending this to the secondary plant, and additionally believes that a stuck steam trap would pass contaminated steam.
- c. Candidate incorrectly makes a conclusion that Loss of Forced Circulation also means loss of all power, and therefore the need to use the steam driven Aux Fd Pp.
- d. **Correct** - ST-0523 stuck closed will likely mean that the steam driven Aux Fd Pp's turbine exhaust line will fill with water, and possibly overspeed and trip the turbine when started, per recent industry events.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: Drawing of M-205, sh. 2, lower left portion

WRITTEN QUESTION DATA SHEET

Question Number: 74

Tier/Group: SRO RO

K/A: 033 Spent Fuel Pool Cooling K1.05
Knowledge of the physical connections and/or cause-effect relationships between the Spent Fuel Pool Cooling System and the following systems: RWST.

Importance Rating: SRO 2.8 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, one or more annunciators alarmed: EK-1309 Spent Fuel Pool Lo Level

References: ARP-8, #9 SOP-27 DBD 2.07, p. 5, 60 ONP-23.3, 4.9.8

Source of Question: Palisades Bank PRAC1-83 Direct

DISTRACTOR ANALYSIS

- a. **Correct** - If losses are other than due to evaporative losses, the SIRWT should be used to maintain adequate boron concentration in the pool.
- b. This should only be used as a last resort in the event of a major loss of water with no other sources available.
- c. This would dilute the pool.
- d. This would dilute the pool.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 75

Tier/Group: SRO RO

K/A: 055 Condenser Air Removal G 2.1.28
 Knowledge of the purpose and function of major system components and controls.

Importance Rating: SRO 3.3 RO 3.2

10CFR55 Content: SRO RO

Palisades Training Objective:

List five (5) indications of main condenser air/water in-leakage. (ASLA0A1.01)

References: LP-IOTF, Parameter Trends LP-ASLA, p. 8

Source of Question: Palisades Bank 95NRC (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly applies the effects of rising air in-leakage to the main condenser, when in actuality, more air in the main condenser would dilute the off-gas and make counts reduce, not rise.
- b. **Correct** - Candidate correctly understands that air in-leakage (and lowering condenser vacuum) would effect depression, and determines there would be more condensate depression.
- c. Since the main condenser uses a bubbler level indicating system, candidate may select this distractor, thinking incorrectly that a loss of vacuum would somehow effect the bubbler system.
- d. Candidate correctly understands that Gland Seal Steam pressure has an effect on condenser vacuum since a gland seal system provides sealing for the Main Turbine and therefore prevents air in-leakage, however candidate incorrectly applies that relationship for an air in-leakage condition.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 76

Tier/Group: SRO RO

K/A: 000068 (BW/A06) Control Room Evac. / 8 A2.04
 Ability to determine and interpret the following as they apply to the Control Room Evacuation: S/G pressure

Importance Rating: SRO 4.0 RO 3.7

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving an Alternate Safe Shutdown, determine the consequences of failing to perform any given step contained within ONP 25.2. (TBAM0K6.02)

References: ONP-25.2, Attachment 2, p. 1, 2 C-33 and C-150A graphic

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. **Correct** - ONP-25.2, 4.3.a requires the operators to place the AVG TEMP DISPLAY SELECT SWITCH to LOOP 2. The NOTE just prior to the step explains that LOOP 2 selected ensures a valid temperature input for the ADV controller. If LOOP 1 were selected the ADVs would not have a valid temperature input for proper operation. Steam Generator pressures remaining stable would be an indication that the ADVs are operating properly, since they have valid inputs.
- b. Steam Generator pressure indication is NOT available at panel C-33.
- c. Steam Generator pressure lowering is NOT a positive indication of a valid signal to the ADVs.
- d. Steam Generator pressure indication is NOT available at panel C-33.

Difficulty Rating: 4

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 77

Tier/Group: SRO RO

K/A: 045A4.06 Main Turbine Generator
Ability to manually operate/monitor the Main Turbine Stop Valves in the Control Room.

Importance Rating: RO 2.8

10CFR55 Content: RO

Palisades Training Objective:
Describe the key parameters monitored for EOP 1.0 left-hand criteria. (TBABG10.01)

References: SOP-8 EOP-1.0 Basis

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. **Correct** - Main Stop valves open when turbine is latched.
- b. Main Governor Valves only open when given the specific command by DEH controller.
- c. Reheat Stop Valves are OPEN when turbine is latched.
- d. Reheat Intercept Valves are OPEN when turbine is latched.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 78

Tier/Group: SRO RO

K/A: 2.1.31 Switches and Control in Control Room
 Ability to locate control room switches, controls, and indications and to determine that they are correctly reflecting the desired plant lineup.

Importance Rating: RO 4.2

10CFR55 Content: RO

Palisades Training Objective:

Describe the two types of indication available on the subcooled margin monitor including the source of the inputs to the monitor; including expected indication for loss of power supply to the monitors.
 (ASEA0K6.03)

References: Steam Tables

Source of Question: Palisades Bank 2000CERT 20 (direct)

DISTRACTOR ANALYSIS

- a. Uses saturation pressure for CETs. Select since this is the highest temperature.
- b. **CORRECT** Uses saturation pressure for highest loop temperature. Psat is 1306 psia. Margin is 754 psi.
- c. Uses saturation pressure for Tave. Select since this is average representation of PCS temperature.
- d. Uses saturation pressure for highest Tcold. Select since Tcold is used in other applications such as PTS concerns.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: Steam Tables

WRITTEN QUESTION DATA SHEET

Question Number: 79

Tier/Group: SRO RO

K/A: 015 A2.03 Nuclear Instrumentation

Ability to:

- a. predict the impacts of Xenon oscillations on the NIS
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of the Xenon oscillations

Importance Rating: RO 3.2

10CFR55 Content: RO

Palisades Training Objective:

Given Plant conditions, describe the effect on the excore nuclear instrumentation indication (i.e., measured fast neutron leakage) for the following events: (ASGA0A1.01)

- e. xenon oscillation

References: EM-04-17 (various sections)

Source of Question: Palisades Bank - 2000 Requal (significantly modified)

DISTRACTOR ANALYSIS

- a. **Correct** - These effects are described in the Engineering Manual and are valid operational and observable effects. The action listed is correct per Xenon dampening strategy.
- b. May select since this correctly describes Power Range NI response, and because rods do have to be withdrawn, however, candidate incorrectly believes that dilution is required also.
- c. Power Range response during a Xenon oscillations is actually more pronounced at EOC.
- d. Power Range response during a Xenon oscillations is actually more pronounced at EOC.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 80

Tier/Group: SRO RO

K/A: BW/E09; CE/A13; W/E09&E10 Natural Circ. / 4 K2.01

Knowledge of the interrelations between the (Natural Circulation Operations) and components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Importance Rating: SRO 3.4 RO 3.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a loss of forced circulation, respond IAW EOP 8.0. (TBACT00.01)

References: LP-TBAC EOP-4.0 Basis, p. 114 for Step 39

Source of Question: INPO Bank: DC Cook April 2000 (Direct)

DISTRACTOR ANALYSIS

- Subcooling would reduce natural circ. flow; however, the given conditions actually result in a rise in subcooling and natural circ flow actually rises.
- A reduction in decay heat rate means less thermal driving head, and less natural circ. flow.
- Correct** - Higher rate of removing heat provides a higher thermal driving head.
- Higher density in the cold leg would actually raise natural circ flow.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 81

Tier/Group: SRO RO

K/A: 017 In-core Temperature Monitor A3.01
 Ability to monitor automatic operation of the ITM system including: Indications of normal, natural, and interrupted circulation of RCS.

Importance Rating: SRO 3.8 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a set of accident data, evaluate parameters to determine if natural circulation is occurring IAW the in-use EOP. TBAC0A2.03

References: EOP-8.0

Source of Question: Palisades Bank Pr1-73 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - To verify NC, Average of Qualified CETs minus TC must be less than 50 °F, average of Qualified CETs must be at least 25 degrees F subcooled, and difference between Loop TH and Average of Qualified CETs must be less than or equal to 15 degrees F.
- b. Difference between CETs and TH is too high.
- c. Difference between CETs and TC is too high.
- d. Difference between CETs and TH is too high.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 82

Tier/Group: SRO RO

K/A: 035 Steam Generator A2.06

Ability to:

- a. predict the impacts of the following malfunctions of operations on the S/Gs, and
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations. Small Break LOCA

Importance Rating: SRO 4.6 RO 4.5

10CFR55 Content: SRO RO

Palisades Training Objective:

Determine the impact a loss of coolant accident will have on each of the safety functions.

(TBAG0K3.01)

References: EOP-1.0 Basis, p. 39, 43, 71, 87, 93

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. **Correct** - Prescribed S/G level for this condition; degraded containment conditions do cause instrument inaccuracies.
- b. Candidate incorrectly believes there is no effect on S/Gs.
- c. This condition might occur, however, procedure guidance exists to preclude it. Further, maintaining S/G pressures high would not affect the likelihood of this happening.
- d. The first part may occur, however, maintaining S/G pressures higher than PCS pressure would only exacerbate any voiding in the S/G U-tubes.

Difficulty Rating: 4

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 83

Tier/Group: SRO RO

K/A: 000011 Large Break LOCA / 3 K1.01
 Knowledge of the operational implications of Natural circulation and cooling, including reflux boiling, as they apply to the Large Break LOCA.

Importance Rating: SRO 4.4 RO 4.1

10CFR55 Content: SRO RO

Palisades Training Objective:

Given Plant conditions involving various size LOCAs, describe the methods available for core decay heat removal. (TBAG0A2.01)

References: EOP-4.0 Basis

Source of Question: GFES Jan 2000 Bank Question #114 in Thermal Hydraulics (significantly modified)

DISTRACTOR ANALYSIS

- a. S/Gs are also required for adequate heat removal for a SBLOCA.
- b. S/Gs are also required for adequate heat removal for a SBLOCA.
- c. Reflux boiling is only a minor contributor to heat removal during a LBLOCA. Fluid flow out the break ALONE provides adequate heat removal.
- d. **Correct** - Fluid flow out the break ALONE provides adequate heat removal during a LBLOCA.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 84

Tier/Group: SRO RO

K/A: 000008 2.4.4 Pressurizer Vapor Space Accident / 3
Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures

Importance Rating: RO 4.0

10CFR55 Content: RO

Palisades Training Objective:

Given plant conditions, analyze the data and predict any effect on any of the following: a. PCS parameters. RHAA0A1.02

References: EOP-4.0

Source of Question: Palisades Bank 99NRC - 55 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - With a pressurizer steam space break, only steam is being initially being released from the break. Since steam has a higher enthalpy than water, a greater amount of energy is lost out the break, thus the pressure in the system will be lower.
- b. Candidate incorrectly believes that a loss of liquid out the break will result in a larger loss of energy than if steam is being lost out the break.
- c. Candidate incorrectly believes that a loss of liquid out the break will result in a larger loss of energy than if steam is being lost out the break.
- d. Candidate incorrectly believes that the rapid cooldown and subsequent depressurization will result in a lower pressure than a loss of coolant from the PCS.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 85

Tier/Group: SRO RO

K/A: 000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / 4 G 2.4.4
 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures

Importance Rating: SRO 4.3 RO 4.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Given post reactor trip conditions, determine the proper follow-up EOP IAW the Diagnostic Flowchart.
 (TBAB0A2.04)

References: EOP-1.0 EOP-6.0

Source of Question: INPO BANK Direct May 2001 Comanche Peak

DISTRACTOR ANALYSIS

- a. Candidate may select, reasoning incorrectly that Containment pressure is rising due to a PCS leak inside Containment.
- b. Containment pressure would not be rising with a Feedwater line break outside containment; further, steam generator levels are rising.
- c. **Correct** - Excessive cooldown from a steam line break inside containment is cooling down the PCS, resulting in a positive reactivity insertion, and resultant power rise; and a rise in containment pressure.
- d. Candidate notes a reducing steam pressure and Tave and incorrectly concludes the steam line break is outside containment.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 86

Tier/Group: SRO RO

K/A: CE/A11; W/E08 RCS Overcooling - PTS / 4 A2.02
 Ability to determine and interpret the following as they apply to the (RCS Overcooling): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Importance Rating: SRO 3.4 RO 3.0

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the major mitigating actions taken to respond to an Excess Steam Demand Event (TBAD0A2.05)

References: EOP-6.0

Source of Question: Palisades Bank 99NRC39 (direct)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that the most affected SG must be steamed until the most affected SG reaches dryout to maintain coupling.
- b. **Correct** Maintaining the least affected SG within 50 psid of the most affected SG ensures the least affected SG remains closely coupled to the PCS. This DP must be maintained only until the heat removal capability of the most affected SG is lost to minimize the overcooling effects on the PCS. Steaming of the least affected SG must commence prior to dryout of the most affected SG to minimize PTS concerns.
- c. Candidate incorrectly believes that steaming the least affected SG while the most affected SG blows down will limit the PCS cooldown, but it is required to prevent reaching PTS conditions.
- d. Candidate incorrectly believes that steaming the least affected SG while the most affected SG steams until it no longer has heat removal capability will limit the PCS cooldown, but it is required to prevent reaching PTS conditions.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 87

Tier/Group: SRO RO

K/A: 000025 Loss of RHR System / 4 A1.02
 Ability to operate and/or monitor the following as they apply to the Loss of Residual Heat Removal System: RCS Inventory.

Importance Rating: SRO 3.9 RO 3.8

10CFR55 Content: SRO RO

Palisades Training Objective:
 Given plant conditions and ONP-17, determine the time to 200°. (TBA00A2.01) (IOTFK.29)

References: ONP-17, Attachment 1 (pp 1-12)

Source of Question: Palisades Bank 2000 Requal (significantly modified)

DISTRACTOR ANALYSIS

- a. Candidate selects the wrong curve (incorrect PCS level) to arrive at 40 minutes.
- b. Candidate selects the correct curve, but interpolates PCS initial temperature incorrectly.
- c. **Correct** - Correct calculated time.
- d. Candidate interpolates PCS initial temperature correctly, but selects the incorrect time after shutdown line.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: ONP-17, Attachment 1 (pp 1-12)

WRITTEN QUESTION DATA SHEET

Question Number: 88

Tier/Group: SRO RO

K/A: 000037 Steam Generator Tube Leak / 3 A2.10
 Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak:
 Tech-Spec limits for RCS leakage.

Importance Rating: SRO 4.1 RO 3.2

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions, select those conditions requiring a reactor trip. (IOTFK.04)

References: ONP-23.2 excerpt (pp. 2-5, Att. 1, Att.2)

Source of Question: Palisades Bank Week 3 Q18 on Annual Requal (Direct)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly estimates leak rate and/or misinterprets procedural guidance.
- b. **Correct** - Per ONP-23.2 the required action for the calculated leakrate is to shutdown at a rate of less than 30% per hour.
- c. Candidate incorrectly estimates leak rate and/or misinterprets procedural guidance.
- d. Candidate incorrectly estimates leak rate and/or misinterprets procedural guidance.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: ONP-23.2 excerpt (pp. 1-6, Att. 1, Att.2)

WRITTEN QUESTION DATA SHEET

Question Number: 89

Tier/Group: SRO RO

K/A: 000038 Steam Generator Tube Rupture / 3 K1.02
Knowledge of the operational implications of the following concepts as they apply to the SGTR:
Leak rate vs. pressure drop

Importance Rating: SRO 3.5 RO 3.2

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving a SGTR with the affected S/G isolated, discuss options available for cooling, depressurizing, and providing inventory control of the affected S/G including potential reactivity effects. (TBAF0A2.12)

References: EOP-5.0 Basis, pp. 150, 102 EOP Supplement 38**Source of Question:** Palisades Bank Week1 Q9 Annual Requal Bank (Direct)**DISTRACTOR ANALYSIS**

- Calculated if candidate mistakenly uses 90% level in the formula.
- Calculated if candidate mistakenly uses 50% level in the formula.
- Correct** calculation by using delta level of 40%.
- Plausible since candidate may believe that the current PCS boron concentration is adequate.

Difficulty Rating: 3**Cognitive Level:** High ✓ Low**References Supplied to Candidate:** EOP Supplement 38

WRITTEN QUESTION DATA SHEET

Question Number: 90**Tier/Group:** SRO RO**K/A:** 059 2.1.28 Main Feedwater

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

Importance Rating: RO 3.2**10CFR55 Content:** RO**Palisades Training Objective:**

Describe the purpose of the Main Feed Regulating Valve high level override interlock. (ASLC0K6.03)

References: ARP-5, #61 ONP-10**Source of Question:** Palisades Bank 4843 (direct)**DISTRACTOR ANALYSIS**

- a. May select since there would be some cooling effect on the PCS; however, the predominant concern is for turbine protection.
- b. This is a common misconception regarding the basis for the high level override function. It may be incorrectly selected, since it is reasonable to expect that the steam lines filling with water would create excessive weight on the pipe supports; however, the actual basis is for turbine blading protection.
- c. **Correct** - The SG high level override function is to prevent this type of damage to the turbine.
- d. Candidate incorrectly believes that the Feed Pumps are pumping so much water so quickly that there may be a runout condition. This is incorrect.

Difficulty Rating: 2**Cognitive Level:** High Low ✓**References Supplied to Candidate:** NONE

WRITTEN QUESTION DATA SHEET

Question Number: 91

Tier/Group: SRO RO

K/A: 2.1.23 Perform system and integrated procedures

Importance Rating: SRO 4.0 RO 3.9

10CFR55 Content: SRO RO

Palisades Training Objective: IOTAG12.01 9189 (probably)

Given plant conditions involving plant startup and appropriate Control Room references determine what action must be taken to begin or continue plant startup.

References: SOP-1, 4.4.4, rev 49

Source of Question: Palisades Bank PR1-27 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Above 185 °F, PCS and pressurizer DeltaT should be maintained above 50 oF.
- b. Delta T shall never allowed to drop below 25 oF.
- c. PCS heatup limit is 40 oF/hr, so no violation has occurred.
- d. PCS and pressurizer DeltaT should be maintained above 50 oF.

Difficulty Rating: 3

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 92

Tier/Group: SRO RO

K/A: 2.1.10 Knowledge of Conditions/limitations in the facility license

Importance Rating: SRO 3.9 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:

State the two functions of the Pressurizer Pressure Control System per FSAR 7.5.1.2 and 7.4.2.1.
(ASFE0G4.01)

References: Tech. Spec. 2.1.2

Source of Question: NEW

DISTRACTOR ANALYSIS

- a. May select since this is the setpoint for RPS Hi PZR Pressure trip.
- b. May select since this is the setpoint for ATWS trip on high PZR pressure.
- c. May select since 2650 is an important number in plant design (design MWt for Steam Generators), but is NOT correct for pressure Safety Limit.
- d. **Correct** - Per Tech Specs.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 93

Tier/Group: SRO RO

K/A: 2.4.12 Knowledge of general operating Crew responsibilities during emergency operations

Importance Rating: SRO 3.9 RO 3.4

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the EOP performance standard requirements IAW AP 4.06.

References: AP 4.06 EOP 9.0, Placekeeper, p. 9, 10

Source of Question: Palisades Bank 99NRC 38 (direct)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes that Heat Removal is the highest priority Safety Function.
- b. Candidate incorrectly believes that CA is a higher priority than IC.
- c. Candidate incorrectly believes that PC is a higher priority than IC (possibly due to concerns for subcooling).
- d. **Correct** - Candidate correctly believes that since IC is a higher priority Safety Function than PC, it should be addressed first.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 94

Tier/Group: SRO RO

K/A: 2.4.35 Knowledge of local auxiliary operator tasks during emergency operations, including system geography and system implications.

Importance Rating: SRO 3.5 RO 3.3

10CFR55 Content: SRO RO

Palisades Training Objective:

Given plant conditions involving an Excess Steam Demand Event, describe the impact on plant operation of isolating the wrong S/G. (ISKFG12.01)

References: EOP-6.0 Basis, p. 41

Source of Question: Palisades Bank 7227 Direct

DISTRACTOR ANALYSIS

- a. Candidate correctly understands there is a crosstie between the main steam lines, but incorrectly applies this, since the crosstie is DOWNstream of the MSIVs. The break is UPstream of the MSIVs.
- b. Candidate recalls that the Turbine Bypass Valve is designed to remove PCS heat, however candidate incorrectly determines that the Turbine Bypass Valve is available for the given conditions. The TBV is DOWNstream of the MSIVs and the MSIVs are closed.
- c. **Correct** - There is no further heat removal available from "A" S/G (since it has blown dry) and now "B" has been incorrectly isolated.
- d. Candidate jumps to the conclusion that PCS pressure control is lost, since the ADVs are now not available; however, the Control Room CAN control PCS pressure using PZR heaters and sprays.

Difficulty Rating: 3

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 95

Tier/Group: SRO RO

K/A: 2.3.10 Ability to perform procedures to Reduce excessive levels of radiation and guard against personnel exposure

Importance Rating: SRO 3.3 RO 2.9

10CFR55 Content: SRO RO

Palisades Training Objective:

Given a radiation exposure scenario, determine the ALARA solution using the radiation exposure theory inverse square law. (ADAAG15.02)

References: GP Course, Health Physics Fundamentals, p.5-17, 19

Source of Question: INPO Bank San Onofre Sept 2000 (direct)

DISTRACTOR ANALYSIS

- Candidate incorrectly calculates exposure.
- Correct** - Per calculation
- Candidate correctly calculates exposure PER PERSON, but incorrectly applies ALARA principle, since overall exposure (two people) is greater.
- Candidate incorrectly calculates exposure per person.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 96

Tier/Group: SRO RO

K/A: 017 In-core Temperature Monitor A2.02

Ability to:

- a. predict the impacts of the following malfunctions or operations on the ITM system, and
- b. based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations. Core damage

Importance Rating: SRO 4.1 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Describe the once-through method of core cooling and the conditions for use. TBAH0A2.02

References: EOP-4.0 EOP-9.0

Source of Question: Palisades Bank 2000 NRC Q1 Direct

DISTRACTOR ANALYSIS

- a. Plausible since saturated conditions will exist until core is uncovered. Conditions reach superheat.
- b. **Correct** - As the core uncovers, heat is added to the steam flowing past the uncovered portion of the fuel. This results in superheated conditions.
- c. Plausible since voiding affects incore NI indication. Indication goes up instead of lowering.
- d. Plausible since leakage changes as core is uncovered. Indication rises instead of lowers.

Difficulty Rating: 2

Cognitive Level: High ✓ Low

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 97

Tier/Group: SRO RO

K/A: 086 Fire Protection A1.03
 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire Doors.

Importance Rating: SRO 3.2 RO 2.7

10CFR55 Content: SRO RO

Palisades Training Objective:
 State the purpose of a fusible link on fire doors. (ISDB0G4.05)

References: LP-ISDB DBD-1.10, 4.13

Source of Question: Palisades Bank 1595 (direct)

DISTRACTOR ANALYSIS

- a. Candidate incorrectly believes an interlock exists which uses the fusible link as an operating mechanism.
- b. Candidate correctly understands the fusible link is for a fire situation, but incorrectly believes it allows opening of a door for personnel escape.
- c. **Correct** - The link melts during a fire and lets the door shut.
- d. The fusible link does hold the door open, however, candidate fails to understand the door will close for a fire situation.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 98

Tier/Group: SRO RO

K/A: 2.2.27 Knowledge of the Refueling process

Importance Rating: SRO 3.5 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

State the definition of the following terms IAW the following: (ADAT0A1.04)

- a. Improved Technical Specification 1.1/Operating Requirements Manual:
- Core Alteration

References: T.S. 1.0 GOP-11

Source of Question: Palisades Bank PRAC2-98 (significantly modified)

DISTRACTOR ANALYSIS

- a. Core alteration applies only to fuel, sources, or control rods
- b. Exception to definition.
- c. No movement of core components.
- d. **Correct** - definition per Tech Specs.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 99

Tier/Group: SRO RO

K/A: 2.2.13 Knowledge of Tagging and clearance procedures

Importance Rating: SRO 3.8 RO 3.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Given any plant conditions, determine the applicable Tagging Rules IAW AP 4.10 PSTOT00.02

References: AP-4.10, 6.8.2

Source of Question Number:: Palisades Bank PR2-24 (direct)

DISTRACTOR ANALYSIS

- a. Not in keeping with ALARA practices.
- b. Not in minimizing the potential spread of contamination.
- c. **Correct** - Acceptable method per AP 4.10
- d. Not in keeping with ALARA practice

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET

Question Number: 100

Tier/Group: SRO RO

K/A: 2.3.1 Knowledge of 10CFR20 and related facility radiation control requirements

Importance Rating: SRO 3.0 RO 2.6

10CFR55 Content: SRO RO

Palisades Training Objective:

Without the use of references, describe the following IAW Administrative Procedure 7.04.(ADAAG15.01)
e. Monitoring requirements

References: AP 7.15, Attachment 3

Source of Question: Palisades Bank PR2-100 (direct)

DISTRACTOR ANALYSIS

- a. **Correct** - Hand and foot frisk required, PCM-1B use required at Access Control.
- b. Hand and foot frisk required, PCM-1B use required at Access Control.
- c. Hand and foot frisk required, PCM-1B use required at Access Control.
- d. Hand and foot frisk required, PCM-1B use required at Access Control.

Difficulty Rating: 2

Cognitive Level: High Low ✓

References Supplied to Candidate: NONE

WRITTEN QUESTION DATA SHEET**Palisades NRC Written Exam - 2001
Index of References Provided for
Reactor Operator (RO)**

Quest #	Required Reference
11	SOP-30, Att. 1 (Y-50 drawing)
14	OA-136 (SWS)
15	M-208, sh. 1A, 1B (FS-0885)
40	SOP-38, Att. 4 (RGEM Panel)
41	T.S. 3.9.2-1, "Refueling Operations - Nuclear Instrumentation"
50	EOP Supplement 1, "Pressure Temperature Limit Curves"
55	Technical Data Book Figure 1.9, "Power Dependent Insertion Limits"
73	M-205, sh. 2, lower left
87	ONP-17, Att. 1 (pp 1-12), "Loss of Shutdown Cooling - Approximate Time to 200°F Curves"
88	ONP-23.2 excerpt (p. 2-5; Att.1; Att. 2), "Steam Generator Tube Leak"
89	EOP Supplement 38, "Determination of Final PCS Boron from S/G Backflow"

WRITTEN QUESTION DATA SHEET

RO KEY

1. c	26. b	51. d	76. a
2. c	27. a	52. c	77. a
3. d	28. a	53. b	78. b
4. d	29. c	54. a	79. a
5. b	30. b	55. b	80. c
6. d	31. d	56. d	81. a
7. a	32. a	57. a	82. a
8. b	33. a	58. a	83. d
9. b	34. b	59. c	84. a
10. c	35. d	60. a	85. c
11. d	36. b	61. b	86. b
12. c	37. c	62. c	87. c
13. a	38. a	63. a	88. b
14. a	39. d	64. d	89. c
15. d	40. c	65. b	90. c
16. d	41. b	66. c	91. a
17. c	42. d	67. a	92. d
18. d	43. d	68. b	93. d
19. a	44. c	69. c	94. c
20. a	45. c	70. c	95. b
21. b	46. a	71. b	96. b
22. d	47. c	72. a	97. c
23. c	48. c	73. d	98. d
24. b	49. b	74. a	99. c
25. b	50. b	75. b	100. a