

FACILITY NAME: North Anna

Section 8

REPORT NUMBER: 05000338/2010301 AND 05000339/2010301

FINAL RO WRITTEN EXAM

CONTENTS:

- ✓ Final RO Written Exam (75 'as given' questions with changes made during administration annotated)
- ✓ Reference Handouts Provided To Applicants
- ✓ Answer Key

Location of Electronic Files:

Submitted by: _____ Verified By: _____

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

Name:

Date: 06/16/10

Facility/Unit: North Anna Units 1 & 2

Region: I ☐ II ☒ III ☐ IV ☐Reactor Type: W ☒ CE ☐ BW ☐ GE ☐

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

Applicant Certification

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

Applicant's Signature**Results**

Examination Value _____ 75 _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

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1.

Given the following conditions:

- Unit 1 is at MOL, starting up following a forced outage.
- The crew has just completed taking critical data.
- The OATC pulls rods to establish a positive startup rate.

When the OATC releases the IN-HOLD-OUT switch, rods continue to step outward.

Assuming NO operator actions are taken, which ONE of the following identifies the plant response to this event?

Power will increase to _____. The power increase is terminated by the _____.

- A. 30% ; Intermediate Range rod stop signal.
- B. 30% ; Power Range rod stop signal.
- C. 25% ; Intermediate Range reactor trip signal.
- D. 25% ; Power Range reactor trip signal.

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2.

Plant conditions are as follows:

- The crew is preparing to roll Unit 1 turbine.
- Reactor power is 8%.
- Turbine power is 0%.
- RCS T_{AVG} is 551°F.

Based on these conditions, PRZR program level is _____, and letdown will automatically isolate if PRZR level decreases to _____.

- A. 28.4% ; 15%
- B. 28.4% ; 23.4%
- C. 32.7% ; 15%
- D. 32.7% ; 27.7%

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3.

Given the following conditions:

- Unit 1 is starting up following a mid-cycle forced outage.
- The crew has commenced slowly raising power in preparations for rolling the turbine.

At approximately 4% power, "B" RCP trips.

Which ONE of the following identifies the effect of the RCP trip on the Departure from Nucleate Boiling Ratio (DNBR), **AND** includes the procedurally required action the crew will take to mitigate this event?

- A. DNBR has decreased ; stop power increase and be in Mode 3 within 6 hours.
- B. DNBR has decreased ; trip the reactor.
- C. DNBR has increased ; stop power increase and be in Mode 3 within 6 hours.
- D. DNBR has increased ; trip the reactor.

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4. The Auxiliary Building Operator reports that the running charging pump, 1-CH-P-1A, seems to be making some unusual noises.

Which ONE of the following identifies the PCS parameter that can be trended by the OATCs to evaluate the status of 1-CH-P-1A?

- A. Cubicle Temperature.
- B. Inboard Pump Bearing Temperature.
- C. Gear Box Cooler Outlet Service Water Temperature.
- D. Lube Oil Cooler Service Water Outlet Flow.

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5.

Unit 1 is at 100% power with the following charging pump configuration:

- 1-CH-P-1A is running.
- 1-CH-P-1B is in AUTO.
- 1-CH-P-1C is tagged out for breaker inspections.

The OATC notes the following indications:

- 1-CH-PI-1121, Discharge Header Pressure - erratic.
- 1-CH-FI-1122, Charging Flow - erratic.
- 1-CH-P-1A, Motor Amps - erratic.

Based on these plant conditions, which ONE of the following identifies the cause of these indications **AND** includes the actions taken per 1-AP-49, Loss of Normal Charging, to mitigate this event?

- A. Gas binding of 1-CH-P-1A;
place 1-CH-P-1B and 1-CH-P-1A in PTL, then vent and start 1-CH-P-1B.
- B. Gas binding of 1-CH-P-1A;
start 1-CH-P-1B and stop 1-CH-P-1A, then vent 1-CH-P-1A.
- C. Relief valve stuck open on 1-CH-P-1A;
stop 1-CH-P-1A and close 1-CH-P-1A discharge MOVs, then start 1-CH-P-1B.
- D. Relief valve stuck open on 1-CH-P-1A;
start 1-CH-P-1B, then stop 1-CH-P-1A and close 1-CH-P-1A discharge MOVs.

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6.

Given the following conditions:

- RCS temperature is 175°F.
- RCS pressure is 305 psig.
- The PRZR is solid.
- Charging flow control is in manual.
- RHR is in service, with the "A" RHR heat exchanger and 1-RH-P-1A in service.
- 1-RH-FCV-1605, RHR H/X bypass, is in AUTO.

The "A" RHR heat exchanger suddenly develops a 150 gpm tube leak.

Which ONE of the following identifies the effect of this malfunction on RHR pump flow, and on RCS pressure?(**assume NO operator actions are taken**)

- A. RHR pump flow remains the same ; RCS pressure remains the same
- B. RHR pump flow remains the same ; RCS pressure decreases
- C. RHR pump flow increases ; RCS pressure remains the same
- D. RHR pump flow increases ; RCS pressure decreases

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7.

Unit 1 was at 100% power when a small-break LOCA occurred. The crew is currently performing 1-E-1, Loss of Reactor or Secondary Coolant.

The Unit Supervisor is at step 6, Check if SI Can Be Terminated.

The following conditions exist:

- Containment pressure is 22 psia and slowly decreasing.
- RCS pressure is 1085 psig and slowly increasing.
- PRZR level is 30% and slowly increasing.
- CETCs are 490°F and stable.
- RCS loop hot-leg temperatures are 475°F and stable.
- AFW has been throttled to 150 gpm to each SG.
- "A" ICCM indicates subcooling of 66°F.
- "B" ICCM indicates subcooling of 80°F.

Given these conditions, _____, and SI termination criteria _____.

- A. "A" ICCM is indicating correctly ; are met
- B. "A" ICCM is indicating correctly ; are NOT met
- C. "B" ICCM is indicating correctly ; are met
- D. "B" ICCM is indicating correctly ; are NOT met

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8.

Given the following conditions:

- Unit 1 is at 50% power.
- "B" and "C" MFW pumps are tagged out.
- "A" MFW pump trips.

The OATC attempted to trip the reactor, but the reactor trip breakers did NOT open.

Assuming NO additional operator actions are taken, which ONE of the following identifies how the AMSAC System will function to mitigate this event?

AMSAC will open the Rod Drive MG Set _____.

- A. supply breakers immediately after level in 2/3 SGs reaches 13% narrow-range.
- B. supply breakers 27 seconds after level in 2/3 SGs reaches 13% narrow-range.
- C. output breakers immediately after level in 2/3 SGs reaches 13% narrow-range.
- D. output breakers 27 seconds after level in 2/3 SGs reaches 13% narrow-range.

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9.

Unit 1 is at 100% power when annunciator 1B-H1, PRZ RELIEF TK HI TEMP, is received.

The OATC confirms the alarm is valid, and notes that PRT level, pressure, and temperature have been slowly increasing since assuming the watch.

Which ONE of the following identifies the source of PRT inleakage that has caused these plant conditions **AND** includes the flowpath used to drain the heated water from the PRT?

- A. Letdown Relief Valve 1-CH-RV-1203 leaking by;
PRT is drained to the PDTT and the PDTT is pumped directly to the in-service Boron Recovery Tank.
- B. Letdown Relief Valve 1-CH-RV-1203 leaking by;
PRT is drained to the PDTT and the PDTT is pumped directly to the Gas Stripper.
- C. Reactor Vessel Flange O-ring leakage;
PRT is drained to the PDTT and the PDTT is pumped directly to the in-service Boron Recovery Tank.
- D. Reactor Vessel Flange O-ring leakage;
PRT is drained to the PDTT and the PDTT is pumped directly to the Gas Stripper.

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10.

Operators are performing 1-OP-1.1, Unit Startup from Mode 5 at Less Than 140°F to Mode 5 at Less Than 200°F, in order to establish a steam bubble in the PRZR.

Which ONE of the following identifies the PRZR temperature that operators should expect the steam bubble to form as stated in 1-OP-1.1, **AND** includes the action to be taken once bubble formation begins?

- A. 425°F ; throttle closed 1-CH-PCV-1145, Letdown Pressure Control Valve.
- B. 425°F ; throttle open 1-CH-PCV-1145, Letdown Pressure Control Valve.
- C. 450°F ; throttle closed 1-CH-PCV-1145, Letdown Pressure Control Valve.
- D. 450°F ; throttle open 1-CH-PCV-1145, Letdown Pressure Control Valve.

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11.

Both Units are at 100% power.

1-CC-PCV-110, Component Clg Pps Recirc Hdr Pressure Control Vv, is 50% open and controlling CC system pressure.

Due to a tagging error, the instrument air supply to 1-CC-PCV-110 is inadvertently closed.

When instrument air is isolated to 1-CC-PCV-110, indicated pressure on 1-CC-PI-100, CC HX Outlet Pressure, will _____ and 2-CC-PCV-210 will _____.

- A. decrease ; throttle closed.
- B. decrease ; NOT change position.
- C. increase ; throttle open.
- D. increase ; NOT change position.

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12.

Unit 1 is at 100% power.

A PRZR safety valve has indications of leakage.

The following conditions exist:

- PRZR pressure is 2220 psig and slowly increasing.
- PRT pressure is 10 psig and slowly increasing.

Which ONE of the following identifies the expected temperature indication downstream of the safety valve, **AND** includes the reason for the indication?

- A. Approximately 240°F because this is an isenthalpic process.
- B. Approximately 240°F because this is an isentropic process.
- C. Approximately 650°F because this is an isenthalpic process.
- D. Approximately 650°F because this is an isentropic process.

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13.

Both Units are at 100% power.

Component Cooling pumps 1-CC-P-1A and 2-CC-P-1A are running.

The following Unit 1 alarms are received:

- 1G-B3, CC HX 1A-1B CC OUTLET LO FLOW.
- 1C-C4, RCP 1A-B-C THERM BARR CC HI/LO FLOW.

ALL other Unit 1 alarms are clear.

Which ONE of the following explains the cause of these alarms, **AND** includes the appropriate operator response?

- A. Breaker 15H12, Stub Bus Supply Breaker, inadvertently opened; manually start 1-CC-P-1B.
- B. Breaker 15H12, Stub Bus Supply Breaker, inadvertently opened; verify 1-CC-P-1B automatically starts after 20 seconds.
- C. Breaker 15H13, 1-CC-P-1A Supply Breaker, overcurrent trip; manually start 1-CC-P-1B.
- D. Breaker 15H13, 1-CC-P-1A Supply Breaker, overcurrent trip; verify 1-CC-P-1B automatically starts after 20 seconds.

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14.

Given the following conditions:

- Unit 1 was initially at 100% power.
- An RCS LOCA occurred.
- The crew tripped the Unit and initiated safety injection.

Plant conditions degraded, and CDA automatically actuated several minutes later.

Based on the above sequence of events, the RSHX SW Outlet Radiation Monitor Sample Pumps, 1-SW-P-5, 6, 7, and 8, started _____.

- A. immediately after SI was initiated.
- B. 2 minutes after SI was initiated.
- C. immediately after CDA actuated.
- D. 2 minutes after CDA actuated.

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15.

Unit 1 is at 100% power.

The OATC notes that all of the PRZR Backup Heater white status lights on the vertical board are ON, and PRZR pressure is 2260 psig and slowly increasing.

Assuming no operator action is taken, which ONE of the following identifies the failed channel, **AND** includes the system response to this failure?

- A. 1-RC-PT-1444 failed ; the PRZR spray valves will modulate open.
- B. 1-RC-PT-1444 failed ; one PRZR PORV will open.
- C. 1-RC-PT-1445 failed ; the PRZR spray valves will modulate open.
- D. 1-RC-PT-1445 failed ; one PRZR PORV will open.

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16.

Unit 1 was initially at 100% power.

A LOCA occurred, and operators have transitioned to 1-E-1, Loss of Reactor or Secondary Coolant.

The following conditions exist:

- RCS pressure is 450 psig and decreasing slowly.
- SG pressures are 800 psig and decreasing slowly.
- CETCs are 580°F and decreasing.
- RCS loop cold-leg temperatures are 290°F and decreasing.

Based on these conditions, which ONE of the following identifies ALL of the systems that are providing cooling water to the core, AND includes the status of natural circulation?

- A. High Head SI flow AND Low Head SI flow ; natural circulation is occurring
- B. High Head SI flow AND Low Head SI flow ; natural circulation is NOT occurring
- C. ONLY High Head SI flow ; natural circulation is occurring
- D. ONLY High Head SI flow ; natural circulation is NOT occurring

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17.

The Solid State Protection System slave relays are powered from 120VAC Vital busses. Train "A" is powered from _____, and Train "B" is powered from _____.

- A. busses I and II ; busses III and IV
- B. busses I and III ; busses II and IV
- C. bus I ONLY ; bus III ONLY
- D. bus II ONLY ; bus IV ONLY

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18. Which ONE of the following reactor trips is designed to protect the core from a Departure from Nucleate Boiling condition?
- A. Overpower Delta T
 - B. Overtemperature Delta T
 - C. Pressurizer High Level
 - D. Steam Generator Low-Low Water Level

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19.

Which ONE of the following identifies the source of control power for the breaker for 1-SI-P-1A, "A" Low Head Safety Injection Pump?

- A. 120VAC Vital bus 1-I
- B. 120VAC Vital bus 1-III
- C. 125VDC Vital bus 1-I
- D. 125VDC Vital bus 1-III

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20.

Given the following conditions:

- Unit 1 was initially at 100% power.
- Reactor trip and SI occurred due to a large-break LOCA.
- A loss of inventory outside containment is occurring and the crew is unable to isolate it.
- RWST level is continuing to decrease.

Which ONE of the following identifies the RWST level setpoint at which automatic swapover to Containment Sump will occur **AND** includes the actions that will prevent the automatic swapover?

- A. 16% ; reset CDA and push both SI Recirc Mode Reset Pushbuttons
- B. 16% ; reset SI and push both SI Recirc Mode Reset Pushbuttons
- C. 23% ; reset CDA and push both SI Recirc Mode Reset Pushbuttons
- D. 23% ; reset SI and push both SI Recirc Mode Reset Pushbuttons

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21.

Which ONE of the following identifies the normal power source to Unit 1 Individual Rod Position Indication (IRPI) System, AND includes the system response in the event of a loss of that power supply?

- A. MCC 1H1-1;
The Unit 1 IRPI System will have power for an indefinite period of time.
- B. MCC 1H1-1;
The Unit 1 IRPI System will have power for a limited period of time.
- C. MCC 1J1-1;
The Unit 1 IRPI System will have power for an indefinite period of time.
- D. MCC 1J1-1;
The Unit 1 IRPI System will have power for a limited period of time.

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22.

Unit 1 is at 100% power.

A total loss of CC flow has occurred, and the crew entered 1-AP-15, Loss of Component Cooling.

Which ONE of the following identifies the component that will reach its temperature limit the soonest for this event, **AND** includes the maximum temperature that is allowed by 1-AP-15 before a reactor trip is required?

- A. RCP pump radial bearing ; 195°F
- B. RCP pump radial bearing ; 225°F
- C. RCP motor bearings ; 195°F
- D. RCP motor bearings ; 225°F

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23.

Given the following conditions:

- Unit 1 is in mode 3.
- Power Range channel N-44 is tagged out.
- A loss of 120VAC Vital bus 1-III occurs.

Based on these conditions, which ONE of the following identifies the response of the Source-range NIs, **AND** includes the reason?

Source-range channel(s) _____.

- A. N-31 only will be de-energized due to the P-10 permissive.
- B. N-31 and N-32 will both be de-energized due to the P-10 permissive.
- C. N-31 only will be de-energized due to the P-6 permissive.
- D. N-31 and N-32 will both be de-energized due to the P-6 permissive.

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24.

Given the following conditions:

- Unit 1 was initially at 100% power with 1H EDG tagged out.
- A loss of offsite power occurred, and 1J EDG locked out.
- Operators implemented 1-ECA-0.0, Loss of All AC Power.
- Power was restored to one emergency bus from the SBO Diesel.

The crew transitioned to 1-ECA-0.2, Loss of All AC Power Recovery with SI Required, Step 1.

The following conditions exist:

- Containment pressure is 18 psia and slowly increasing.
- RCS pressure is 1100 psig and stable.
- CETCs are 1300°F and slowly increasing.
- RVLIS is oscillating between 64% and 68%.

Based on these conditions, which ONE of the following identifies the procedural flowpath the crew will take to mitigate this event?

- A. Immediately transition to 1-FR-C.1, Response to Inadequate Core Cooling; once the core cooling function is restored, return to 1-ECA-0.2, Step 1.
- B. Immediately transition to 1-FR-C.2, Response to Degraded Core Cooling; once the core cooling function is restored, return to 1-ECA-0.2, Step 1.
- C. Continue performing 1-ECA-0.2; transition to 1-FR-C.1 when directed by 1-ECA-0.2.
- D. Continue performing 1-ECA-0.2; transition to 1-FR-C.2 when directed by 1-ECA-0.2.

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25.

If a loss of chilled water occurs, _____ must be aligned to the CARFs in order to prevent containment temperature from exceeding the Technical Specification limit of _____.

- A. Component Cooling Water ; 105°F
- B. Component Cooling Water ; 115°F
- C. Service Water ; 105°F
- D. Service Water ; 115°F

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26.

Given the following conditions:

- Unit 1 is on RHR, and has just entered Mode 5 for a scheduled refueling outage.
- Unit 2 is at 100% power.
- Unit 1 has one CC pump and one SW pump running.
- Unit 2 has two CC pumps and two SW pumps running.
- All Service Water spray arrays are in service.

Unit 2 experiences a catastrophic failure of the "A" Main Steamline inside Containment.

Which ONE of the following describes the initial effect of this event on Unit 1 RHR temperature, **AND** includes the reason?

RHR temperature will _____

- A. increase due to the decrease in total CC flow.
- B. increase due to the decrease in total SW flow.
- C. decrease due to the increase in total CC flow.
- D. decrease due to the increase in total SW flow.

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27.

Given the following conditions:

- Unit 1 was initially at 100% power with Quench Spray pump 1-QS-P-1B tagged out.
- A LOCA occurred 7 minutes ago.

The crew is performing 1-E-0, Reactor Trip or Safety Injection, Attachment 2, Verification of Phase B Isolation.

The crew notes the following indications:

- 1-QS-MOV-102A, Chemical Addition Tank Outlet Valve, GREEN and RED lights both OFF.
- 1-QS-MOV-102B, Chemical Addition Tank Outlet Valve, GREEN light ON, RED light OFF.
- 1-QS-LI-101, Chemical Addition Tank Level, 90% and stable.

Which ONE of the following describes the action required by 1-E-0, Attachment 2, **AND** includes the consequence if the above malfunction is not corrected?

- A. **Locally** open 1-QS-MOV-102A, Chemical Addition Tank Outlet Valve;
reduced boron concentration of containment sump water.
- B. **Locally** open 1-QS-MOV-102A, Chemical Addition Tank Outlet Valve;
reduced effectiveness of containment Iodine removal.
- C. **Manually** open 1-QS-MOV-102B, Chemical Addition Tank Outlet Valve;
reduced boron concentration of containment sump water.
- D. **Manually** open 1-QS-MOV-102B, Chemical Addition Tank Outlet Valve;
reduced effectiveness of containment Iodine removal.

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28.

In the event that CC is lost and cannot be readily restored, 1-AP-15, Loss of Component Cooling, will direct the operator to align _____ to the Fuel Pit Coolers.

- A. Chilled Water
- B. Fire Protection Water
- C. Primary Grade Water
- D. Service Water

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29.

Given the following conditions:

- Unit 1 is at 30% power and holding for chemistry.
- The block valve for 1-RC-PCV-1455C, PRZR PORV, is closed.

1-RC-PC-1444J, PRZR Master Pressure Controller, fails to 100% demand and will not swap to MANUAL.

In response to this event, the crew will _____.

- A. manually open spray valves to prevent cycling a PRZR PORV.
- B. manually open spray valves to prevent a reactor trip.
- C. manually close spray valves to prevent a turbine runback.
- D. manually close spray valves to prevent a reactor trip.

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30.

Containment Purge is in service on Unit 1.

Which ONE of the following identifies conditions that will automatically isolate Containment Purge?

- A. 1-RM-RMS-159, Containment Particulate Radiation Monitor, Hi-Hi alarm.
1-VG-RI-179-1, MGP Vent Stack A Rad monitor, Hi alarm.
- B. 1-RM-RMS-162, Manipulator Crane Radiation Monitor, Hi-Hi alarm.
1-VG-RI-180-1, MGP Vent Stack B Rad monitor, Hi alarm.
- C. 1-RM-RMS-159, Containment Particulate Radiation Monitor, Hi-Hi alarm.
1-RM-RMS-162, Manipulator Crane Radiation Monitor, Hi-Hi alarm.
- D. 1-RM-RMS-160, Containment Gaseous Radiation Monitor, Hi-Hi alarm.
1-VG-RI-180-1, MGP Vent Stack B Rad monitor, Hi alarm.

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31.

The Plant Computer System (PCS) is unavailable.

In the event that the Main Control Room is evacuated, which ONE of the following identifies the instrument used to monitor reactor status, **AND** includes the location of the indicator?

- A. Excore Neutron Flux Monitor System Ch. I ; Emergency Switchgear Room
- B. Excore Neutron Flux Monitor System Ch. I ; Fuel Building
- C. Source Range Channel N-31 ; Emergency Switchgear Room
- D. Source Range Channel N-31 ; Fuel Building

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32.

Unit 1 is in Mode 2.

A **CONTROL POWER** fuse blows on Intermediate Range Channel N-35.

Which ONE of the following identifies the plant response for this event?

- A. N-35 detector will indicate downscale and the reactor will trip.
- B. N-35 detector will indicate normally and the reactor will trip.
- C. N-35 detector will indicate downscale and the reactor will NOT trip.
- D. N-35 detector will indicate normally and the reactor will NOT trip.

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33.

Given the following conditions:

- Unit 1 has been shutdown for 6 days.
- Containment purge is in service on Unit 1.
- "A" containment air recirc fan (CARF) is running.
- Core off-load is in progress.

The "A" CARF trips, and the crew is unable to restart any CARF.

Which ONE of the following describes impacts of this failure on the Radiation Monitoring System, **AND** on the core off-load in accordance with 1-OP-4.1, Controlling Procedure for Refueling?

- A. 1-RM-RMS-159 and -160, Containment Particulate and Gaseous monitors, are BOTH inoperable; Station Management approval is required in order to continue core off-load.
- B. 1-RM-RMS-160, Containment Gaseous monitor ONLY is inoperable; Station Management approval is required in order to continue core off-load.
- C. 1-RM-RMS-159 and -160, Containment Particulate and Gaseous monitors, are BOTH inoperable; Nuclear Analysis and Fuels approval is required in order to continue core off-load.
- D. 1-RM-RMS-160, Containment Gaseous monitor ONLY is inoperable; Nuclear Analysis and Fuels approval is required in order to continue core off-load.

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34. Unit 2 is in a refueling outage with core on-load in progress.

Given the below instruments, which ONE of the following identifies ALL of the instruments that can cause **AUTOMATIC** actuation of the Containment Evacuation alarm?

- 1) Source Range Channel N-31
- 2) Manipulator Crane Radiation Monitor, 2-RM-RMS-262
- 3) Containment Gaseous Radiation Monitor, 2-RM-RMS-260

- A. 1 & 3
- B. 2 & 3
- C. 1 only
- D. 2 only

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35.

Given the following conditions:

- Unit 1 was at 100% power when a 50 gpm tube leak was identified in "B" SG.
- The crew is performing 1-AP-24, Steam Generator Tube Leak.

The Unit Supervisor is at Step 18, Verify Flow from Affected SGs - ISOLATED.

The BOP reports that Attachment 3, MSVH Steam Generator Isolation Local Actions, has been initiated, but has NOT been completed.

Which ONE of the following identifies the crew response, **AND** includes the reason?

- A. Continue with Step 19 and initiate RCS cooldown without delay; precludes overfill of "B" SG.
- B. Continue with Step 19 and initiate RCS cooldown without delay; minimizes offsite dose.
- C. Do NOT continue with Step 19, RCS cooldown can NOT be initiated until Attachment 3 is complete; ensures adequate delta-P is maintained between "B" SG and the unaffected SGs.
- D. Do NOT continue with Step 19, RCS cooldown can not be initiated until Attachment 3 is complete; ensures "B" SG PORV remains available.

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36.

Given the following conditions:

- A SG tube rupture has occurred on Unit 1.
- The crew is preparing to initiate RCS depressurization to minimize break flow in accordance with 1-E-3, Steam Generator Tube Rupture.
- Ruptured SG level is OFF-SCALE HIGH.
- All equipment is available and operating as required.

Which ONE of the following describes the action that will be required to initiate RCS depressurization in accordance with 1-E-3?

- A. Initiate normal PRZR spray flow.
- B. Initiate auxiliary spray flow.
- C. Open one PRZR PORV.
- D. Open both PRZR PORVs.

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37.

In accordance with 1-OP-28.3, Startup of the Moisture Separator Reheaters, when placing the Reheat Steam System in service, the **total rate of change** of the LP Turbine Inlet (Reheater Outlet) temperature should NOT exceed _____. This heatup rate is initially controlled by _____.

- A. 100°F per hour ; throttling the MSR FCVs from the Benchboard
- B. 100°F per hour ; throttling the 3-inch bypass valves locally
- C. 150°F per hour ; throttling the MSR FCVs from the Benchboard
- D. 150°F per hour ; throttling the 3-inch bypass valves locally

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38.

An unisolable steamline break has led to an excessive cooldown of the RCS and an ORANGE path on RCS Integrity.

Which ONE of the following describes the area of most concern for the propagation of an existing flaw in the RCS during this event?

- A. Plastic deformation due to tensile stresses in the reactor vessel upper head area.
- B. Brittle fracture due to compressive stresses in the reactor vessel hot leg area.
- C. Plastic deformation due to compressive stresses in the reactor vessel cold leg area.
- D. Brittle fracture due to tensile stresses in the reactor vessel downcomer beltline area.

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39.

Given the following conditions:

- Unit 1 was initially stable at 50% power.
- RCS T_{AVG} & T_{REF} were initially matched and on program.

An event occurs, which causes rods to begin stepping IN.

The crew observes the following indications:

- T_{AVG} is 568°F.
- T_{REF} is 560°F.
- Power Range Channel N-44 is 48%.

Which ONE of the following identifies the correct response to this event **AND** includes the reason for this response?

- A. Place rods in MANUAL because they are moving in response to a N-44 failure.
- B. Place rods in MANUAL because they are moving in response to a T_{REF} failure.
- C. Leave rods in AUTO because they are moving in response to an increase in steam demand due to a malfunction in the turbine control system.
- D. Leave rods in AUTO because they are moving in response to a decrease in steam demand due to a malfunction in the turbine control system.

NAPS 2010 NRC RO Exam

40.

Given the following conditions:

- 1-ECA-0.0, Loss of All AC Power, is in progress.
- The crew is performing step 22, Depressurize all Intact SGs to 290 psig.
- The BOP mistakenly did NOT stop depressurizing SGs at 290 psig.
- Pressure in all SGs reaches 180 psig before the depressurization is stopped.

What is the potential operational implication that could result from the excessive SG depressurization?

- A. Nitrogen injection from the accumulators may occur, causing natural circulation flow in the RCS to be interrupted.
- B. Excessive RCS cooldown, which could require transition to 1-FR-P.1, Response to Imminent Pressurized Thermal Shock.
- C. Voiding may occur in the reactor vessel, causing the upper portion of the core to become uncovered and potentially causing core damage.
- D. An undesired automatic Safety Injection signal may occur, complicating other recovery actions that are in progress.

NAPS 2010 NRC RO Exam

41.

Which ONE of the following identifies the post-accident instrument required by TR 3.3.9, Regulatory Guide (RG) 1.97 Instrumentation, AND includes the TR 3.3.9 Mode(s) of Applicability?

- A. 1-MS-RM-170, A Steamline Radiation Monitor ; Mode 1 ONLY.
- B. 1-MS-RM-170, A Steamline Radiation Monitor ; Modes 1, 2, or 3.
- C. 1-SV-RM-121, Condenser Air Ejector Radiation Monitor ; Mode 1 ONLY.
- D. 1-SV-RM-121, Condenser Air Ejector Radiation Monitor ; Modes 1, 2, or 3.

NAPS 2010 NRC RO Exam

42.

Given the following conditions:

- Unit 1 RCS cooldown is in progress due to leakage from a PRZR manway.
- "A" RHR pump is in service.
- RCS temperature is 190°F with a 30°F/Hr cooldown rate.

A loss of "F" transfer bus occurs.

In accordance with 1-AP-11, Loss of RHR, in order to re-establish RHR cooling after the EDG energizes the bus, the crew is directed to _____.

- verify "A" RHR pump running, and manually adjust 1-CC-MOV-100A & B, CC HX Outlet Isolation Valves.
- verify "B" RHR pump automatically starts, and manually adjust 1-RH-HCV-1758, RHR HX Outlet Valve.
- manually start "A" RHR pump, and manually adjust 1-RH-HCV-1758, RHR HX Outlet Valve.
- manually start "A" RHR pump, and manually adjust 1-CC-MOV-100A & B, CC HX Outlet Isolation Valves.

NAPS 2010 NRC RO Exam

43.

Unit 1 is at 100% power when several Unit 1 annunciators are received.

The OATC verifies all critical parameters are stable and on program.

The crew notes the following:

- All status lights on "L" Panel are OFF.
- Annunciator 1P-E4, C-7 PERM STM DUMP ARMED FROM LOSS OF LOAD, is LIT.

Which ONE of the following identifies the 120VAC Vital bus that has lost power, **AND** includes the action needed to reset (clear) 1P-E4 once power is restored?

- A. Vital bus I-III ; momentarily place the Steam Dump Mode Selector in the RESET position.
- B. Vital bus I-III ; place both Steam Dump INTLK switches to OFF/RESET and return to ON.
- C. Vital bus I-IV ; momentarily place the Steam Dump Mode Selector in the RESET position.
- D. Vital bus I-IV ; place both Steam Dump INTLK switches to OFF/RESET and return to ON.

NAPS 2010 NRC RO Exam

44. Given the following conditions:

- Unit 1 is at 70% power
- "B" Main Feedwater (MFW) pump is tagged out

The "C" MFW pump trips.

Which ONE of the following describes the plant response?

(Assume no operator action.)

- A. MFRVs modulate open; SG levels continue to decrease.
- B. MFRVs modulate open; SG levels are maintained on program.
- C. MFRVs and bypass valves fully open; SG levels continue to decrease.
- D. MFRVs and bypass valves modulate open; SG levels are maintained on program.

NAPS 2010 NRC RO Exam

45.

Given the following conditions:

- Unit 1 is at 25% power and ramping up.
- Unit 2 is in a refueling outage.
- All Unit 1 SGWLC channels are selected to Channel III (Blue channel).

An I&C Tech inadvertently equalizes and isolates 1-FW-FT-1487, Unit 1 "B" SG Feed Flow Transmitter (Blue channel).

Which ONE of the following describes the result of the I&C technicians error? (assume NO operator action is taken)

- A. "B" SG level decreases until the turbine automatically trips.
- B. "B" SG level decreases until the reactor automatically trips.
- C. "B" SG level increases until the turbine automatically trips.
- D. "B" SG level increases until the reactor automatically trips.

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46.

Given the following conditions:

- Unit 1 experiences a reactor trip and safety injection.
- 1-FW-P-2, Turbine Driven AFW pump, will not operate.

The crew performs 1-AP-22.1, Loss of 1-FW-P-2 Turbine Driven AFW Pump, to feed all three SG's.

Which ONE of the following identifies the AFW alignment once 1-AP-22.1 has been performed?

- A. 1-FW-P-3A and 1-FW-P-3B feeding "A" SG thru 1-FW-HCV-100A
1-FW-P-3A and 1-FW-P-3B feeding "B" SG thru 1-FW-HCV-100B
1-FW-P-3A and 1-FW-P-3B feeding "C" SG thru 1-FW-HCV-100C
- B. 1-FW-P-3A and 1-FW-P-3B feeding "A" SG thru 1-FW-HCV-100A
1-FW-P-3A and 1-FW-P-3B feeding "B" SG thru 1-FW-MOV-100B
1-FW-P-3A and 1-FW-P-3B feeding "C" SG thru 1-FW-HCV-100C
- C. 1-FW-P-3B feeding "A" SG thru 1-FW-MOV-100A
1-FW-P-3B feeding "B" SG thru 1-FW-MOV-100B
1-FW-P-3A feeding "C" SG thru 1-FW-HCV-100C
- D. 1-FW-P-3A feeding "A" SG thru 1-FW-MOV-100D
1-FW-P-3B feeding "B" SG thru 1-FW-MOV-100B
1-FW-P-3A feeding "C" SG thru 1-FW-HCV-100C

NAPS 2010 NRC RO Exam

47.

Unit 1 is at 100% power.

Which ONE of the following identifies the response if Vital Bus Inverter 1-II fails, **AND** includes the Technical Specification implications of this malfunction?

120VAC Vital bus 1-II will be powered automatically from _____.

- A. MCC 1H1-1 via a constant voltage transformer ; Unit 1 is in an info-only action.
- B. MCC 1H1-1 via a constant voltage transformer ; Unit 1 is in a limiting action.
- C. MCC 1J1-1 via a constant voltage transformer ; Unit 1 is in an info-only action.
- D. MCC 1J1-1 via a constant voltage transformer ; Unit 1 is in a limiting action.

NAPS 2010 NRC RO Exam

48.

Given the following conditions:

- Both Units are at 100% power.
- Service Water (SW) is throttled.
- Service Water pumps 1-SW-P-1A and 1-SW-P-1B are running.
- All SW Spray MOVs are open and all SW Spray Bypass MOVs are closed.

The crew notes that SW reservoir level has been decreasing slowly, and currently indicates 312 feet.

The following conditions exist:

- 1-SW-P-1A discharge pressure is 45psig.
- 1-SW-P-1B discharge pressure is 55 psig.

Based on these indications, the leak is on _____ and the Ultimate Heat Sink is _____.

- A. "A" Service Water Header ; operable
- B. "A" Service Water Header ; inoperable
- C. "B" Service Water Header ; operable
- D. "B" Service Water Header ; inoperable

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49.

Both Units are at 100% power.

An electrical fault results in a loss of "C" RSST.

Which ONE of the following will occur as a result of this event?

- A. 1H and 2J EDGs will start and load; breaker 15G10 will remain open
- B. 1H and 2J EDGs will start and load; breaker 15G10 will close
- C. ONLY 2H EDG will start and load; breaker 15G10 will remain open
- D. ONLY 2H EDG will start and load; breaker 15G10 will close

NAPS 2010 NRC RO Exam

50.

Which ONE of the following describes the operation of the 125VDC Vital bus battery chargers?

The battery chargers have an adjustable current limiter device, which _____.

- A. opens the AC input breaker if AC input current reaches 275 amps.
- B. limits the maximum AC input current to 275 amps.
- C. opens the DC output breaker if DC output current reaches 275 amps.
- D. limits the maximum DC output current to 275 amps.

NAPS 2010 NRC RO Exam

51.

With Unit 1 at 100% power, the 1H 4160V bus normal feeder breaker 15H11 trips open, and 1H EDG re-energizes the bus.

Per 0-AP-10, Loss of Electrical Power, configuring 1H bus loads is done as a high priority in order to _____.

- A. prevent EDG overload in the event of an SI/CDA.
- B. facilitate restoration of the emergency bus from the normal feeder.
- C. ensure loads that may have automatically started are returned to their pre-event (standby) status.
- D. ensure that 1H bus loads will trip selectively in the event of an SI/CDA.

NAPS 2010 NRC RO Exam

52.

Given the following conditions:

- A loss of Instrument Air (IA) occurs.
- IA pressure decreases to 0 psig.

Which ONE of the following identifies ALL of the Auxiliary Feedwater System components that can be operated for a limited period of time?

- A. AFW Pump 1-FW-P-2 steam supply valves (1-MS-TV-111A & B) ONLY.
- B. AFW HCVs (1-FW-HCV-100A, B, & C) **AND** AFW PCVs (1-FW-PCV-159A & B) ONLY.
- C. AFW Pump 1-FW-P-2 steam supply valves (1-MS-TV-111A & B) **AND** AFW HCVs (1-FW-HCV-100A, B, & C) ONLY.
- D. AFW HCVs (1-FW-HCV-100A, B, & C) **AND** AFW PCVs (1-FW-PCV-159A & B) **AND** AFW Pump 1-FW-P-2 steam supply valves (1-MS-TV-111A & B).

NAPS 2010 NRC RO Exam

53.

Which ONE of the following describes the impact of a failure of 1-RM-LW-110, Clarifier Inlet Radiation Monitor, and 1-RM-LW-111, Clarifier Outlet Radiation Monitor, on the following valves?

1-LW-PCV-115, LW Effluent to Discharge Canal
1-LW-FCV-100, Holdup Tank Influent

A failure (HIGH) of _____.

- A. either 1-RM-LW-110 or 1-RM-LW-111 will close 1-LW-PCV-115 ONLY.
- B. either 1-RM-LW-110 or 1-RM-LW-111 will close 1-LW-PCV-115 and 1-LW-FCV-100.
- C. only 1-RM-LW-111 will close 1-LW-PCV-115 ONLY.
- D. only 1-RM-LW-111 will close 1-LW-PCV-115 and 1-LW-FCV-100.

NAPS 2010 NRC RO Exam

54.

Given the following conditions:

- A WGDT release is in progress.
- HI and HI-HI alarms are received on 1-GW-RM-178-1, Process Vent RM Noble Gas Normal.
- The cause of the alarm was determined to be the detector spiking.
- 1-GW-RM-178-1 indication is trending back to normal.

Which ONE of the following describes **the automatic action** that the OATC will verify, **AND** includes the procedural direction given to re-establish the WGDT release once the detector is operating normally?

- A. Verify 1-GW-FCV-101, WGDT to Process Vents, CLOSED ;
the WGDT release can be re-established once the OATC verifies the HI alarm clears.
- B. Verify 1-GW-FCV-101, WGDT to Process Vents, CLOSED ;
the WGDT release can be re-established once the Instrument Department resets the HI-HI alarm
AND restores the MGP system to normal range monitoring.
- C. Verify 1-GW-TV-106, Equipment Vents, CLOSED ;
the WGDT release can be re-established once the OATC verifies the HI alarm clears.
- D. Verify 1-GW-TV-106, Equipment Vents, CLOSED ;
the WGDT release can be re-established once the Instrument Department resets the HI-HI alarm
AND restores the MGP system to normal range monitoring.

NAPS 2010 NRC RO Exam

55.

Per 1-FR-C.1, Response to Inadequate Core Cooling, SGs are depressurized at the maximum rate to (ultimately) atmospheric pressure in order to _____.

- A. reduce RCS temperature to collapse steam voids in the reactor vessel head.
- B. reduce SG pressure to enable low-pressure sources of SG feedwater to restore RCS heat sink.
- C. reduce RCS temperature to increase thermal driving head for natural circulation.
- D. reduce RCS pressure to allow the SI accumulators and LHSI pumps to inject water to the RCS.

NAPS 2010 NRC RO Exam

56.

Which ONE of the following identifies the normal and backup cooling water sources to the Control Room Chillers?

- A. Bearing Cooling normally supplies both Units Control Room Chillers; either Unit can be supplied from Service Water as a backup.
- B. Bearing Cooling normally supplies both Units Control Room Chillers; ONLY Unit 1 can be supplied from Service Water as a backup.
- C. Service Water normally supplies both Units Control Room Chillers; either Unit can be supplied from Bearing Cooling as a backup.
- D. Service Water normally supplies both Units Control Room Chillers; ONLY Unit 1 can be supplied from Bearing Cooling as a backup.

NAPS 2010 NRC RO Exam

57.

Which ONE of the following parameters **by itself** can be used to discriminate between a voltage regulator malfunction and a grid disturbance?

- A. Generator Megawatts.
- B. Generator Megavars.
- C. Generator Output Voltage.
- D. Exciter Field Current.

NAPS 2010 NRC RO Exam

58.

Which ONE of the following identifies the power supplies to the Unit 1 and Unit 2 Instrument Air compressors, 1-IA-C-1 and 2-IA-C-1, respectively?

1-IA-C-1 is powered from _____, and 2-IA-C-1 is powered from _____.

- A. 1H Emergency Bus ; 2H Emergency Bus
- B. 1H Emergency Bus ; 2J Emergency Bus
- C. 1J Emergency Bus ; 2H Emergency Bus
- D. 1J Emergency Bus ; 2J Emergency Bus

NAPS 2010 NRC RO Exam

59.

If a Main Transformer deluge is **inadvertently actuated**, the Electric Fire Pump is started by _____, and the associated Main Transformer will _____.

- A. a limit switch on the deluge valve ; de-energize
- B. a limit switch on the deluge valve ; remain energized
- C. a pressure switch on the fire main ; de-energize
- D. a pressure switch on the fire main ; remain energized

NAPS 2010 NRC RO Exam

60.

The crew is preparing for Unit 1 core off-load.

Which ONE of the following describes the method specified in 1-PT-91, Containment Penetrations, to control containment penetrations, **AND** includes the approval required to breach a penetration during fuel movement?

Containment penetrations shall be tagged with _____.

- A. Danger tags, and an SRO or Shift Manager may approve breaching a penetration.
- B. Danger tags, and FSRC approval is required for breaching a penetration.
- C. Caution/Information tags, and an SRO or Shift Manager may approve breaching a penetration.
- D. Caution/Information tags, and FSRC approval is required for breaching a penetration.

NAPS 2010 NRC RO Exam

61.

In accordance with 1-OP-2.1, Unit Startup from Mode 2 to Mode 1, during a Unit ramp, all of the following indications should be used to monitor real power **EXCEPT** _____.

- A. U0980, Power, Calorimetric
- B. U1201, Power, 1 Min Avg STM
- C. U1203, Power, 1 Min Avg FW
- D. U1231, Power, 1 Min Avg UFM

NAPS 2010 NRC RO Exam

62.

With Unit 1 at 100% power, the following conditions exist:

- 1-CW-MOV-101D, "D" Waterbox Inlet MOV, indicates mid-position.
- Condenser pressure is 2.2 inches Hg abs. and degrading.

Which ONE of the following identifies the immediate operator action, **AND** includes the action required by 1-AP-14, Low Condenser Vacuum, to mitigate this event?

- A. Verify at least two Circulating Water pumps running;
Close 1-VP-18, Air Ejector suction valve for 'D' water box.
- B. Verify condenser pressure is 3.5 inches Hg abs or less and stable;
Close 1-VP-18, Air Ejector suction valve for 'D' water box.
- C. Verify at least two Circulating Water pumps running;
Open 1-CW-MOV-100D, "D" CW pump Discharge MOV.
- D. Verify condenser pressure is 3.5 inches Hg abs or less and stable;
Open 1-CW-MOV-100D, "D" CW pump Discharge MOV.

NAPS 2010 NRC RO Exam

63.

The Backboards operator is conducting an infrequently performed PT.

One of the steps of the procedure is designated IV (Independent Verification).

The Backboards operator feels that CV (Concurrent Verification) would be a more appropriate method of verification for the step.

As the OATC, you review the procedure and concur with the Backboards operator's assessment.

Which ONE of the following describes the guidance provided by PI-AA-500, Verification Practices, to address this issue?

- A. An inactive SRO on shift performing reactivation duties may authorize the use of CV in lieu of IV.
- B. A procedure change is the ONLY acceptable method of changing the type of verification.
- C. The Operations Manager MUST grant approval anytime CV is used in lieu of IV.
- D. The Shift Manager or SRO may authorize the use of CV in lieu of IV.

NAPS 2010 NRC RO Exam

64.

Unit 1 was initially at 100% power.

1-AP-2.2, Fast Load Reduction, has been entered.

Which ONE of the following describes the sequence of actions that must be performed when a fast load reduction is required in accordance with 1-AP-2.2?

- A. 1) Bypass AMSAC
2) Transfer Rod Control to MANUAL
3) Transfer Feedwater Control to Bypass FCVs
- B. 1) Bypass AMSAC
2) Transfer Feedwater Control to Bypass FCVs
3) Transfer Rod Control to MANUAL
- C. 1) Transfer Feedwater Control to Bypass FCVs
2) Bypass AMSAC
3) Transfer Rod Control to MANUAL
- D. 1) Transfer Rod Control to MANUAL
2) Bypass AMSAC
3) Transfer Feedwater Control to Bypass FCVs

NAPS 2010 NRC RO Exam

65.

Given the following conditions:

- Unit 1 was initially at 100% power.
- PRZR Pressure Control Transmitter, 1-RC-PT-1445, failed HIGH.
- The crew placed the control switch for 1-RC-PCV-1456, PRZR PORV, in CLOSE.
- RCS pressure subsequently returned to 2235 psig.
- PRT pressure and temperature have stabilized.

Which ONE of the following identifies the Technical Specification implications of these plant conditions?

1-RC-PCV-1456 _____, and 1-RC-MOV-1535, PRZR PORV Block Valve, _____.

- A. is operable;
MUST be closed to comply with Technical Specifications.
- B. is operable;
is NOT required to be closed to comply with Technical Specifications.
- C. is NOT operable;
MUST be closed to comply with Technical Specifications.
- D. is NOT operable;
is NOT required to be closed to comply with Technical Specifications.

NAPS 2010 NRC RO Exam

66.

Given the following conditions:

- Unit 1 is at 50% power and ramping up at 0.3%/minute.
- 1-CW-P-1D, "D" Circulating Water pump, trips.
- The crew enters 1-AP-13, Loss of One or More Circulating Water Pumps.

Which ONE of the following identifies the guidance provided by 1-AP-13 for controlling Liquid Waste releases?

- A. Liquid Waste releases must be immediately secured, and Chemistry Department approval must be obtained prior to resuming them.
- B. Liquid Waste releases must be immediately secured, and Health Physics Department approval must be obtained prior to resuming them.
- C. Inform Chemistry Department of Circulating Water Pumps status, and they will determine if Liquid Waste releases are required to be secured.
- D. Inform Health Physics Department of Circulating Water Pumps status, and they will determine if Liquid Waste releases are required to be secured.

NAPS 2010 NRC RO Exam

67.

Which ONE of the following identifies the posting requirements, **AND** includes the **MINIMUM** entry requirements for an area accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 100 mrem in one hour at 30 centimeters from the source?

- A. High Radiation Area ; alarming dosimetry (DAD) OR continuous HP coverage
- B. High Radiation Area ; alarming dosimetry (DAD) AND continuous HP coverage
- C. Locked High Radiation Area ; alarming dosimetry (DAD) OR continuous HP coverage
- D. Locked High Radiation Area ; alarming dosimetry (DAD) AND continuous HP coverage

NAPS 2010 NRC RO Exam

68.

Which ONE of the following provides the correct value for the associated Federal Annual Exposure Limits?

	<u>Extremities</u>	<u>Skin</u>	<u>Lens of eye</u>
A.	15 rem/yr	50 rem/yr	5 rem/yr
B.	50 rem/yr	50 rem/yr	15 rem/yr
C.	50 rem/yr	15 rem/yr	5 rem/yr
D.	50 rem/yr	15 rem/yr	15 rem/yr

NAPS 2010 NRC RO Exam

69.

In accordance with 0-FCA-1, Control Room Fire, RCS cooldown rate shall be _____, and a 29-hour hold is NOT required prior to depressurizing the RCS provided _____.

- A. less than 15°F/hr ; at least one CRDM fan is running.
- B. less than 15°F/hr ; three CRDM fans are running.
- C. less than 50°F/hr ; at least one CRDM fan is running.
- D. less than 50°F/hr ; three CRDM fans are running.

NAPS 2010 NRC RO Exam

70.

Which ONE of the following would result in an emergency event classification in accordance with the EAL Matrix?

- A. RCS identified leakage is determined to be 8.3 gpm.
- B. Unit 1 enters TS 3.0.3.
- C. An unconfirmed security threat is received.
- D. Offsite power was lost one hour ago and has not been restored.

NAPS 2010 NRC RO Exam

71.

Given the following conditions:

- Unit 1 tripped from 100% power due to a spurious safety injection.
- The crew has transitioned to 1-ES-1.1, SI Termination.

The OATC is performing Step 1, Reset Both Trains of SI, and notes that annunciator 1P-H2, AUTO SI BLKD TRNS A&B, is FLASHING.

Which ONE of the following identifies the SSPS status, **AND** includes the action the crew should take?

- A. BOTH trains of SSPS have failed to RESET;
reset both trains by closing and then opening Reactor Trip Breakers to clear the seal-in.
- B. BOTH trains of SSPS have failed to RESET;
place both trains of SSPS in TEST and locally reset BOTH trains.
- C. ONE train of SSPS has failed to RESET;
reset the affected train by closing and then opening Reactor Trip Breakers to clear the seal-in.
- D. ONE train of SSPS has failed to RESET;
place the affected train of SSPS in TEST and locally reset the affected train.

NAPS 2010 NRC RO Exam

72.

Given the following conditions:

- Unit 1 was initially at 100% power with 1-FW-P-2 tagged out.
- A Reactor Trip occurred, and multiple failures have resulted in a loss of all AFW pumps.
- The crew has transitioned to 1-FR-H.1, Response to Loss of Secondary Heat Sink.

Attempts to start a MFW pump proved unsuccessful, and the crew is attempting to establish SG feed flow from the Condensate system.

Which ONE of the following describes how conditions are established to feed from the Condensate system, **AND** includes the reason?

- A. Depressurize ONLY one SG to reduce the probability of a PTS condition.
- B. Depressurize ONLY one SG to maximize time before bleed and feed criteria are met.
- C. Depressurize ALL SGs to ensure even cooling of the RCS.
- D. Depressurize ALL SGs to minimize the probability of an undesired SI actuation.

NAPS 2010 NRC RO Exam

73.

Following a large-break LOCA, the crew has completed 1-ES-1.3, Transfer to Cold Leg Recirculation, Step 9, Align SI System For Cold Leg Recirculation.

The following conditions exist:

- Amps and flow are oscillating on both Low-head SI pumps.
- The STA reports that a RED path exists on heat sink.

Which ONE of the following describes the correct actions **AND** implementation of procedures for these conditions?

- A. Perform 1-ES-1.3, Attachment 3, Containment Sump Screen Blockage or Loss of Suction; Do NOT implement 1-FR-H.1, Response to Loss of Secondary Heat Sink, until directed in 1-E-1, Loss of Reactor or Secondary Coolant.
- B. Perform 1-ES-1.3, Attachment 3, Containment Sump Screen Blockage or Loss of Suction; Do NOT implement 1-FR-H.1, Response to Loss of Secondary Heat Sink, until directed in Attachment 3 OR 1-ECA-1.1, Loss of Emergency Coolant Recirculation.
- C. Immediately transition to 1-FR-H.1, Response to Loss of Secondary Heat Sink.
- D. Immediately transition to 1-ECA-1.1, Loss of Emergency Coolant Recirculation.

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74.

Given the following conditions:

- Unit 1 was initially at 100% power.
- "B" SG faulted inside Containment.
- The crew is unable to terminate SI, and have determined that "B" SG is also ruptured.

The crew has completed the appropriate EOP transitions, and is now performing 1-ECA-3.1, SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired.

The STA reports the following:

- RWST Level is 38% and slowly decreasing.
- There is an ORANGE Path on Containment Sump Level (sump level is 11 feet and slowly increasing).
- There are no other RED or ORANGE paths.

Which ONE of the following identifies the appropriate procedure transitions for these conditions?

- A. DO NOT transition to 1-FR-Z.2, Response to High Containment Sump Level; remain in 1-ECA-3.1 and continue recovery actions.
- B. DO NOT transition to 1-FR-Z.2, Response to High Containment Sump Level; transition to 1-ES-1.3, Transfer to Cold Leg Recirculation.
- C. Transition to 1-FR-Z.2, Response to High Containment Sump Level, to identify the source of water; then return to 1-ECA-3.1 and continue recovery actions.
- D. Transition to 1-FR-Z.2, Response to High Containment Sump Level, to identify the source of water; transition to 1-ES-1.3, Transfer to Cold Leg Recirculation.

NAPS 2010 NRC RO Exam

75.

Given the following conditions:

- Unit 1 core off-load is in progress.
- A recently-irradiated fuel assembly drops while placing it into the containment upender.
- Bubbles are coming to the surface of the reactor cavity.

The following radiation monitors are in alarm:

- 1-RM-RMS-159, Containment Gaseous R/M.
- 1-RM-RMS-160, Containment Particulate R/M.
- 1-RM-RMS-162, Manipulator Crane Area R/M.

Based on these conditions, which ONE of the following describes actions that will initially be required in accordance with 0-AP-30, Fuel Failure During Handling?

- A. Place Fuel Building ventilation in service through the charcoal filters; evacuate the Containment only.
- B. Place Fuel Building ventilation in service through the charcoal filters; evacuate the Fuel Building and the Containment.
- C. Manually initiate Control Room bottled air dump; evacuate the Containment only.
- D. Manually initiate Control Room bottled air dump; evacuate the Fuel Building and the Containment.

NAPS 2010 NRC 140 Written exam
RO/SRO answer key

Answers		
#	ID	I
1	001AK1.03 1	D
2	002K4.07 2	C
3	003K5.02 3	B
4	004G2.1.19 4	B
5	004K6.15 5	A
6	005K6.03 6	D
7	006K6.18 7	B
8	007EK2.02 8	B
9	007K4.01 9	B
10	007K5.02 10	B
11	008A3.10 11	C
12	008AK3.02 12	A
13	008G2.4.45 13	A
14	009EA1.03 14	D
15	010A3.0.2 15	B
16	011EK1.01 16	D
17	012K2.01 17	C
18	012K5.01 18	B
19	013K2.01 19	C
20	013K4.06 20	B
21	014A2.02 21	B
22	015AK2.08 22	C
23	015K2.01 23	B
24	017A1.01 24	C
25	022A1.01 25	D
26	025AK2.03 26	A
27	026A2.05 27	D
28	026AA1.03 28	D
29	027AK3.01 29	D
30	029K1.03 30	C
31	032AA2.06 31	B
32	033AA1.01 32	B
33	034A4.01 33	A
34	036AK3.01 34	C
35	037AG2.1.20 35	C
36	038EA2.16 36	C
37	039A4.01 37	B
38	040AK1.04 38	D
39	045K3.01 39	D
40	055EK1.02 40	A
41	055G2.4.3 41	B
42	056AG2.4.9 42	C
43	057AG2.4.45 43	C
44	059A1.07 44	A

Answers

#	ID	I
45	059K1.04 45	C
46	061G2.1.23 46	A
47	062A1.03 47	B
48	062AA2.01 48	B
49	062K1.04 49	B
50	063K4.04 50	D
51	064A4.10 51	A
52	065AG2.1.27 52	D B
53	068K6.10 53	D
54	073A2.02 54	B
55	074EK1.03 55	D
56	076K1.07 56	D
57	077AA1.02 57	A
58	078K2.01 58	A
59	086K5.03 59	D
60	103K3.03 60	C
61	G2.1.19 61	A
62	G2.1.20 62	A
63	G2.1.9 63	D
64	G2.2.2 64	B
65	G2.2.37 65	B
66	G2.3.11 66	D
67	G2.3.13 67	A
68	G2.3.4 68	B
69	G2.4.27 69	B
70	G2.4.4 70	D
71	WE02EK2.1 71	D
72	WE05EK3.3 72	D
73	WE11EA2.1 73	B
74	WE15EK2.2 74	C
75	WE16EG2.4.50 75	C
76	001AA2.03 76	C
77	006G2.2.39 77	B
78	008AA2.25 78	B
79	010G2.4.31 79	D
80	015A2.03 80	A
81	016A2.01 81	D
82	025AG2.2.36 82	D
83	026A2.02 83	C
84	027G2.4.30 84	C
85	028AA2.12 85	D
86	035A2.02 86	A
87	036AG2.4.8 87	D
88	058AA2.02 88	A

Answers

#	ID	I
89	064A2.06 89	B
90	065AA2.06 90	B
91	068AG2.2.40 91	C
92	G2.1.31 92	C
93	G2.1.35 93	A
94	G2.2.20 94	D
95	G2.2.39 95	D
96	G2.3.14 96	A
97	G2.3.6 97	A
98	G2.4.26 98	B
99	WE04EA2.1 99	D
100	WE05G2.4.20 100	C