

**U.S. Nuclear Regulatory Commission  
2013 HNP NRC  
Site-Specific RO Written Examination****Applicant Information**

Name:

Date:

Facility/Unit: Harris Nuclear Plant

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

*Rec'd  
10/2/13*

## Answers

#	ID	Points	Type	0
1	2013 NRC RO 1	1.00	MCS	C
2	2013 NRC RO 2	1.00	MCS	A
3	2013 NRC RO 3	1.00	MCS	A
4	2013 NRC RO 4	1.00	MCS	A
5	2013 NRC RO 5	1.00	MCS	D
6	2013 NRC RO 6	1.00	MCS	A
7	2013 NRC RO 7	1.00	MCS	B
8	2013 NRC RO 8	1.00	MCS	C
9	2013 NRC RO 9	1.00	MCS	B
10	2013 NRC RO 10	1.00	MCS	A
11	2013 NRC RO 11	1.00	MCS	A
12	2013 NRC RO 12	1.00	MCS	D
13	2013 NRC RO 13	1.00	MCS	C
14	2013 NRC RO 14	1.00	MCS	C
15	2013 NRC RO 15	1.00	MCS	C
16	2013 NRC RO 16	1.00	MCS	A
17	2013 NRC RO 17	1.00	MCS	C
18	2013 NRC RO 18	1.00	MCS	B
19	2013 NRC RO 19	1.00	MCS	D
20	2013 NRC RO 20	1.00	MCS	A
21	2013 NRC RO 21	1.00	MCS	C
22	2013 NRC RO 22	1.00	MCS	C
23	2013 NRC RO 23	1.00	MCS	A
24	2013 NRC RO 24	1.00	MCS	B
25	2013 NRC RO 25	1.00	MCS	D
26	2013 NRC RO 26	1.00	MCS	<del>A</del> C
27	2013 NRC RO 27	1.00	MCS	D
28	2013 NRC RO 28	1.00	MCS	C
29	2013 NRC RO 29	1.00	MCS	A
30	2013 NRC RO 30	1.00	MCS	B
31	2013 NRC RO 31	1.00	MCS	C
32	2013 NRC RO 32	1.00	MCS	B
33	2013 NRC RO 33	1.00	MCS	C
34	2013 NRC RO 34	1.00	MCS	B
35	2013 NRC RO 35	1.00	MCS	A
36	2013 NRC RO 36	1.00	MCS	D
37	2013 NRC RO 37	1.00	MCS	A
38	2013 NRC RO 38	1.00	MCS	C
39	2013 NRC RO 39	1.00	MCS	B
40	2013 NRC RO 40	1.00	MCS	C
41	2013 NRC RO 41	1.00	MCS	C
42	2013 NRC RO 42	1.00	MCS	C
43	2013 NRC RO 43	1.00	MCS	A
44	2013 NRC RO 44	1.00	MCS	B
45	2013 NRC RO 45	1.00	MCS	B
46	2013 NRC RO 46	1.00	MCS	C
47	2013 NRC RO 47	1.00	MCS	D
48	2013 NRC RO 48	1.00	MCS	C

## Answers

#	ID	Points	Type	0
49	2013 NRC RO 49	1.00	MCS	B
50	2013 NRC RO 50	1.00	MCS	B
51	2013 NRC RO 51	1.00	MCS	C
52	2013 NRC RO 52	1.00	MCS	A
53	2013 NRC RO 53	1.00	MCS	A
54	2013 NRC RO 54	1.00	MCS	B
55	2013 NRC RO 55	1.00	MCS	A
56	2013 NRC RO 56	1.00	MCS	A
57	2013 NRC RO 57	1.00	MCS	B
58	2013 NRC RO 58	1.00	MCS	B
59	2013 NRC RO 59	1.00	MCS	C
60	2013 NRC RO 60	1.00	MCS	A
61	2013 NRC RO 61	1.00	MCS	B
62	2013 NRC RO 62	1.00	MCS	A
63	2013 NRC RO 63	1.00	MCS	A
64	2013 NRC RO 64	1.00	MCS	D
65	2013 NRC RO 65	1.00	MCS	B
66	2013 NRC RO 66	1.00	MCS	D
67	2013 NRC RO 67	1.00	MCS	C
68	2013 NRC RO 68	1.00	MCS	B
69	2013 NRC RO 69	1.00	MCS	B/D
70	2013 NRC RO 70	1.00	MCS	C
71	2013 NRC RO 71	1.00	MCS	B
72	2013 NRC RO 72	1.00	MCS	C
73	2013 NRC RO 73	1.00	MCS	D
74	2013 NRC RO 74	1.00	MCS	B
75	2013 NRC RO 75	1.00	MCS	D
<b>SECTION 1 ( 75 items)</b>		<b>75.00</b>		

1. Given the following plant conditions:

- A Reactor Trip occurs due to lowering RCS Pressure
- 'A' Reactor Trip breaker is OPEN
- 'B' Reactor Trip breaker is CLOSED
- The crew is implementing E-0, Reactor Trip or Safety Injection to stabilize the plant when RCS pressure reaches the low RCS pressure safety injection setpoint

Which ONE of the following completes the statements below?

When directed to reset safety injection in E-0, the operator must wait a MINIMUM of \_\_\_\_ (1) \_\_\_\_ seconds after the SI signal actuation.

Based on the current conditions, safety injection reset AND automatic block can be performed on \_\_\_\_ (2) \_\_\_\_ .

- A. (1) 150  
(2) 'A' Train ONLY
- B. (1) 150  
(2) 'A' AND 'B' Train
- C. (1) 60  
(2) 'A' Train ONLY
- D. (1) 60  
(2) 'A' AND 'B' Train

2. Given the following plant conditions:

- A LOCA occurs through a stuck open PZR Safety Valve
- The crew transitions to ES-1.2, Post LOCA Cooldown and Depressurization

WHICH ONE of the following completes BOTH of the statements below?

In accordance with ES-1.2, Pressurizer heaters \_\_\_\_ (1) \_\_\_\_.

The basis for this restriction on heater operation is that \_\_\_\_ (2) \_\_\_\_.

- A. (1) are NOT allowed to be energized until a TSC evaluation is provided  
(2) PZR level instruments may have measurement errors
- B. (1) are NOT allowed to be energized until a TSC evaluation is provided  
(2) heater elements may have been previously damaged
- C. (1) CAN be energized without a TSC evaluation if PZR level is at least 25%  
(2) PZR level instruments may have measurement errors
- D. (1) CAN be energized without a TSC evaluation if PZR level is at least 25%  
(2) heater elements may have been previously damaged

3. Given the following plant conditions:

- All RCPs are running
- RCS pressure is 920 psig and slowly LOWERING
- SI flow is 100 GPM
- Containment pressure is 3.2 psig and slowly RISING
- SG pressures are 1120 psig

Which ONE of the following completes the statements below, in accordance with E-1, Loss of Reactor Or Secondary Coolant?

RCPs   (1)   be tripped.

  (2)   is the MINIMUM pressure above which the crew will transition to ES-1.2, Post LOCA Cooldown and Depressurization, where the SGs will be required for RCS cooldown.

A. (1) must NOT

(2) 230 psig

B. (1) must NOT

(2) 360 psig

C. (1) must

(2) 230 psig

D. (1) must

(2) 360 psig

4. Given the following plant conditions:

- The crew is implementing E-1, Loss Of Reactor Or Secondary Coolant
- Intermediate range flux is  $3 \times 10^{-11}$  amps and lowering
- Containment pressure is 26.5 psig and lowering
- RCS pressure is 675 psig and lowering
- SG pressure is 950 psig and lowering
- SI flow is 630 gpm

Which ONE of the following predicts the status of the Source Range Detectors and identifies the required RHR pump alignment in accordance with E-1?

- A. are energized; Leave RHR Pumps running
- B. are energized; Stop RHR Pumps
- C. are de-energized; Stop RHR Pumps
- D. are de-energized; Leave RHR pumps running

5. Given the following conditions:

- The Reactor is at 45% power
- RCP 'B' trips
- ALB-010, 6-3A, RCS Loop A Tavg Hi/Lo Dev, is in alarm

Given the above conditions, which of the following completes the statements below?

SG 'B' Level will initially   (1)  .

In accordance with APP-ALB-010 the crew will   (2)  .

A. (1) rise

(2) trip the Reactor and Go to E-0, Reactor Trip or Safety Injection

B. (1) rise

(2) commence a Reactor shutdown using GP-006, Normal Plant Shutdown from Power Operation to Hot Standby

C. (1) lower

(2) trip the Reactor and Go to E-0, Reactor Trip or Safety Injection

D. (1) lower

(2) Commence a Reactor shutdown using GP-006, Normal Plant Shutdown from Power Operation to Hot Standby



6. Given the following plant conditions:

- The unit is in Mode 6
- Auto makeup to the VCT is unavailable
- VCT level is currently 19% and slowly lowering

Which ONE of the following is required in accordance with AOP-003, Malfunction of Reactor Makeup Control, Attachment 5, Manual Makeup in Modes 5 & 6?

- A. From the MCB: Open 1CS-291 & 292, CSIP Suctions From RWST AND close 1CS-165 & 166 VCT Outlet valves
- B. Locally: Open 1CS-278, Emergency Boric Acid Addition AND 1CS-274, Manual Blend From RMWST Isol valve
- C. From the MCB: Start one Boric Acid pump, open 1CS-283 (FK-113 Borc Acid Flow), 1CS-156 (FCV-113B, Makeup to CSIP Suction) and 1CS-151 (FCV-114, RWMU To Boric Acid Blender)
- D. Locally: Open 1CS-287, Alt Emergency Boration Manual Isol AND 1CS-274, Manual Blend From RMWST Isol valve

7. Given the following plant conditions:
- The unit is operating at 100% power
  - CCW Surge Tank level is 50% and lowering

Which ONE of the following completes both statements below?

The FIRST level at which annunciator ALB-005, 6-1, CCW Surge Tank High-Low Level, will alarm while level lowers is (1).

In accordance with AOP-014, Loss Of Component Cooling Water, an action required for this condition is (2).

- A. (1) 38%  
(2) SHUT 1CC-299, RCP Bearing Oil Coolers Return.
- B. (1) 40%  
(2) SHUT 1CC-299, RCP Bearing Oil Coolers Return.
- C. (1) 38%  
(2) SHUT 1CC-252, RCP Thermal Barriers Flow Control.
- D. (1) 40%  
(2) SHUT 1CC-252, RCP Thermal Barriers Flow Control.

8. Given the following plant conditions:

- The unit is operating at 100% power BOL conditions
- Steam Dumps are in the  $T_{avg}$  mode
- A Turbine trip occurs
- The Reactor does NOT trip

Which ONE of the following completes both statements?

**(Assuming NO operator actions)**

Reactor Delta T indications TI-412A, 422A, and 432A, RCS Loop Prot Delta Ts will  
\_\_\_\_(1)\_\_\_\_.

SG Safety valves will \_\_\_\_ (2) \_\_\_\_.

- A. (1) rise  
(2) lift
- B. (1) rise  
(2) not lift
- C. (1) lower  
(2) lift
- D. (1) lower  
(2) not lift

9. Given the following plant conditions:

- The unit is in Mode 3
- GP-007, Normal Plant Cooldown Mode 3 to Mode 5, is in progress
- PRZ LO PRESS TRAIN A and B SI BLOCKED status lights are illuminated
- STM LINE ISOL TRAIN A and B SI BLOCKED status lights are illuminated
- RCS  $T_{avg}$  is 485°F
- RCS pressure is 1875 psig
- All SG pressures are 625 psig

A fault on the 'A' SG occurs inside Containment and the following conditions exist:

- Containment is 2.6 psig and rising
- 'A' SG pressure has lowered to 450 psig in the last 30 seconds

Which ONE of the following identifies (1) the ESFAS signal(s) that has (have) automatically initiated AND (2) the reason for the initiation?

A. (1) MSL Isolation ONLY

(2) 'A' SG pressure has lowered below the low pressure actuation setpoint.

B. (1) MSL Isolation ONLY

(2) 'A' SG pressure has exceeded the rate actuation setpoint.

C. (1) MSL Isolation AND MFW Isolation

(2) 'A' SG pressure has lowered below the low pressure actuation setpoint.

D. (1) MSL Isolation AND MFW Isolation

(2) 'A' SG pressure has exceeded the rate actuation setpoint.

10. Given the following plant conditions:
- The unit is operating at 100% power

Which ONE of the following predicts the Main FW Pump response, if any, to an inadvertant actuation of Train 'B' Safety Injection?

- A. Both Main FW pumps immediately trip
- B. No Main FW pump trip is initially generated; Both MFW pumps will trip when Tavg lowers to  $< 564^{\circ}\text{F}$
- C. ONLY 'B' Main FW pump will trip
- D. 'B' Main FW pump will trip, 'A' Main FW pump continues to run until Tavg lowers to  $< 564^{\circ}\text{F}$

11. Given the following plant conditions:

- The unit is operating at 100% power when the following annunciators are reported to the CRS:
  - ALB-022-1-2, Start Up XFMR-A Both 230KV Bkrs Open
  - ALB-022-9-2, Start Up XFMR-B Both 230KV Bkrs Open
  - ALB-018-1-3, Turbine Trip Reactor Trip P4
  - ALB-025-3-3, Diesel Generator B Start Failure
  - ALB-002-2-4A, Condsr Pre Trip Low Vacuum
- The crew is implementing ES-0.1, Reactor Trip Response

Based on the above conditions, (1) which AOP is required to mitigate the current conditions AND (2) what is the status of FW isolation valves?

1FW-159, Main FW A Isolation  
1FW-277, Main FW B Isolation  
1FW-217, Main FW C Isolation

- A. (1) AOP-025, Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)  
(2) OPEN
- B. (1) AOP-025, Loss of One Emergency AC Bus (6.9KV) or One Emergency DC Bus (125V)  
(2) CLOSED
- C. (1) AOP-039, Startup And Auxiliary Transformer Trouble  
(2) OPEN
- D. (1) AOP-039, Startup And Auxiliary Transformer Trouble  
(2) CLOSED

12. Given the following plant conditions:

- The unit is operating at 100% power
- ALB-015, 4-5, Channel III UPS Trouble has just alarmed
- Feed flows to all SG's have not changed
- The S-III inverter static switch has shifted to the bypass alignment

Which ONE of the following completes both statements below in accordance with ALB-015, 4-5?

The 7.5 KVA Instrument Bus III INVERTER (1).

Instrument Bus III is currently powered from (2).

- A. (1) has lost DC power ONLY  
(2) the 7.5KVA Instrument Bus III Inverter
- B. (1) has lost DC power ONLY  
(2) 1A21
- C. (1) has lost AC and DC power  
(2) 1D21
- D. (1) has lost AC and DC power  
(2) 1A21

13. Given the following plant conditions:

- The plant is operating at 100% power
- 'B' Train Safety Equipment is in service
- Both ESW Pumps are running to support surveillance testing

The following indications and annunciators are observed:

- ALB-02-4-5, SERV WTR LEAKAGE
- ALB-02-5-5, SERV WTR HEADER A HIGH/LOW FLOW
- ALB-02-6-1, SERV WTR SUPPLY HEADER A LOW PRESS
- CNMT Sump level is increasing on ERFIS

The crew enters AOP-022, Loss of Service Water and secures the 'A' ESW Pump.

Which ONE of the following actions in accordance with AOP-022, identifies (1) the possible location of the rupture AND (2) the action required by the procedure?

- A. (1) CNMT Fan Coil Units
  - (2) Shut 1SW-231, NNS CNMT Fan CLRS Inlet Isol, AND 1SW-242, NNS CNMT Fan CLRS Outlet Isol
- B. (1) CNMT Fan Coil Units
  - (2) Shut 1SW-231, NNS CNMT Fan CLRS Inlet Isol, AND 1SW-276, Headers A&B Return to Normal Service Water
- C. (1) CNMT Fan Coolers
  - (2) Shut ONLY AH-2/3 ESW Supply and Return Valves
- D. (1) CNMT Fan Coolers
  - (2) Shut AH-1/2/3/4 ESW Supply and Return Valves



14. Given the following plant conditions:

- The crew is currently implementing E-3, Steam Generator Tube Rupture
- The OAC reports Train 'A' Phase A valves will not open after resetting Phase A

Based on the above conditions, which ONE of the following completes the statements below?

The required RCS depressurization will be accomplished using   (1)   .

The E-3 RCS depressurization termination criteria, when using the PZR Spray Valves, is   (2)   the termination criteria when the PZR PORVs are used to depressurize the RCS.

A. (1) PZR Spray Valves

(2) different than

B. (1) PZR Spray Valves

(2) exactly the same as

C. (1) PZR PORVs

(2) different than

D. (1) PZR PORVs

(2) exactly the same as

15. Given the following plant conditions:

- The unit is operating at 100% power
- Grid frequency is beginning to lower

Which ONE of the following completes the following statements in accordance with AOP-028, Grid Instability?

The highest frequency, below which entry into AOP-028 will be required is \_\_\_\_ (1) \_\_\_\_ .

The highest frequency at which an automatic Reactor trip, as well as a trip of all RCPs, will occur is \_\_\_\_ (2) \_\_\_\_ .

A. (1) 59.0 Hz

(2) 57.5 Hz

B. (1) 59.0 Hz

(2) 58.4 Hz

C. (1) 59.5 Hz

(2) 57.5 Hz

D. (1) 59.5 Hz

(2) 58.4 Hz

16. Given the following plant conditions:

- The unit was operating at 100% power
- A LOCA has occurred in the RAB and the crew is implementing ECA-1.2, LOCA Outside Containment, step 6 - check break isolated

Which ONE of the following identifies (1) a parameter trend, which is used to confirm that the break is isolated, AND (2) the reason for the trend?

- A. (1) RCS pressure rising  
(2) SI flow is filling up the RCS
- B. (1) RCS pressure rising  
(2) Main Steam Lines are isolated
- C. (1) PZR level rising  
(2) SI flow is filling up the RCS
- D. (1) PZR level rising  
(2) Main Steam Lines are isolated

17. Given the following plant conditions:

- Bleed & Feed is in progress in accordance with FR-H.1, Response to Loss of Secondary Heat Sink
- Main Feedwater is now available
- No AFW Pumps are available
- Core Exit Thermocouple temperatures are stable
- All SG wide range levels are 10%

Which ONE of the following completes the statements below in accordance with FR-H.1, Attachment 1, Guidance on Restoration of Feed Flow?

Feed one intact SG at no more than (1).

Feed flow may be raised to maximum rate as soon as SG Wide Range level rises to greater than (2).

- A. (1) 50 KPPH  
(2) 15%
- B. (1) 50 KPPH  
(2) 25%
- C. (1) the lowest controllable rate  
(2) 15%
- D. (1) the lowest controllable rate  
(2) 25%

18. Given the following plant conditions:

- A LOCA has occurred
- Containment pressure is 15 psig and LOWERING
- Due to a failure of A and B train, CNMT Sump to RHR Pump suction valves, the crew has transitioned from E-1, Loss of Reactor Or Secondary Coolant to ECA-1.1, Loss Of Emergency Coolant Recirculation
- Two CSIPs, two Containment Fan Coolers, both CT pumps and both RHR pumps are running
- RWST level is approximately 30% and lowering
- Wide Range Containment Sump level is 140 inches

Which ONE of the following identifies (1) the reason why 'A' CT pump is required to be secured AND (2) another required action if RWST level lowers to 3% while the crew continues with ECA-1.1?

**(Reference provided)**

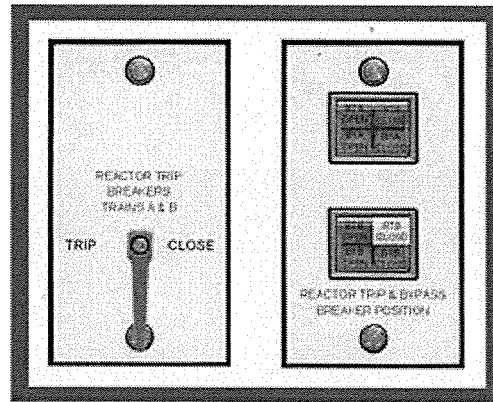
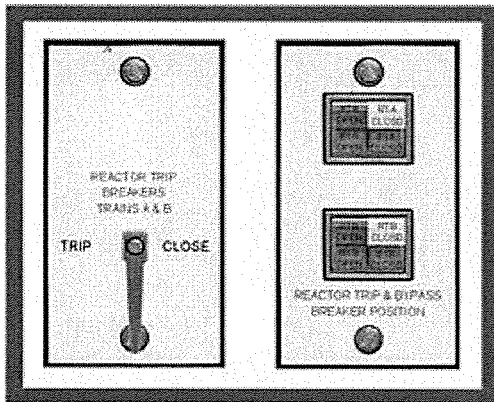
- A. (1) Preserve RWST inventory
  - (2) secure the other Containment Spray pump when Containment pressure is less than 10 psig
- B. (1) Preserve RWST inventory
  - (2) establish makeup to the RCS from an alternate source
- C. (1) Preclude unnecessary entry into FR-Z.2, Reponse To Containment Flooding
  - (2) secure the other Containment Spray pump when Containment pressure is less than 10 psig
- D. (1) Preclude unnecessary entry into FR-Z.2, Reponse To Containment Flooding
  - (2) establish makeup to the RCS from an alternate source

19. Given the following plant conditions:

- A Reactor startup is in progress
- The OAC withdraws CBD from 20 steps to the next doubling in accordance with GP-004, Reactor Startup (Mode 3 To Mode 2)
- The OAC releases the Rod Motion switch, but CBD rods continue to withdraw
- The MCB Rx Trip Switch #1 is taken to Trip
- The Reactor Trip Breaker indications change as indicated in the pictures below  
(NOTE: the light bulbs are not blown)

Before Rx Trip Switch # 1 taken to Trip

After Rx Trip Switch # 1 taken to Trip



Which ONE of the following completes the statement below?

The current status of the Reactor is (1) AND the indication of the Reactor Trip Breakers on the MCB indicates a failure of the (2) Trip coil.

For "A"

BK  
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- A. (1) tripped  
(2) UV
- B. (1) tripped  
(2) Shunt
- C. (1) NOT tripped  
(2) UV
- D. (1) NOT tripped  
(2) Shunt

20. A traverse drive system (roller chain) failure has occurred on the fuel transfer system conveyor while the cart was in the horizontal position and loaded with a fuel bundle inside Containment.

Which ONE of the following identifies (1) the back-up method of returning the fuel transfer cart to the Fuel Handling Building (FHB) in accordance with FHP-020, Refueling Operations AND (2) where the equipment is operated?

- A. (1) Emergency pull-out cable  
(2) Inside the Fuel Handling Building
- B. (1) Emergency pull-out cable  
(2) Inside the Containment Building
- C. (1) Auxiliary Crane Traverse  
(2) Inside the Fuel Handling Building
- D. (1) Auxiliary Crane Traverse  
(2) Inside the Containment Building

21. Given the following plant conditions:

- The plant is operating at 100%
- One SG has developed a tube leak and the crew is implementing AOP-016, Excessive Primary Plant Leakage
- Chemistry has been directed to perform CRC-804, Primary to Secondary Leak Rate Monitoring, to quantify the leak rate

Which ONE of the following instrument(s) is/are used to determine the primary to secondary leak rate in accordance with AOP-016?

- A. SG Blowdown Radiation Monitor, REM-01BD-3527
- B. Turbine Building Vent Stack Effluent Monitor, RM-1TV-3536-1
- C. Condenser Vacuum Pump Effluent Monitor, REM-01TV-3534
- D. Main Steam Line Radiation Monitors RM-01MS-3591 SB, 3592 SB, or 3593 SB



22. Given the following plant conditions:

- The unit was operating at 60% power when air leakage into the Condenser resulted in entry in AOP-012, Partial Loss of Condenser Vacuum
- A load reduction was initiated in accordance with AOP-038, Rapid Downpower

<u>Time</u>	<u>Power</u>	<u>Control Bank C</u>	<u>Control Bank D</u>
0800	60%	225 steps	130 steps
0830	50%	223 steps	95 steps
0900	45%	213 steps	85 steps
0930	40%	198 steps	70 steps
1000	35%	178 steps	50 steps

Which ONE of the following identifies the EARLIEST time that the LCO for Technical Specification 3.1.3.6, Control Rod Insertion Limits was not met?

**(Reference provided)**

- A. 0830
- B. 0900
- C. 0930
- D. 1000

23. Given the following plant conditions:

- An RWST leak has occurred
- REM-01MD-3530, Tank Area Drain Transfer Pumps Monitor, is in HIGH alarm
- Contaminated water is filling the retention dike area

Which ONE of the following completes BOTH statements below?

As a result of this radiation alarm, (1) automatically.

In accordance with AOP-008, Accidental Release of Liquid Waste, a leak from the Refueling Water Storage Tank requires manual operation to (2).

- A. (1) the Tank Area Drain Transfer Pump stops  
(2) shut 1FD-109, FD Tank Area Drain Pump 1X Discharge to Storm Drain Valve
- B. (1) the Tank Area Floor Drain Sump Pump stops  
(2) shut 1FD-109, FD Tank Area Drain Pump 1X Discharge to Storm Drain Valve
- C. (1) 1FD-109, FD Tank Area Drain Pump 1X Discharge to Storm Drain Valve shuts  
(2) secure the Tank Area drain pump
- D. (1) 1FD-109, FD Tank Area Drain Pump 1X Discharge to Storm Drain Valve shuts  
(2) secure the Tank Area Floor Drain Sump pump

24. Given the following plant conditions:

- The unit was operating at 100% power
- An 86 Lockout occurs on the 'A' and 'B' SUTs
- Sixty minutes later, the following plant conditions exist:
  - RVLIS Full Range 63% and lowering
  - Core Exit Thermocouples 745°F and rising
  - Containment Pressure 3.5 psig and rising
  - Pressurizer Level 0%
  - SG NR level 'A' 38%
  - SG NR level 'B' 44%
  - SG NR level 'C' 23%

Based on these conditions, which ONE of the following completes the statement below?

The Core Cooling Critical Safety Function Status Tree requires entry into \_\_\_\_ (1) \_\_\_\_  
AND the crew will depressurize the SGs to 130 psig using \_\_\_\_ (2) \_\_\_\_.

- A. (1) FR-C.2, Response To Degraded Core Cooling  
(2) steam dumps
- B. (1) FR-C.2, Response To Degraded Core Cooling  
(2) SG PORVs
- C. (1) FR-C.1, Response To Inadequate Core Cooling  
(2) steam dumps
- D. (1) FR-C.1, Response To Inadequate Core Cooling  
(2) SG PORVs

25. Given the following plant conditions:

- A LOCA has occurred
- The crew is implementing ES-1.2, Post LOCA Cooldown and Depressurization
- Safety Injection has NOT been terminated

Which ONE of the following identifies (1) the parameter used by the operator to determine whether the CLAs are required to be isolated AND (2) the reason the accumulators are isolated under these conditions?

- A. (1) RCS Cold Leg Temperature  
(2) To allow minimum subcooling to be established
- B. (1) RCS Cold Leg Temperature  
(2) To prevent gas binding of the S/G U-tubes
- C. (1) RCS Hot Leg Temperature  
(2) To allow minimum subcooling to be established
- D. (1) RCS Hot Leg Temperature  
(2) To prevent gas binding of the S/G U-tubes

26. The crew has transitioned to E-1, Loss of Reactor or Secondary Coolant and is presently evaluating the RHR System capable of Cold Leg Recirculation.

The following conditions exist:

- Offsite Power has been lost
- EDG 'B' has tripped
- CNMT Pressure is 17 psig and rising
- CNMT High Range Rad Monitors are in alarm
- CNMT Wide Range Sump Level is reading 211 inches
- RVLIS Full Range Level is reading 60%
- RCS Cold Leg Temperature is reading 265°F
- RCS Wide Range Pressure is reading 225 psig
- Core Exit Thermocouples are reading 740°F
- Containment Spray pump 'A' has tripped

Which ONE of the following is the procedure that the crew is required to implement at this time?

- A. FR-Z.1, Response to High Containment Pressure
- B. FR-Z.2, Response to Containment Flooding
- C. FR-C.2, Response to Degraded Core Cooling
- D. FR-P.1, Response to Imminent Pressurized Thermal Shock

27. Which ONE of the following identifies the sources of water, in accordance with the WOG Background Document for FR-Z.2, Response To Containment Flooding, that are the basis for the maximum anticipated containment water level?
- A. Condensate Storage Tank, Emergency Service Water, Reactor Coolant System
  - B. Refueling Water Storage Tank, Emergency Service Water, Reactor Coolant System
  - C. Condensate Storage Tank, Emergency Service Water, Refueling Water Storage Tank
  - D. Refueling Water Storage Tank, Reactor Coolant System, Condensate Storage Tank

28. Given the following plant conditions:

- A plant cooldown is in progress following a planned shutdown in accordance with GP-007, Normal Plant Cooldown Mode 3 To Mode 5 to repair the Reactor Vessel Head
- The following conditions exist for RCP 'B'

<u>Time</u>	<u>Upper Thrust Bearing Temperature</u>	<u># 1 Seal Differential Pressure</u>
0800	154°F	253 psig
0805	159°F	237 psig
0810	165°F	223 psig
0815	174°F	209 psig
0820	183°F	198 psig

Which ONE of the following completes the statements below?

The (1) is the first RCP parameter outside the normal limit.

In accordance with GP-007 the action required under these conditions is (2).

- A. (1) Upper Thrust Bearing Temperature  
(2) stop RCP 'B'
- B. (1) Upper Thrust Bearing Temperature  
(2) open the RCP # 1 Seal Bypass
- C. (1) # 1 Seal Differential Pressure  
(2) stop RCP 'B'
- D. (1) # 1 Seal Differential Pressure  
(2) isolate the RCP 'B' Seal Water Return

29. Given the following plant conditions:

- A Large Break LOCA has occurred
- RWST level indicates 22% and continues to lower
- 1RH-1, RCS Loop A to RHR Pump A-SA is CLOSED

In accordance with ES-1.3, Transfer to Cold Leg Recirculation, which ONE of the following actions completes the statement below to establish the 'A' CSIP alignment for long term operation?

The operator must FIRST \_\_\_\_ (1) \_\_\_\_ 1CS-746 AND then \_\_\_\_ (2) \_\_\_\_ must be OPENED.

1CS-746, CSIP A Alternate Miniflow

1RH-25 SA, Suction From RHR Heat Exchanger A-SA

1SI-340, Safety Injection A train to Cold Leg

A. (1) CLOSE

(2) 1RH-25

B. (1) CLOSE

(2) 1SI-340

C. (1) OPEN

(2) 1RH-25

D. (1) OPEN

(2) 1SI-340



30. Given the following plant conditions:

- The unit was operating at 100% power
- ALB-007-4-3, VCT High-Low Level is in Alarm
- VCT level transmitter LI-115 has failed high
- VCT level transmitter LI-112 reads 14%

Which ONE of the following completes the statements below?

In accordance with AOP-003, Malfunction Of Reactor Makeup Control, the HIGHEST VCT level below which gas binding of the running CSIP is a concern is (1).

Given these conditions, RWST suction valves AND VCT Outlet valves will (2).

1CS-291, Suction from RWST LCV-115B

1CS-292, Suction from RWST LCV-115D

1CS-165, VCT Outlet LCV-115C

1CS-166, VCT Outlet LCV-115E

- A. (1) 5%  
(2) automatically realign
- B. (1) 5%  
(2) require manual realignment
- C. (1) 10%  
(2) automatically realign
- D. (1) 10%  
(2) require manual realignment

31. Which ONE of the following identifies (1) the MINIMUM Containment wide range sump level required to place the RHR system in Cold Leg Recirculation in accordance with ES-1.3, Transfer To Cold Leg Recirculation AND (2) the basis for this level?
- A. (1) 137.5 inches  
(2) ensures the recirculation sump strainers are completely submerged
  - B. (1) 137.5 inches  
(2) ensures the recirculation sump pH level is acceptable
  - C. (1) 142 inches  
(2) ensures the recirculation sump strainers are completely submerged
  - D. (1) 142 inches  
(2) ensures the recirculation sump pH level is acceptable

32. Which ONE of the following completes both statements in accordance with OP-107, CVCS, Attachment 5, Replacing B CSIP with C CSIP?

To align the C CSIP to 1B-SB, a transfer switch located in the RAB, on elevation   (1)   , must be operated.

First, the B Train Kirk Key Lock Switch must be rotated, then   (2)   must be closed.

- A. (1) 236' just south of the 'A' CSIP room  
(2) the transfer switch, which is a knife switch,
- B. (1) 236' just south of the 'A' CSIP room  
(2) a handle must be placed into the handle casting and the transfer switch
- C. (1) 286' Switchgear room  
(2) the transfer switch, which is a knife switch,
- D. (1) 286' Switchgear room  
(2) a handle must be placed into the handle casting and the transfer switch

33. Given the following plant conditions:

- The unit is operating at 100% power
- ALB-009-8-1, Pressurizer Relief Tank High-Low Level Press Or Temp, Alarms
- PRT temperature indicates 105°F
- PRT pressure indicates 8 psig
- PRT level indicates 73%

Which ONE of the following (1) identifies the cause of the alarm AND (2) describes the operator response for this alarm in accordance with the Annunciator Panel Procedure and OP-100, Reactor Coolant System?

- A. (1) PRT level is high  
(2) Drain the PRT to the Reactor Coolant Drain Tank
- B. (1) PRT level is high  
(2) Drain the PRT to the Waste Hold Tank
- C. (1) PRT pressure is high  
(2) Vent the PRT to the Waste Gas Vent Header
- D. (1) PRT pressure is high  
(2) Drain the PRT to the Waste Hold Tank

34. Which ONE of the following completes both statements in accordance with OP-100, Reactor Coolant System?

Per the OP-100, Precautions and Limitation, the MAXIMUM temperature below which the Pressurizer Relief Tank (PRT) should be maintained is (1).

A rapid cool down of the PRT can be performed by draining the PRT and providing makeup water to the spray header from the (2).

- A. (1) 120°F  
(2) RCDT
- B. (1) 120°F  
(2) RMWST
- C. (1) 150°F  
(2) RCDT
- D. (1) 150°F  
(2) RMWST

35. Given the following plant conditions:

- The unit is at 100% Reactor power
- A Reactor trip and Safety Injection has occurred
- Phase 'A' fails to actuate

Which ONE of the following CCW System loads are isolated from the CCW System?

**(Assume NO Operator actions)**

- A. Primary Sample Panel AND Gross Failed Fuel Detector
- B. RCDT heat exchanger AND Excess Letdown heat exchanger
- C. RCDT heat exchanger AND Gross Failed Fuel Detector
- D. Primary Sample Panel AND Excess Letdown heat exchanger

36. Given the following plant conditions:

- The unit is operating at 100% power
- PZR Pressure Channel (PT-445) fails high

Which ONE of the following completes the statement below describing the response of the PZR Pressure Control System to this failure?

\_\_\_\_(1)\_\_\_\_ PZR PORV(s) will OPEN AND remain OPEN until the \_\_\_\_ (2) \_\_\_\_ setpoint is reached.

A. (1) ONE

(2) Safety Injection

B. (1) ONE

(2) P-11, PZR High Pressure

C. (1) TWO

(2) Safety Injection

D. (1) TWO

(2) P-11, PZR High Pressure

37. Given the following plant conditions:

- The unit is at 100% power
- The PZR pressure master controller, PK-444A, is in AUTOMATIC
- A PZR pressure master controller malfunction causes the setpoint to slowly drift to 61% over 10 minutes

Which ONE of the following is the expected plant response to the drifting of the setpoint?

**(Assume NO Operator Actions)**

- A. Both spray valves will open
- B. The control heaters will be at maximum output
- C. Pressure will stabilize at 2280 psig
- D. One PZR PORV will cycle



38. Given the following plant conditions:

- The unit was operating at 8% power when the following parameters are indicated prior to the Reactor automatically tripping:
- PI-455, RCS Pressure is 2380 psig
- PI-456, RCS Pressure is 2390 psig
- PI-457, RCS Pressure is 2400 psig
- LI-459, PRZ Level is 92%
- LI-460, PRZ Level is 90%
- LI-461, PRZ Level is 93%

Which ONE of the following (1) identifies the condition that caused the automatic Reactor trip AND (2) the associated basis for the automatic trip?

A. (1) PZR High Level

(2) provides protection against over pressurizing the RCS.

B. (1) PZR High Level

(2) precludes water relief through the Pressurizer safety valves.

C. (1) PZR High Press

(2) provides protection against over pressurizing the RCS.

D. (1) PZR High Press

(2) precludes water relief through the Pressurizer safety valves.

39. Given the following plant conditions:

- The crew is responding to a Large Break LOCA in E-1, Loss Of Reactor Or Secondary Coolant
- Both RHR pumps are running
  
- The following actions have been taken:
  - SI and Phase A have both been reset
  - Instrument Air and Nitrogen have been restored to Containment

Subsequently, a Loss of Off-site power occurs.

Which ONE of the following completes the statement below?

The sequencers will run in \_\_\_\_ (1) \_\_\_\_ after the Loss of Off-site power AND the RHR pumps \_\_\_\_ (2) \_\_\_\_.

- A. (1) Program A  
(2) will automatically start in load block 2
- B. (1) Program A  
(2) must be manually started after load block 9
- C. (1) Program B  
(2) will automatically start in load block 2
- D. (1) Program B  
(2) must be manually started after load block 9

40. Which ONE of the following completes the statement below?

Instrument Buses \_\_\_\_ (1) \_\_\_\_ AND \_\_\_\_ (2) \_\_\_\_ provide power to the ESFAS Slave Relays.

- A. (1) SI  
(2) SII
- B. (1) SII  
(2) SIII
- C. (1) SI  
(2) SIV
- D. (1) SIII  
(2) SIV

41. Given the following plant conditions:

- The unit was operating at 100% power
- Containment Fan Coolers are in the Normal Cooling mode
- A steam leak into Containment occurs
- Containment pressure is 2.6 psig and rising
- Containment temperature is 135°F and rising

Which ONE of the following completes the statement below?

Containment Fan Coolers are running in \_\_\_\_ (1) \_\_\_\_ speed with the post-accident dampers \_\_\_\_ (2) \_\_\_\_.

**(Assume NO Operator actions)**

- A. (1) SLOW  
(2) SHUT
- B. (1) SLOW  
(2) OPEN
- C. (1) HIGH  
(2) SHUT
- D. (1) HIGH  
(2) OPEN

42. Which ONE of the following completes the statement below?

Following a Containment spray actuation signal, the HIGHEST Containment spray additive tank level at which Containment spray chemical addition valves 1CT-11 and 1CT-12 will auto-close is \_\_\_\_\_ .

- A. 23.4%
- B. 10%
- C. 2%
- D. 0%

43. Given the following plant conditions

- The unit was operating at 100% power
- A LOCA has occurred and the crew is implementing E-1, Loss Of Reactor Or Secondary Coolant
- The CT Pump 'A' tripped while aligned to the RWST

When RWST level reaches the Low-Low level setpoint, which ONE of the following identifies (1) the recirc sump suction valve(s) will automatically open AND (2) after the recirc suction valve(s) reach(es) the full-open position, RWST suction valve(s) which will automatically close?

1CT-105, Containment Sump To CNMT Spray Pump A-SA

1CT-102, Containment Sump To CNMT Spray Pump B-SB

1CT-26, RWST To CNMT Spray Pump A-SA

1CT-71, RWST To CNMT Spray Pump B-SB

- A. (1) 1CT-102 ONLY  
(2) 1CT-71 ONLY
- B. (1) 1CT-102 AND 1CT-105  
(2) 1CT-71 ONLY
- C. (1) 1CT-102 ONLY  
(2) 1CT-26 AND 1CT-71
- D. (1) 1CT-102 AND 1CT-105  
(2) 1CT-26 AND 1CT-71

44. Given the following plant conditions:

- The unit is in MODE 2 at 1% power
- $T_{avg}$  is at the NO load reference value
- A failure of an SG PORV results in the following:
  - Steam Generator pressures at 1028 psig

Which ONE of the following completes BOTH statements below?

Operation of the Condenser Steam Dumps is \_\_\_\_ (1) \_\_\_\_ at this time.

In accordance with GP-004, Reactor Startup (Mode 3 to Mode 2) the operator has 15 minutes to restore temperature to above a MINIMUM of \_\_\_\_ (2) \_\_\_\_.

**(Assume NO operator action)**

- A. (1) blocked  
(2) 553°F
- B. (1) blocked  
(2) 551°F
- C. (1) NOT blocked  
(2) 553°F
- D. (1) NOT blocked  
(2) 551°F

45. Given the following plant conditions:

- The unit is operating at 91% power
- A Loss of Main Feedwater Pump 'B' occurs
- The crew enters AOP-010, Feedwater Malfunctions

Which ONE of the following describes (1) the plant response AND (2) the action required in accordance with AOP-010?

- A. (1) Automatic turbine runback is initiated  
(2) Isolate Steam Generator Blowdown
- B. (1) Automatic turbine runback is initiated  
(2) Trip the Reactor and go to E-0
- C. (1) Automatic turbine runback is NOT initiated  
(2) Isolate Steam Generator Blowdown
- D. (1) Automatic turbine runback is NOT initiated  
(2) Trip the Reactor and go to E-0



46. Given the following plant conditions:

- The unit was operating at 100% Reactor power when a station black out occurs
- The crew is implementing ECA-0.0, Loss of All AC Power
- The TDAFW has been running in automatic with the controller setpoint at 31% for several minutes
- NO operator actions have been taken on the AFW system
- All SG NR levels are approximately 9% and lowering
- AFW flow is currently 160 kpph

Which ONE of the following identifies the action(s) required to be taken for these conditions?

- A. Transition to FR-H.1, Response to Loss of Secondary Heat Sink.
- B. Open 1 SG PORV (on the SG with the highest level) to lower SG pressure.
- C. Place Aux FW Turbine SPD PDK-2180.1 in MAN and depress the output RAISE pushbutton.
- D. Depress the RAISE pushbutton(s) on the TDAFW FCV(s).

47. Given the following plant conditions:

- The unit is operating at 100% power
- Annunciator ALB-014, 7-4, SG A, B, C Backleakage High Temp, has alarmed
- An NLO has been dispatched to verify local temperatures

Which ONE of the following completes BOTH of the statement below?

The reason this condition occurred is because a (1) is leaking.

In accordance with the AOP-010, under these conditions with the TDAFW piping local temperature > 212°F, the FIRST action required is (2).

- A. (1) TDAFW pump steam supply piping check valve  
(2) start the TDAFW pump to flush the line through the exhaust
- B. (1) TDAFW pump steam supply piping check valve  
(2) isolate the TDAFW pump discharge header
- C. (1) AFW feed water piping check valve  
(2) start the TDAFW pump to flush the line to the SGs
- D. (1) AFW feed water piping check valve  
(2) isolate the TDAFW pump discharge header

48. Given the following plant conditions:

- The unit is operating at 100% power
- Aux Bus 1E deenergizes and is locked out

Which ONE of the following describes an effect on the unit?

- A. RCP 'C' is deenergized
- B. CSIP 'A' is momentarily deenergized
- C. CSIP 'B' is momentarily deenergized
- D. CTMU Pump '1X' is deenergized

49. Which ONE of the following completes the statements below in accordance with OP-156.01, DC Electrical Distribution, Section 8.2. Rotation of 125 VDC NNS Battery Chargers?

When placing a 125VDC battery charger in service, its \_\_\_\_ (1) \_\_\_\_ breaker is closed first.

A Low DC Volt alarm \_\_\_\_ (2) \_\_\_\_ expected after this first breaker is closed.

A. (1) DC output

(2) is NOT

B. (1) DC output

(2) is

C. (1) AC input

(2) is NOT

D. (1) AC input

(2) is

50. Given the following plant conditions:

- The unit is currently in MODE 3
- DP-1A-SA has lost power

Which ONE of the following completes the statement below for the 'A' MDAFW Pump?

Breaker control from the MCB   (1)   AND the control switch indication on the MCB will   (2)   .

- A. (1) remains available  
      (2) extinguish
- B. (1) is not available  
      (2) extinguish
- C. (1) remains available  
      (2) remain illuminated
- D. (1) is not available  
      (2) remain illuminated

51. Given the following EDG Fuel Oil Data:

- Both Fuel Oil Day Tanks Specific gravity: 0.835
- Fuel Oil Day Tank 'A': 47%
- Fuel Oil Storage Tank 'A': 90,000 gallons
- Fuel Oil Day Tank 'B': 42%
- Fuel Oil Storage Tank 'B': 110,000 gallons

Which ONE of the following identifies the status of the EDGs in accordance with Technical Specification 3.8.1.1, Electrical Power Systems - AC Sources?

**(Reference provided)**

<u>EDG 'A'</u>	<u>EDG 'B'</u>
A. OPERABLE	OPERABLE
B. OPERABLE	INOPERABLE
C. INOPERABLE	OPERABLE
D. INOPERABLE	INOPERABLE

52. Which ONE of the following identifies an RAB radiation monitor that requires entry into AOP-032, High RCS Activity, when a valid HIGH alarm condition exists?
- A. RM-1RR-3600, Recycle Evaporator Valve Gallery
  - B. RM-21CR-3578A, Recycle Monitor Tank 1A & 2A
  - C. RM-1RR-3605A, Sample Room 1A Elev. 236
  - D. RM-1RR-3611, Recycle Holdup Tank Area

53. Given the following plant conditions:

- The unit is in Mode 4
- 'A' Train safety equipment is in service
- The 'B' NSW pump is tagged out for maintenance
- A Loss of Off-site power occurs
- The 'A' EDG failed to start

Which ONE of the following completes the statement below?

ESW is providing flow to (1) CCW Heat Exchanger(s) with ESW return header flow aligned to the (2).

- A. (1) ONLY 'B'  
(2) Auxiliary Reservoir
- B. (1) ONLY 'B'  
(2) Cooling Tower Basin
- C. (1) 'A' AND 'B'  
(2) Auxiliary Reservoir
- D. (1) 'A' AND 'B'  
(2) Cooling Tower Basin



54. Given the following plant conditions:

- The unit is operating at 100% power
- An Instrument Air leak is occurring
- Instrument Air pressure is currently 85 psig and stable

Which ONE of the following predicts the plant response for the current condition?

- A. All FW flow control valves will CLOSE.
- B. RCS letdown flowpath valves drift to mid-position.
- C. PZR Spray valves drift to mid-position.
- D. Gland Steam Seal Spillover Regulator Valve will OPEN.

55. Which ONE of the following completes the statements below?

There are   (1)   Primary Shield Cooling Fans.

The Primary Shield Cooling Fans are located in the Containment Building at elevation   (2)  .

A. (1) Two

(2) 221'

B. (1) Two

(2) 236'

C. (1) Four

(2) 221'

D. (1) Four

(2) 236'

56. Given the following plant conditions:

- A Loss of Off-site Power occurs while the unit was operating at 100% power
- EDG A-SA failed to start
- Load Block 9 has been verified complete on EDG B-SB
- RCS pressure is 2180 psig

Assuming NO operator action has been taken, which ONE of the following identifies the PZR Heaters group(s) that are currently energized, if any?

- A. None
- B. B only
- C. C only
- D. B and C only

57. Given the following plant conditions:

- The unit is operating at 8% power
- Intermediate Range (IR) N35 is inoperable
- N35 Level Trip Switch is in BYPASS in accordance with OWP-RP-21, Reactor Protection

The following occur:

- At 12:00 N35 Instrument Power fuses blow
- At 12:15 N35 Control Power fuses blow

Which ONE of the following identifies (1) the status of the Reactor Trip Breakers AND (2) the reason for the status of the Reactor Trip Breaker?

- A. (1) OPEN at 12:00  
(2) N35 Instrument Power fuses blew
- B. (1) OPEN at 12:15  
(2) N35 Control Power fuses blew
- C. (1) CLOSED at 12:15  
(2) N35 is BLOCKED in accordance with GP-005, Power Operations
- D. (1) CLOSED at 12:15  
(2) N35 is in BYPASS in accordance with OWP-RP-21

58. Given the following plant conditions:

- The unit is operating at 100% power
- ALB-015-1-5, 7.5 KVA UPS Trouble, alarms

Which ONE of the following identifies (1) the uninterruptible power supply that is potentially affected AND (2) the action taken, if this power supply is lost, per AOP-024, Loss Of Uninterruptible Power Supply?

- A. (1) UPP-1B  
(2) Locally control Steam Dumps
- B. (1) UPP-1B  
(2) Locally control Condensate Booster pumps
- C. (1) UPP-1  
(2) Locally control Steam Dumps
- D. (1) UPP-1  
(2) Locally control Condensate Booster pumps

59. Given the following plant conditions:

- At 0200, the unit was operating at 100% power
- The crew is implementing E-1, Loss of Reactor or Secondary Coolant
- The hydrogen monitoring system has been aligned
  
- At 0400 Containment hydrogen concentration was 0.35% and slowly rising
  
- At 0500 Containment hydrogen concentration was 0.52% and the Hydrogen Recombiner 1A was placed in operation in accordance with OP-125, Post Accident Hydrogen Systems
  
- At 1800 Containment hydrogen concentration has increased to 3.14%

Based on these conditions, which ONE of the following actions is required in accordance with OP-125?

- A. Start the 1B recombimer ONLY when Containment hydrogen concentration exceeds 3.5%, then operate both recombiners.
- B. Start the 1B recombimer ONLY when Containment hydrogen concentration exceeds 4%, then operate both recombiners.
- C. Start the 1B recombimer NOW and operate both recombiners.
- D. Do NOT start the 1B recombimer. Increase the 1A recombimer power by 4 KW.

60. Given the following plant conditions:

- Refueling is in progress.
- A spent fuel assembly is being moved in the Fuel Handling Building (FHB) when it is damaged.
- Spent Fuel Pool area radiation monitor RM-1FR-3566A-SA is in HIGH alarm.
- Spent Fuel Pool area radiation monitor RM-1FR-3567B-SB is in ALERT.

Which ONE of the following completes BOTH of the statements below?

\_\_\_(1)\_\_\_ train(s) of Fuel Handling Building Ventilation Emergency Exhaust has(have) received an automatic start signal.

RM-1FR-3566A-SA radiation monitor \_\_\_(2)\_\_\_ sound an alarm locally.

- A. (1) ONLY 'A'  
(2) will
- B. (1) BOTH 'A' and 'B'  
(2) will
- C. (1) ONLY 'A'  
(2) will NOT
- D. (1) BOTH 'A' and 'B'  
(2) will NOT

61. Which ONE of the following completes the statement below concerning the Waste Gas System in accordance with Technical Specification 3.11.2.5, Radioactive Effluents - Explosive Gas Mixture?

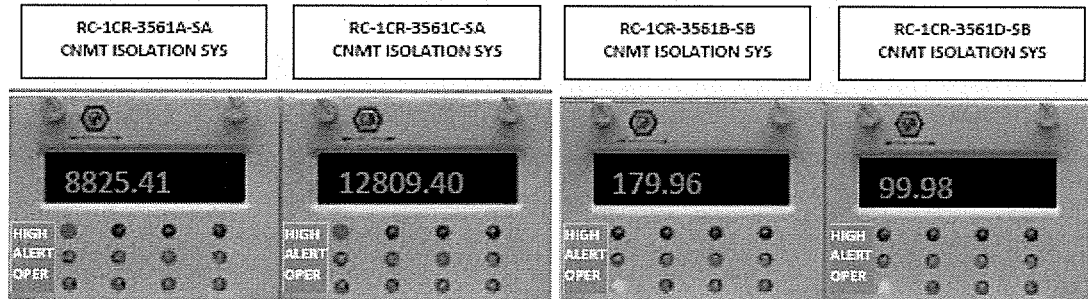
The concentration of oxygen in the GASEOUS RADWASTE TREATMENT SYSTEM downstream of the hydrogen recombiners shall be limited to less than or equal to (1) by volume whenever the hydrogen concentration exceeds (2) by volume.

- A. (1) 2%  
(2) 2%
- B. (1) 2%  
(2) 4%
- C. (1) 4%  
(2) 2%
- D. (1) 4%  
(2) 4%



62. Given the following plant condition:

- The unit is operating at 100% Reactor power
- S-1A, Airborne Radioactivity Removal fan is in AUTO
- Subsequently, CVI rad monitors indicate as follows:



- E-5, Containment Pre-entry Purge Fan failed to trip

Which ONE of the following identifies the system response during these conditions?

- A. Containment Vacuum Relief dampers (CB-D51 SA and CB-D52 SB) receive a CLOSE signal.
- B. Airborne Radioactivity Removal fan S-1A will Auto START.
- C. Containment Isolation Phase "A" isolation valves receive a CLOSE signal.
- D. Containment Pre-entry Purge Makeup fans AH-81A/B receive a TRIP signal.

63. Given the following plant conditions:

- The unit is operating in Mode 4 preparing to start up
- CWP 'A' is running
- NSW Pump 'A' is running

Which ONE of the following completes the statements below?

Opening 1CW-77, Cooling Tower Bypass Valve #1, will \_\_\_\_ (1) \_\_\_\_ the back pressure on the NSW system.

To prevent CTMU Pump run out, the MAXIMUM total flow allowed is \_\_\_\_ (2) \_\_\_\_ gpm.

A. (1) reduce

(2) 30,000

B. (1) reduce

(2) 22,000

C. (1) NOT affect

(2) 30,000

D. (1) NOT affect

(2) 22,000

64. Given the following plant conditions:

- The plant is operating at 100% power
- Air pressure on PI-9751.1, Instrument Air Header Pressure is 80 psig

Which ONE of the following completes the statement below?

1SA-506, Service Air Header Isol. Valve, is   (1)   AND ALB-002, 8-1, Instrument Air Low Pressure Annunciator, is   (2)  .

- A. (1) OPEN  
(2) in Alarm
- B. (1) OPEN  
(2) NOT in Alarm
- C. (1) CLOSED  
(2) in Alarm
- D. (1) CLOSED  
(2) NOT in Alarm

65. Given the following plant conditions:

- The Motor Driven Fire pump has just been stopped per FPT-3001, Motor Driven Main Fire Pump Operability Test Monthly Interval Modes: All
- A fire occurs
- Fire header pressure lowers to 90 psig
- Fire header pressure is now 125 psig and stable

Which ONE of the following completes the statements below?

The Motor-Driven Fire Pump is \_\_\_\_ (1) \_\_\_\_.

The Diesel Driven Fire Pump is \_\_\_\_ (2) \_\_\_\_.

- A. (1) OFF  
(2) OFF
- B. (1) RUNNING  
(2) OFF
- C. (1) OFF  
(2) RUNNING
- D. (1) RUNNING  
(2) RUNNING

66. Which ONE of the following completes the statement below describing the location and control of the Security Master Key in the control room that provides access to plant vital areas?

The Security Master Key is located in a \_\_\_\_ (1) \_\_\_\_ ,

The keys to this Box/Cabinet are controlled by \_\_\_\_ (2) \_\_\_\_.

- A. (1) locked box in the SM desk  
(2) the SM
- B. (1) 'break-glass' cabinet  
(2) the SM
- C. (1) locked box in the CRS desk  
(2) the CRS
- D. (1) 'break-glass' cabinet  
(2) Security

67. Which ONE of the following completes BOTH of the statements below in accordance with OPS-NGGC-1314, Communications?

Standing Instructions   (1)   contain items of long term significance.

During shift turnover, in accordance OPS-NGGC-1314, it is REQUIRED that the crew review   (2)  .

- A. (1) normally  
      (2) ONLY the NEW standing instructions since the last watch
- B. (1) normally  
      (2) ALL current standing instructions
- C. (1) should NOT  
      (2) ONLY the NEW standing instructions since the last watch
- D. (1) should NOT  
      (2) ALL current standing instructions

68. Which ERFIS quality code (AND Color) indicates that an in-core thermocouple has failed due to an open circuit?

- A. REDU (Red)
- B. OPEN (White)
- C. LWRN (Yellow)
- D. DALM (Green)

69. Which ONE of the following identifies an ACCEPTABLE example of a troubleshooting activity in accordance with AP-929, Troubleshooting Guide?

- A. Installing gags on valves
- B. Pulling an annunciator card
- C. Replacing failed components on circuit boards
- D. Temporary M&TE "Test point /jack" connections



70. Given the following plant conditions:

- The unit is operating at 100% power
- Makeup to the 'C' SI Accumulator has just been completed
- 'C' SI Accumulator parameters are as follows:

Boron Concentration	2419 ppm
Pressure	670 psig
Level	68%
1SI-248, Accum 'C' Disch Iso Valve	OPEN
Breaker 1A21-SA-3D, 1SI-248 Accum 'C' Dish	OFF

Based on the current conditions of the 'C' SI Accumulator, which ONE of the following describes the action required in accordance with Technical Specifications 3.5.1, Emergency Core Cooling System - Accumulators?

- A. Restore Level to within limits within 1 hour.
- B. Restore Boron concentration to within limits within 1 hour.
- C. Restore Pressure to within limits within 1 hour.
- D. Restore Disch Iso Valve Breaker to ON within 1 hour.

71. Which ONE of the following completes the statement below in accordance with OP-120.07, Waste Gas Processing?

The MAXIMUM allowed total curie content for Two Gas Decay Tanks cross-tied together is less than \_\_\_\_\_ curies.

- A. 10,000
- B. 20,000
- C. 86,825
- D. 105,000

72. Given the following plant conditions:

- A Refueling Outage is in progress
- You have been assigned to hang a clearance in the RCA, have been briefed, and are preparing to sign on to the RWP
- The survey map records the radiation levels as 1750 mRem/hour in the general area

Which ONE of the following completes the statements below?

The classification for this area in accordance with HPS-NGGC-0003, Radiological Posting, Labeling and Surveys, would be a   (1)   High Radiation Area.

In accordance with OPS-NGGC-1301, Equipment Clearance, independent verification requirements may be waived by the   (2)   if excessive radiation exposure would result.

- A. (1) Very  
      (2) Control Room Supervisor
- B. (1) Very  
      (2) Radiation Control Supervisor
- C. (1) Locked  
      (2) Control Room Supervisor
- D. (1) Locked  
      (2) Radiation Control Supervisor

73. Given the following plant conditions:

- The Reactor has tripped and Safety Injection has actuated due to a Large Break Loss of Coolant Accident (LOCA).
- The crew is implementing E-1, Loss of Reactor Or Secondary Coolant
- The OAC reports the following for Critical Safety Function Status Trees:
  - Containment - Orange
  - Subcriticality - Orange
  - Heat Sink - Red
  - Integrity - Red
  - All others are Green

Which ONE of the following identifies the required procedure transition AND what it is based on?

- A. FR-P.1, Response to Imminent Pressurized Thermal Shock, based on a Severe Challenge to the RPV Integrity
- B. FR-Z.1, Response to High Containment Pressure, based on an Severe Challenge to the Containment
- C. FR-S.2, Response to Loss of Core Shutdown, based on an Severe Challenge to the Subcriticality
- D. FR-H.1, Response to Loss of Secondary Heat Sink, based on an Severe Challenge to the Secondary Heat Sink

74. Given the following plant conditions:

- AOP-036, Safe Shutdown Following a Fire, is being implemented
- MCB level indicators LI-9010A1 SA & LI-9010B1 SB, CST Level, are not available

Which ONE of the following completes the statement below?

In accordance with AOP-036.02, Fire Area 1-A-BAL-A, 1-A-BAL-G, 1-A-BAL-H, the alternate method of checking CST level greater than 10% is to use \_\_\_\_\_.

- A. the local CST level indicator LI-9011
- B. a graph of AFW Pump suction pressure vs CST level
- C. a graph of Condensate Transfer Pump suction pressure vs CST level
- D. the annunciator ALB-017, 5-5, Condensate Storage Tank Low Minimum Level

75. Which ONE of the following completes the statements below in accordance with PEP-230, Control Room Operations?

During an event including an Alert or higher all NLO watch stations should report to the \_\_\_\_ (1) \_\_\_\_ promptly after putting work in a safe conditions.

The \_\_\_\_ (2) \_\_\_\_ must be informed when assigning additional duties to people who were already dispatched to perform another duty and have not yet returned from the first duty assignment.

- A. (1) Operations Support Center  
(2) Site Emergency Coordinator
- B. (1) Operations Support Center  
(2) Plant Operations Director
- C. (1) Main Control Room  
(2) Site Emergency Coordinator
- D. (1) Main Control Room  
(2) Plant Operations Director

**You have completed the test!**

# 2013 ILC NRC Exam

## DUKE ENERGY PROGRESS

### HARRIS TRAINING SECTION

EXAM NUMBER: 2013 NRC LESSON/COURSE CODE: RO6C03H

SUBJECT/CATEGORY: RO Written EXAM POINT VALUE: 75

STUDENT NAME (PLEASE PRINT): \_\_\_\_\_

DATE: \_\_\_\_\_ SSN: \_\_\_\_\_

Prepared by: Archie Lucky / J.R. Horton DATE: 9/01/2013

Exam Validation by: Mike Matheny, Kyle Kelly, Scott Horne DATE: 9/04/2013  
and Eugene Eagle

APPROVED BY: Simon Schwindt DATE: 9/06/2013  
SUPERVISOR OR DESIGNEE

***ALL WORK DONE ON THIS EXAM (INCLUDING CORRECTIONS) IS MY OWN. I HAVE NEITHER GIVEN NOR RECEIVED AID.***

***I AGREE THAT I WILL NOT DIVULGE ANY INFORMATION WITH REGARDS TO THE CONTENT OF THIS EXAMINATION TO ANY UNAUTHORIZED PERSONNEL.***

SIGNATURE: \_\_\_\_\_ DATE \_\_\_\_\_

GRADE: \_\_\_\_\_ GRADED BY: \_\_\_\_\_ DATE \_\_\_\_\_

GRADE VERIFICATION: \_\_\_\_\_ DATE \_\_\_\_\_

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References and/or tools provided for use with the examination include: (list below)

- Calculator
- Steam Tables / Mollier Diagram
- Curve No. F-18-1, Rev. 0
- Curve No. F-X-20, Rev. 1
- ECA-1.1 step 7.b, pg 6, Rev. 0

QA/VITAL RECORD

2013 NRC <sup>20</sup>SRQ Question 18 Reference

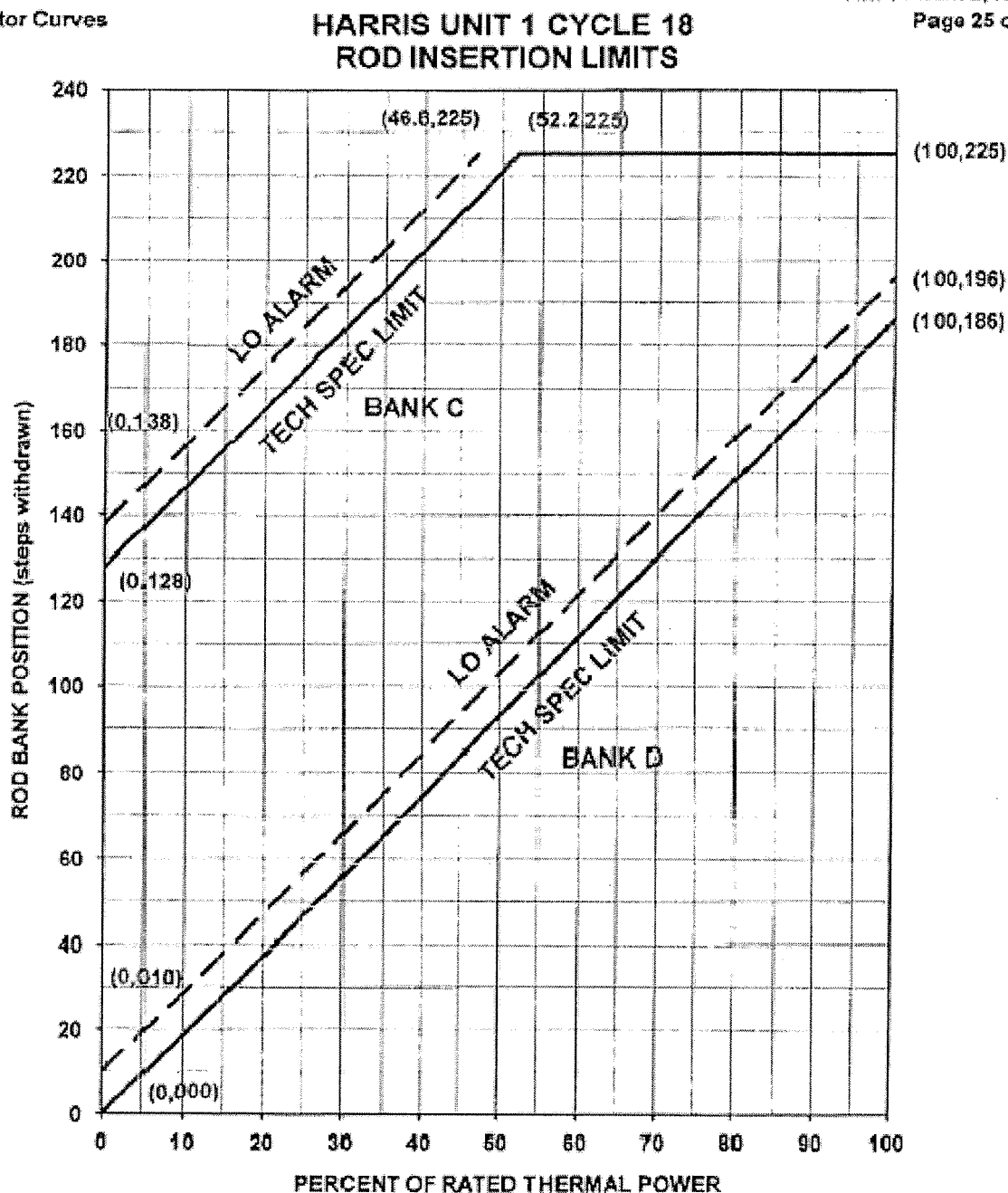
- ☐ b. Determine required number of CNMT spray pumps from Table:

CONTAINMENT SPRAY REQUIREMENTS			
RWST LEVEL	CONTAINMENT PRESSURE	TOTAL # OF FAN COOLER UNITS RUNNING	REQUIRED # OF CNMT SPRAY PUMPS
GREATER THAN 23.4%	GREATER THAN 45 PSIG	N/A	2
	BETWEEN 10 PSIG AND 45 PSIG	0 OR 1	2
		2 OR 3	1
		4	0
	LESS THAN 10 PSIG	N/A	0
BETWEEN 3% AND 23.4%	GREATER THAN 45 PSIG	N/A	2
	BETWEEN 10 PSIG AND 45 PSIG	0, 1 OR 2	1
		3 OR 4	0
	LESS THAN 10 PSIG	N/A	0
LESS THAN 3%	N/A	N/A	0



HNP Cycle 18  
Curvebook  
Operator Curves

HNP-F/NFSA-0210  
Attachment 2, Rev 0  
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CURVE NO.	F-18-1	REV NO.	0
ORIGINATOR	<i>[Signature]</i>	DATE	4-29-12
SUPERVISOR	<i>[Signature]</i>	DATE	4-30-12
SHIFT MANAGER	<i>[Signature]</i>	DATE	5/2/12

