

October 15, 1999

Florida Power and Light Company  
ATTN: Mr. T. F. Plunkett  
President - Nuclear Division  
P. O. Box 14000  
Juno Beach, FL 33408-0420

SUBJECT: NRC EXAMINATION REPORT NOS. 50-250/99-301 AND 50-251/99-301

Dear Mr. Plunkett:

On August 30, through September 16, 1999, the NRC administered examinations to employees of your facility who had applied for licenses to operate the Turkey Point Nuclear Station. At the conclusion of the examination, the examiners discussed the examination questions and preliminary findings with those members of your staff identified in the enclosed report.

The Simulation Facility Report is included in this report as Enclosure 2. A copy of the written examination question and answer keys, as noted in Enclosure 3, was provided to the members of your training staff at the conclusion of the examination.

All seven Senior Reactor Operator (SRO) and Reactor Operator (RO) applicants who received written examinations and operating tests passed the examination, representing a 100 percent pass rate. Several applicants were identified as having some performance deficiencies during the conduct of the Job Performance Measures (JPMs). The individual examination reports should be reviewed to determine if adjustments to the training program, as well as individual remediation, are necessary.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact me at (404) 562-4638.

Sincerely,

Original signed by  
Harold O. Christensen

Harold O. Christensen, Chief  
Operator Licensing and  
Human Performance Branch  
Division of Reactor Safety

Docket Nos. 50-250, 50-251  
License Nos. DPR-31, DPR-41

Enclosures: (See page 2)

DISTRIBUTION CODE  
IE42

- Enclosures: 1. Report Details  
 2. Simulation Facility Report  
 3. Written Examination and Answer Key (SRO)  
 (Document Control Desk Only)

cc w/encls:

Plant General Manager  
 Turkey Point Nuclear Plant  
 Florida Power and Light Company  
 9760 SW 344th Street  
 Florida City, FL 33035

Attorney General  
 Department of Legal Affairs  
 The Capitol  
 Tallahassee, FL 32304

R. J. Hovey  
 Site Vice President  
 Turkey Point Nuclear Plant  
 Florida Power and Light Company  
 9760 SW 344th Street  
 Florida City, FL 33035

William A. Passetti  
 Bureau of Radiation Control  
 Department of Health  
 Electronic Mail Distribution

County Manager  
 Metropolitan Dade County  
 Electronic Mail Distribution

Steve Franzone  
 Licensing Manager  
 Turkey Point Nuclear Plant  
 Florida Power and Light Company  
 Electronic Mail Distribution

Joe Myers, Director  
 Division of Emergency Preparedness  
 Department of Community Affairs  
 Electronic Mail Distribution

John Gianfrancesco, Manager  
 Administrative Support & Special Projects  
 Florida Power & Light Company  
 Electronic Mail Distribution

Ms. Maria L. Lacal  
 Training Manager  
 Turkey Point Nuclear Plant  
 9760 SW 344th Street  
 Florida City, FL 33035

Rajiv S. Kundalkar  
 Vice President - Nuclear Engineering  
 Florida Power & Light Company  
 Electronic Mail Distribution

Distribution w/encls:  
 K. Jabbour, NRR  
 PUBLIC

M. S. Ross, Attorney  
 Florida Power & Light  
 Electronic Mail Distribution

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

**Docket Nos.:** 50-250, 50-251  
**License Nos.:** DPR-31, DPR-41

**Report No.:** 50-250/99-301, 50-251/99-301

**Licensee:** Florida Power & Light

**Facility:** Turkey Point Units 3 and 4

**Location:** Florida City, FL

**Dates:** August 30 through September 16, 1999

**Examiners:** Ronald F. Aiello, Senior License Examiner (Chief)  
Michael E. Ernstes , Senior License Examiner  
Bobby L. Holbrook, Senior Reactor Inspector

**Approved by:** Harold O. Christensen, Chief  
Operator Licensing and Human Performance Branch  
Division of Reactor Safety

**Enclosure 1**

## EXECUTIVE SUMMARY

### Turkey Point Nuclear Power Station Units 3 & 4 NRC Examination Report No. 50-250/99-301 and 50-250/99-301

During the period of August 30 through September 16, 1999, NRC examiners conducted an announced operator licensing initial examination in accordance with the guidance of Examination Standards, (ES) NUREG-1021, Revision 8: This examination implemented the operator licensing requirements of 10 CFR §55.41, §55.43, and §55.45.

Two Senior Reactor Operator (SRO) and five Reactor Operator (RO) applicants received written examinations and operating tests. The written examinations were administered by the NRC and the licensee on August 30, 1999. The operating tests were administered by the NRC the week of September 13, 1999.

#### Operations

- The final submitted written examinations and operating tests met the requirements of NUREG-1021, Revision 8. (Section O5.1)
- All seven of the applicants passed the examination. The examiner identified six questions where the applicants exhibited knowledge deficiencies. (Section O5.1)
- Deficiencies on the operating test were noted in four areas. (Section O5.1)
- The examiner identified inconsistent use of procedures. (Section O8.1)

## Report Details

### Summary of Plant Status

During the period of the examinations both units remained at 100 percent power.

### I. Operations

#### **O5 Operator Training and Qualifications**

##### **O5.1 Initial Licensing Examinations**

###### **a. Scope**

NRC examiners conducted regular, announced operator licensing initial examinations during the period of August 30 through September 16, 1999. NRC examiners administered examinations developed by the licensee's training department, under the requirements of an NRC security agreement, in accordance with the guidelines of the Examination Standards (ES), NUREG-1021, Revision 8. Two Senior Reactor Operator (SRO) instant and five Reactor Operator (RO) applicants received written examinations and operating tests.

###### **b. Observations and Findings**

The licensee developed the SRO and RO written examinations, one Job Performance Measure (JPM) set, three dynamic simulator scenarios, and one spare scenario. All materials were submitted to the NRC on schedule. NRC examiners reviewed, modified as necessary, and approved the examinations prior to administration. The NRC conducted an on-site preparation visit during the week of August 30, 1999, to validate examination materials and familiarize themselves with the details of the examination.

###### **(1) Written Examinations Development**

The examinations were developed in accordance with NUREG 1021, Revision 8.

###### **(2) Operating Test Development**

The NRC reviewed two walkthrough examination sets submitted by the licensee. The licensee elected to use Revision 8 of NUREG-1021 for their examination. Revision 8 removed the requirement for JPM questions. The NRC selected JPMs from both sets to make one. This set met the guidelines of NUREG-1021.

The NRC conducted a review and validation of the three simulator scenarios submitted by the licensee. The scenarios met the guidelines of NUREG-1021.

## (3) Examination Results

The NRC and the licensee training department personnel administered the written examinations on August 30, 1999, in accordance with NUREG-1021, Revision 8. The examiners reviewed the results of the written examinations and found that all seven applicants passed. The examiners concluded that no significant generic training deficiencies existed. The licensee conducted a post-examination item analysis of the SRO and RO written examinations. This analysis identified four questions where both SRO and RO applicants exhibited knowledge deficiencies. The analysis also identified one other SRO specific and one other RO specific knowledge deficiency. The licensee submitted no post-examination comments. The table below lists the questions, topics and subsequent miss rate.

Question #	Miss Rate (RO/SRO/Comb)	Topic
RO # 12/SRO # 19	4 /2 /6	Preferred extinguishing agent for energized electrical without CO2 available
RO # 31/SRO # 36	2 /1 /3	Minimum actions to reestablish feed flow using the standby Steam Generator Feed Pump (SGFP) with no Main Feed (MF) or Auxiliary Feed Water (AFW) pumps
RO # 52/SRO # 56	1 /2 /3	Effect on steam flow and flow control valve if controlling Steam Generator (SG) pressure transmitter fails low
RO # 69/SRO # 73	2 /1 /3	Result or effect seen if during refueling operations a cavity seal failure occurred
RO # 28	3 /0 /0	Expected response of R-15 and R-19 radiation monitors from a SG tube leak after the leaking SG had been isolated
SRO # 20	0 /2 /0	Required identification of energized 480 volt load centers following control room evacuation

The examiners identified several deficiencies in applicant performance during the operating examination. Details of the deficiencies are described in each individual's examination report, Form ES-303-1, "Operator Licensing Examination Report." Copies of the evaluations were forwarded under separate

correspondence to the Site Training Manager. The licensee should evaluate the deficiencies and provide appropriate remedial training for those operators, as necessary.

In general, these deficiencies included the following:

- Several applicants had difficulty in adjusting the "High Flux At Shuddown" alarm associated with the Nuclear Instrumentation system.
- Several applicants had difficulty identifying all of the valves necessary to establish an acceptable clearance boundary.
- During a loss of heat sink scenario, several applicants chose to rely on the pressurizer Power Operated Relief Valves (PORVs) as the accepted bleed path instead of the reactor head vents when PORV/block valve position was unknown. This was inconsistent with procedure 3-EOP-FR-H.1, Loss of Secondary Heat Sink, Step 18.
- Several applicants failed to diagnose the failure of the turbine runback in a timely manner. Subsequently, the SG levels decreased to the low level setpoint requiring a reactor trip.

c. Conclusion

All of the applicants passed the examination. The NRC did not identify any significant generic training deficiencies. However, the NRC did identify six written and four Performance deficiencies during the exam.

O8 Procedures

O8.1 Quality of Procedures and Procedure usage

The examiner identified inconsistent use of procedures. Examples included:

- the early trip of the Reactor Coolant Pump (RCP) while performing JPM B.1.d, Respond to Low Pressurizer Pressure.
- obtaining a key to the Heating, Ventilating and Air Conditioning (HVAC) key lock test switch during JPM B.1.e, Respond to Process Radiation Monitor Alarm, and trying to manipulate dampers. This was not in accordance with the Administration Procedure for procedure usage.
- the failure to consistently use Annunciator Response Procedures and Operating Procedures. When they were used, the use was not always thorough and detailed. This resulted in some missed procedure steps and actions.

These issues were discussed with the facility following the examination.

## V. Management Meetings

### **X1. Exit Meeting Summary**

At the conclusion of the site visit, the examiners met with representatives of the plant staff listed on the following page to discuss the results of the examinations and other issues. No proprietary material provided was provided.



## PARTIAL LIST OF PERSONS CONTACTED

Licensee:

- \*R. Bretton, Operations Continuing Training Supervisor
- B. Burrows, Assistant Training Manager
- \*P. Finegan, Operations Training Supervisor
- J. Ferguson, Nuclear Information Systems
- S. Franzone, Licensing Manager
- \*O. Haneil, Licensing Engineer
- \*D. Jernigan, Plant General Manager
- \*T. Jones, Operations Manager
- \*M. Lecal, Training Manager
- \*G. Laughlin, Supervisor Initial License Training
- W. Prevatt, Operations Supervisor
- R. Rose, Maintenance Manager
- C. Rossi, QA Supervisor
- D. Tomaszewski, Engineering Manager

NRC:

- \*C. Patterson, Senior Resident Inspector, Turkey Point
- R. Reyes, Resident Inspector, Turkey Point

\* Attended exit interview

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened:

None

Closed:

None

Discussed:

None

## SIMULATION FACILITY REPORT

Facility Licensee: Florida Power and Light Corporation - Turkey Point Nuclear Station Units  
3 & 4

Facility Docket Nos.: 50-250 and 50-251

Operating Tests Administered on: September 13 - 16, 1999

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, no fidelity or configuration control items were identified.

Enclosure 2

ENCLOSURE 3

WRITTEN EXAMINATIONS AND ANSWER KEY

Florida Power & Light Co.

Turkey Point Nuclear Plant

1999 NRC Written Examination

**Reactor Operator (RO) Exam**

August 30, 1999

*FINAL of references - R2*

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

**Applicant Information**

Name:	Region: II
Date: August 30, 1999	Facility/Unit: FPL/TURKEY POINT/3&4
License Level: RO	Reactor Type: W
Start Time:	Finish Time:

**Instructions**

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

**Applicant Certification**

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

\_\_\_\_\_  
Applicant's Signature

**Results**

Examination Value \_\_\_\_\_ Points

Applicant's Score \_\_\_\_\_ Points

Applicant's Grade \_\_\_\_\_ Percent

**QUESTION: 001**

**The following conditions exist on Unit 3:**

- **The operators are responding to a misaligned D Bank, Group 2, control rod using 3-ONOP-28.1 "RCC Misalignment."**
- **The appropriate lift coil disconnect switches have been placed to the disconnect position.**

**Which ONE of the following Power Cabinets will be the source of the Urgent Failure alarm that occurs when the operator initiates rod motion?**

- a. **1AC**
- b. **1BD**
- c. **2AC**
- d. **2BD**

**QUESTION: 002**

**The following conditions exist on Unit 3.**

- **The "POWER BELOW P-8" status lamp is NOT lit.**
- **The 3A RCP experiences a sheared shaft.**

**Which ONE of the following correctly describes the applicable reactor trip logic?**

**The reactor will:**

- a. **trip due to a single RCS loop low flow signal.**
- b. **trip due to a single RCP breaker open signal.**
- c. **not trip because two RCS loops must have low flow signals.**
- d. **not trip because two RCPs must have breaker open signals.**

**QUESTION: 003**

The following conditions exist on Unit 4:

- Operators are performing ES-0.2, "Natural Circulation Cooldown."
- All systems are operable except the RCPs and Channel A of QSPDS.
- The NPS determines a cooldown rate in excess of 25°F/hr is required.

Which ONE of the following describes the correct operator action?

- a. Increase the cooldown rate to a rate not to exceed 60°F/hr and remain in ES-0.2.
- b. Increase the cooldown rate to a rate not to exceed 100°F/hr and remain in ES-0.2.
- c. Transition to ES-0.3, "Natural Circulation Cooldown with Steam Void in Vessel (With RVLMS)."
- d. Transition to ES-0.4, "Natural Circulation Cooldown with Steam Void in Vessel (Without RVLMS)."



**QUESTION: 004**

**The following event occurs while Unit 4 is in Mode 3:**

- **RCS Tavg is 520° F.**
- **Both NIS Source Ranges indicate an unexplained increase in count rate.**
- **The RCO initiates emergency boration per ONOP-046.1 "Emergency Boration."**
- **All equipment functions as designed.**

**Which ONE of the following is correct for emergency boration termination?**

**Emergency boration may be terminated when:**

- a. **Tavg is greater than 525° F.**
- b. **Source Range count rates are stable or decreasing.**
- c. **a minimum of 9 minutes has passed since boration initiation.**
- d. **a minimum of 39 minutes has passed since boration initiation.**

**QUESTION: 005**

**A total loss of CCW occurs on Unit 4 while at 100% power.**

**Which ONE of the following is correct?**

**Damage will occur quickest to the Charging pump:**

- a. oil pump with the Charging pump run at minimum speed.
- b. oil pump with the Charging pump run at maximum speed.
- c. fluid drive coupling with the Charging pump run at minimum speed.
- d. fluid drive coupling with the Charging pump run at maximum speed.

**QUESTION: 006**

**Unit 3 is in Mode 1 when operators responded to PRZ pressure transmitter, PT-445, failed high.**

**The following stable conditions now exist:**

- **Reactor Power            80%**
- **Tavg                        572 °F**
- **PRZ Pressure            2150 psig**
- **PRZ Level                48%**

**Which ONE of the following is the operator response required by Technical Specifications?**

- a. **Restore PRZ level to greater than 48%.**
- b. **Restore PRZ pressure to greater than 2200 psig.**
- c. **Reduce Tavg to less than 570°F.**
- d. **Reduce Reactor Power to less than 75%.**

**QUESTION: 007**

**The following conditions exist on Unit 3:**

- The unit is at 2% power.
- All MSIVs are closed.
- A steam line break occurs on the 3A S/G at the safety header.

**Which ONE of the following describes the plant response given these conditions?**

**SI will occur when:**

- a. Tavg decreases to 543°F.
- b. containment pressure increases to 4 psig.
- c. 3A S/G pressure decreases to 485 psig.
- d. 3A S/G pressure decreases to 614 psig.

**QUESTION: 008**

**Unit 4 operators have just transitioned to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition."**

**The following conditions exist:**

- **AFW is not available.**
- **The "A" Standby Feedwater Pump is being used to maintain S/G inventory.**

**Which ONE of the following indications should be used to control feed water flow?**

**Use changes in:**

- a. **RCS pressure.**
- b. **RCS temperature.**
- c. **PRZ level.**
- d. **S/G pressure.**

**QUESTION: 009**

**The following conditions exist on Unit 3:**

- **The operators have completed the IOAs of ONOP- 014 "Main Condenser Loss of Vacuum."**
- **The unit was initially at 750 MWe and 26" vacuum with vacuum slowly decreasing.**
- **The unit is now at 650 MWe and 23" vacuum with vacuum slowly decreasing.**

**Which ONE of the following is the required operator action?**

- a. **Continue reducing MWe until vacuum stabilizes at greater than or equal to 20.0" vacuum.**
- b. **Continue reducing MWe until vacuum stabilizes at greater than or equal to 22" vacuum.**
- c. **Stabilize the plant at the present power level and investigate the cause of the low vacuum condition.**
- d. **Trip the reactor and turbine and perform the actions of E-0, "Reactor Trip or Safety Injection."**

**QUESTION: 010**

**Unit 3 experienced a Loss of All AC Power simultaneous with a complete loss of Instrument Air.**

**Operators have restored power to and started the 3A Charging pump.**

**Which ONE of the following correctly describes the effect on CVCS?**

**The letdown flowpath:**

- a. remains open and the charging pump speed goes to minimum.**
- b. remains open and the charging pump speed goes to maximum.**
- c. isolates and the charging pump speed goes to minimum.**
- d. isolates and the charging pump speed goes to maximum.**

**QUESTION: 011**

**Unit 3 is in Mode 3 with the following conditions:**

- **A loss of a 120V Vital Instrument Panel has caused VCT level indicator LI-3-115 to indicate zero level.**
- **Annunciator A 4/6 "VCT HI/LO LEVEL" is in alarm.**

**Which ONE of the following is correct for the given conditions?**

**VCT Auto Makeup:**

- a. **initiates and charging pump suction remains aligned to the VCT.**
- b. **initiates and charging pump suction auto swaps to the RWST.**
- c. **is disabled and charging pump suction remains aligned to the VCT.**
- d. **is disabled and charging pump suction auto swaps to the RWST.**



**QUESTION: 012**

The fire team is fighting a class C fire in an energized 480 volt Load Center. All available CO<sub>2</sub> extinguishers have been expended and the fire is still not under control.

Which ONE of the following identifies the preferred fire fighting equipment that should be used in this situation?

- a. Fire hoses with fog nozzles
- b. Portable H<sub>2</sub>O extinguishers
- c. Dry Chemical fire extinguishers
- d. Portable Halon fire extinguishers

**QUESTION: 013**

**Which ONE of the following is an indication or control that is on the Unit 3 Alternate Shutdown Panel?**

- a. 3A EDG voltage indicator
- b. RCS Loop Flow indicator
- c. "C" AFW pump T&T valve control switch
- d. 3A Charging pump control switch

**QUESTION: 014**

**Unit 3 operators are performing step 14 of E-0, "Reactor Trip or Safety Injection" to determine if Containment Spray is required. Containment pressure is 22 psig.**

**Which ONE of the following states the reason for verifying Phase B Isolation has occurred?**

**To ensure:**

- a. the MSIVs are closed due to the high Containment pressure.**
- b. the RCP seals and motors do not overheat.**
- c. that potential release paths from the containment are isolated.**
- d. system alignment is correct for containment spray operation.**

**QUESTION: 015**

**Operators are responding to an inadequate core cooling condition using FR-C.1, "Response to Inadequate Core Cooling."**

**Which ONE of the following is correct regarding RCP operation?**

**If an RCP is:**

- a. initially running, it should be left running until it trips by itself.
- b. initially running, it should be left running until #1 seal delta P trip criteria is met.
- c. not running, it should be left off until 6% [32%] level is attained in its associated S/G.
- d. not running, it should be left off until 6% [32%] level is attained in any S/G.

**QUESTION: 016**

**Operators are performing 3-ONOP-041.4, "Excessive Reactor Coolant System Activity," and have just reduced Tavg to less than 500°F as directed by the procedure.**

**Which ONE of the following describes the basis for reducing Tavg to less than 500°F?**

- a. To block SI in preparation for a controlled cooldown.**
- b. To allow closing the MSIVs in preparation for a controlled cooldown.**
- c. To prevent the release of activity in the event of a main steam line break upstream of the MSIVs.**
- d. To ensure the saturation pressure of the RCS is below the lift pressure of the atmospheric relief valves.**

**QUESTION: 017**

**The following conditions exist on Unit 3:**

- **The Rod Control System is in Manual.**
- **Control Bank C is at 225 steps.**
- **Control Bank D is at 97 steps.**

**The following event occurs:**

- **A Rod Control System malfunction causes continuous rod withdrawal for 10 steps. Rod motion then stops.**

**Which ONE of the following identifies what the RPis for control banks C and D should indicate?**

- a. **Bank C – 225            Bank D – 97**
- b. **Bank C – 230            Bank D – 97**
- c. **Bank C – 230            Bank D – 107**
- d. **Bank C – 235            Bank D - 107**

**QUESTION: 018**

**The following conditions exist on Unit 3:**

- **The unit is at 100% power**
- **A power supply failure in rod control Power Cabinet 1AC results in one dropped rod in Control Bank A Group 1 and one dropped rod in Control Bank C Group 1.**

**Which ONE of the following actions is correct?**

- a. **Manually runback the turbine.**
- b. **Verify automatic turbine runback.**
- c. **Enter ONOP-28.3 "Dropped RCC" and retrieve both dropped rods.**
- d. **Trip the Reactor and go to E-0 "Reactor Trip Or Safety Injection."**

**QUESTION: 019**

**The following conditions exist on Unit 4:**

- **Low PRZ pressure SI has occurred.**
- **All 4 HHSI pumps are running.**
- **PRZ level is increasing.**
- **RCS pressure is 1450 psig and decreasing.**
- **HHSI cold leg flow indication (FI-943) is zero.**
- **PRT pressure and level are increasing.**

**Which ONE of the following describes the events that could have caused these conditions?**

- a. **A PRZ PORV is open and the HHSI isolation valves, MOV-843A and MOV-843B, failed to open.**
- b. **A PRZ PORV is open and the HHSI line downstream of the HHSI isolation valves, MOV-843A and MOV-843B, has sheared.**
- c. **A PRZ Spray valve is open and the HHSI isolation valves, MOV-843A and MOV-843B, failed to open.**
- d. **A PRZ Spray valve is open and the HHSI line downstream of the HHSI pumps has sheared.**



**QUESTION: 020**

**Unit 3 operators are responding to a small break LOCA.**

**The following conditions exist:**

- **RCS pressure is 1500 psig.**
- **CET subcooling is 38°F.**
- **Containment temperature is 160°F.**
- **Containment pressure is 10 psig.**

**Which ONE of the following top border (border targets) should be lit on the SPDS/ERDADS screens?**

- a. **TRIP RCPs**
- b. **PA**
- c. **MSL ISOL**
- d. **ADV CNTNMT**

**QUESTION: 021**

**A large break LOCA occurred while Unit 4 was operating at 100% power. The operators are responding per E-0, "Reactor Trip or Safety Injection".**

**Which ONE of the following describes why the RCO verifies the Feedwater Isolation signal closed the Main and Bypass FW Control valves in step 5 of E-0?**

- a. To ensure the subsequent availability of AFW flowpaths.**
- b. To ensure the subsequent availability of secondary heat sink water sources.**
- c. To minimize the potential for RCS cooldown due to S/G overfill.**
- d. To minimize the potential for containment overpressurization from feedwater addition.**

**QUESTION: 022**

**Unit 3 operators are performing Step 16 of EOP-ES-1.2 "Post LOCA Cooldown and Depressurization."**

**The following conditions exist:**

- **One Unit 3 HHSI pump is running.**
- **One RHR pump is running.**
- **Two Charging pumps are running at maximum flow.**
- **Containment temperature is 178°F.**
- **CET subcooling is 68°F**
- **RCS Thot temperatures are 320°F.**
- **RCS pressure is 260 psig.**
- **No RCPs are available.**
- **PRZ level is stable at 30%.**

**Which ONE of the following describes the operating HHSI/RHR pump configuration when the operators isolate the accumulators?**

- a. **Zero HHSI pumps, Zero RHR pumps.**
- b. **Zero HHSI pumps, One RHR pump.**
- c. **One HHSI pump, Zero RHR pumps.**
- d. **One HHSI pump, One RHR pump.**

**QUESTION: 023**

**Which ONE of the following describes a condition that would prevent successful transition to Cold Leg recirculation?**

- a. Only one of the RHR Pump Suction Stop valves, MOV-750 or MOV-751 can be energized.
- b. Only one of the RHR Suction from RWST valves, MOV-862A or MOV-862B can be energized.
- c. Containment Recirculation Sump Isolation valves MOV-860A and MOV-860B will not open.
- d. Containment Recirculation Sump Isolation valves MOV-860A and MOV-861A will not open.

**QUESTION: 024**

**The following conditions exist on Unit 3:**

- **The operators are performing ES-1.1, "SI Termination."**
- **While preparing to re-establish RCP seal return flow they verify that RCS pressure is 100 psi greater than VCT pressure.**

**Which ONE of the following describes the basis for the 100 psi requirement?**

**Less than 100 psi differential pressure could result in:**

- a. **damage to the VCT.**
- b. **damage to the PRT.**
- c. **cocked RCP seals.**
- d. **debris in the RCP seals.**

**QUESTION: 025**

**Unit 4 is in Mode 5 and all loops are filled.**

**The following equipment is out of service:**

- RHR Loop A
- 4C ICW pump
- 4C CCW pump

**Which ONE of the following will result in a loss of RHR required capability per 3-OP-050, "Residual Heat Removal System?"**

**A failure of the:**

- a. 4A EDG.
- b. 4B CCW H/X.
- c. 4A CCW pump.
- d. 4B ICW pump

**QUESTION: 026**

**With Unit 4 stable at 2% power, the RCO observes that the Reactor Trip Breakers have no red or green indicating lights lit on the console or on VPB.**

**Which ONE of the following correctly describes an event that could have caused this condition?**

- a. SR NIS N-31 Instrument Power fuse has blown.
- b. SR NIS N-32 Control Power fuse has blown.
- c. IR NIS N-35 Instrument Power fuse has blown.
- d. PR NIS N-41 Control Power fuse has blown.

**QUESTION: 027**

**The following conditions exist on Unit 3:**

- **Reactor power is 22% with operators performing a plant startup.**
- **NIS Intermediate range channel N-36 fails high.**

**Which ONE of the following is the correct operator response?**

- a. **Enter E-0, "Reactor Trip or Safety Injection."**
- b. **Place the N-36 LEVEL TRIP switch in BYPASS and continue the power ascension.**
- c. **Place the N-36 LEVEL TRIP switch in BYPASS and reduce power below permissive P-6.**
- d. **Place the N-36 LEVEL TRIP switch in BYPASS and reduce power below permissive P-10.**



**QUESTION: 028**

**Unit 3 operators have responded to a Steam Generator Tube Leak on the 3A S/G using 3-ONOP-067, "Radioactive Effluent Release."**

- **PRMS R-15, Condenser Air Ejector, reading was increasing while in Mode 1 and has alarmed.**
- **PRMS R-19, Blowdown Radiation, reading was increasing while in Mode 1 but has not alarmed.**
- **The unit is currently in Mode 3 and Attachment 3, "Steam Generator Isolation Checklist / Steam Generator A Isolation," is complete.**

**Which ONE of the following describes the expected response of R-15 and R-19 after performing Attachment 3?**

- |    | <u>R-15</u> | <u>R-19</u> |
|----|-------------|-------------|
| a. | Decreasing  | Decreasing  |
| b. | Decreasing  | Stable      |
| c. | Stable      | Decreasing  |
| d. | Stable      | Stable      |

**QUESTION: 029**

**Unit 4 experienced a SGTR while at 100% power.**

**Which ONE of the following Control Room indications does E-3, "Steam Generator Tube Rupture," use to identify which S/G is ruptured?**

- a. PRMS R-15, Condenser Air Ejector.
- b. PRMS R-19, Steam Generator Blowdown.
- c. Unexpected increase in any S/G NR level.
- d. Unexpected S/G steam flow mismatch.

**QUESTION: 030**

**Which ONE of the following describes the basis for verifying AFW flow is greater than 390 gpm following a loss of main feedwater event?**

**390 gpm is the minimum AFW flow required in the event:**

- a. an ATWS occurs.**
- b. only one AFW pump is running.**
- c. any S/G level is below 6% NR.**
- d. all S/G levels are below 6% NR.**

**QUESTION: 031**

**Unit 3 operators have entered FR-H.1 "Response to Loss of Secondary Heat Sink."**

**The following conditions exist:**

- **No Main Feedwater Pumps are available.**
- **No Auxiliary Feedwater Pumps are available.**
- **The RCPs are off.**
- **Annunciator E 2/6 "HI-HI SG LVL TURBINE TRIP/FEEDWATER ISOLATION is in alarm.**
- **The operators are preparing to re-establish feedwater using a Standby Steam Generator Feedwater Pump.**

**Which ONE of the following describes the minimum Control Room action(s) required to re-establish feed flow to the S/Gs?**

**Reset:**

- a. **SI**
- b. **Phase A**
- c. **Feedwater Isolation**
- d. **SI and Feedwater Isolation**

**QUESTION: 032**

Unit 3 operators have initiated an RCS cooldown while responding to a faulted/ruptured S/G per ECA-3.2, "SGTR With Loss of Reactor Coolant-Saturated Recovery Desired."

Which ONE of the following identifies the limitations on the cooldown rate and the reason for initiating the cooldown?

	<u>COOLDOWN RATE</u>	<u>REASON/BASIS</u>
a.	50°F/hr	Minimize radioactive release
b.	50°F/hr	Prevent S/G overflow
c.	100°F/Hr	Minimize radioactive release
d.	100°F/Hr	Prevent S/G overflow

**QUESTION: 033**

**Which ONE of the following describes the Immediate Operator Action(s) of 0-ONOP-066, "High Area Radiation Monitoring System Alarm," in the event Annunciator X 4/1, ARMS HI RADIATION, alarms?**

**Identify the alarming channel(s) at the ARMS panel and then:**

- a. announce the alarm over the plant page system.**
- b. notify Security to restrict entry to the affected areas.**
- c. press the ALARM ACK pushbutton on the ARMS control panel.**
- d. cross-check the alarming ARMS channel(s) with PRMS channel(s) in the affected area.**

**QUESTION: 034**

Unit 4 is at 100% power with all systems operating in automatic and all switches in their normal positions.

PRZ level transmitter LT-459 fails low.

Which ONE of the following describes the plant response?

- a. Charging flow will decrease.  
Letdown will isolate.
- b. Charging flow will decrease.  
Letdown will remain in service.
- c. Charging flow will increase.  
Letdown will isolate.
- d. Charging flow will increase.  
Letdown will remain in service.

**QUESTION: 035**

The following conditions exist with Unit 3 at 100% power and all systems operable:

- 3D 4KV Bus is aligned to 3A 4KV Bus.
- 3B and 3C ICW Pumps are running.

The following events occur:

- A loss of offsite power (LOOP) occurs on Unit 3.
- The 3B EDG fails to start.

Which ONE of the following describes the ICW pump configuration when sequencing is complete (assume no operator response)?

- a. No ICW pumps will be running.
- b. Only the 3A ICW pump will be running.
- c. Only the 3C ICW pump will be running.
- d. The 3A and 3C ICW pumps will be running.



**QUESTION: 036**

**Unit 4 operators have entered 0-ONOP-13, "Loss of Instrument Air" in response to Annunciator I 6/1, INST AIR SYSTEM HI TEMP/LO PRESS.**

**The following conditions exist:**

- **All available air compressors are running.**
- **Instrument Air pressure indicator, PI-4-1444, is 60 psig and stable.**

**Which ONE of the following identifies the equipment that will be affected?**

**Unit 4:**

- a. **MSIVs will fail closed.**
- b. **Feedwater Reg Valves will fail closed.**
- c. **EDG Fuel Oil Transfer capability will be lost.**
- d. **Train 1 AFW FCV automatic operation will be lost.**

**QUESTION: 037**

**The following conditions exist on Unit 3:**

- **Reactor Trip Breaker A has failed in the closed position.**
- **Both MG sets input and output breakers have been opened.**

**Which ONE of the following describes the effect on the Control Rod System Logic and Power cabinets' control power?**

**Control power has:**

- a. **automatically swapped to the 3B MCC.**
- b. **automatically swapped to its backup CVT.**
- c. **been lost and can be manually swapped to the 3B MCC.**
- d. **been lost and cannot be restored until the Reactor Trip Breaker is opened.**

**QUESTION: 038**

Unit 3 is stable at 75% power with all systems in automatic and Tavg matched with Tref.

The following events occur:

- 3A Steam Generator Feed pump breaker trips open.
- Generator load has stabilized following the turbine runback.

The RCO observes the following indications:

- Tavg: 555°F and decreasing
- Tref 559°F and stable
- Control Rods Inserting

Which ONE of the following describes the correct immediate operator action?

- a. Maintain rods in AUTO and if rods continue to insert, adjust turbine load to match Tavg to Tref.
- b. Maintain rods in AUTO and if rods continue to insert, adjust boron concentration to match Tavg to Tref.
- c. Place rods in MANUAL and if rods continue to insert, adjust turbine load to match Tavg to Tref.
- d. Place rods in MANUAL and if rods continue to insert, adjust boron concentration to match Tavg to Tref.

**QUESTION: 039**

**Which ONE of the following identifies the containment isolation signal that requires stopping all RCPs and the reason the RCPs are stopped?**

- a. Phase "A" MOV-626, RCP Thermal Barrier CCW Outlet, is closed resulting in a loss of RCP seal package cooling.
- b. Phase "A" MOV-1417, CCW to Normal Containment Coolers, and MOV 1418, CCW from Normal Containment Coolers, are closed resulting in a loss of RCP stator winding cooling.
- c. Phase "B" MOV-6386, Excess L/D and RCP Seal Return, is closed resulting in a loss of RCP seal package cooling.
- d. Phase "B" MOVs 716A and 716B, RCP CCW Inlet valves, and MOV-730, RCP Bearing CCW Outlet valve are closed resulting in a loss of RCP motor bearing cooling.

**QUESTION: 040**

**The following plant conditions exist:**

- **Containment Phase "A" isolation has occurred.**
- **The isolation signal has not yet been reset.**

**Which ONE of the following describes the effect this condition will have on RCP Number 1 seal leak off flow?**

**Number 1 seal leak off flow will:**

- a. **decrease because VCT level has increased.**
- b. **decrease because the backpressure has increased.**
- c. **go to zero because RCP Seal Return to VCT valve, MOV-381, is closed.**
- d. **go to zero because #1 Seal Leakoff Isolation valves, 303A, 303B, and 303C are closed.**

**QUESTION: 041**

**Unit 3 is in a water solid condition when an RCS pressure transient closes Loop 3C RHR Pump Suction Stop valves, MOV-750 and MOV-751.**

**MOV-750 and MOV-751 cannot be reopened.**

**Which ONE of the following describes the effect this event will have on the CVCS system after the operators have performed the Immediate Operator Actions of the applicable ONOP?**

**CVCS letdown line pressure upstream of PCV-145, Low Pressure Letdown Control valve, will:**

- a. decrease. PCV-145 will open.**
- b. decrease. PCV-145 will close.**
- c. increase. PCV-145 will open.**
- d. increase. PCV-145 will close.**

**QUESTION: 042**

A reactor startup is being performed on Unit 3. The following conditions apply:

- The ECC estimated critical rod height is D bank at 110 steps.
- The initial highest source range count rate was N-31 at 250 cps.
- The current N-31 count rate is 1000 cps.
- Based on the current N-31 count rate, the 1/M plot predicts criticality at D bank, 180 steps.
- Integrated rod worth for D-110 is 490 pcm.
- Integrated rod worth for D-180 is 160 pcm.

Which ONE of the following is the correct operator response?

- a. Do not continue the reactor startup. Obtain permission from the NPS to continue.
- b. Do not continue the reactor startup. Obtain permission from the Reactor Supervisor to continue.
- c. Continue the reactor startup. If the prediction is still D-180 after the next doubling, obtain permission from the NPS to continue.
- d. Continue the reactor startup. If the prediction is still D-180 after the next doubling, obtain permission from the Reactor Supervisor to continue.

**QUESTION: 043**

**Which ONE of the following describes the purpose of the interlocks between CVCS Letdown Isolation valve, LCV-460, and the Letdown Orifice Isolation valves, 200A, 200B, & 200C?**

**The interlocks prevent damage to:**

- a. LCV-460 upon depressurization of the letdown line.
- b. CV-200A, 200B, 200C upon depressurization of the letdown line.
- c. the Regenerative Heat Exchanger upon subsequent repressurization of the letdown line.
- d. RV-203, Letdown Relief Valve, upon subsequent repressurization of the letdown line.



**QUESTION: 044**

**The following conditions exist on Unit 3:**

- **Operators are responding to a LOCA using the EOP Network.**
- **3A Sequencer has failed to respond to the SI signal.**
- **SI has been reset.**
- **Following SI reset, Containment pressure exceeds 20 psig .**

**Which ONE of the following describes the response of the Containment Spray Pumps (CSPs) and their discharge valves, MOV-880A and MOV-880B?**

- a. **Neither CSP will automatically start.  
Only MOV-880B will automatically open.**
- b. **Neither CSP will automatically start.  
Both MOVs will automatically open.**
- c. **Only 3B CSP will automatically start.  
Only MOV-880B will automatically open.**
- d. **Only 3B CSP will automatically start.  
Both MOVs will automatically open.**

**QUESTION: 045**

**The following conditions exist on Unit 3:**

- **Reactor power is stable at  $10^{-8}$  amps.**
- **"PRZ Pressure Control Channel" PT-444 fails high.**

**Assuming no operator action, which ONE of the following describes the response of the plant to this condition?**

- a. **The reactor will trip when PRZ pressure increases to 2385 psig.**
- b. **PRZ pressure will stabilize at approximately 2000 psig .**
- c. **The reactor will trip when PRZ pressure decreases to 1835 psig.**
- d. **SI actuation will occur when PRZ pressure decreases to 1730 psig.**

**QUESTION: 046**

Unit 3 is stable at 98% power. Reactor Engineering has performed QPTR calculations using a full core flux map and core exit thermocouples. Both calculations reveal the QPTR value is 1.03.

Which ONE of the following describes the required operator response?

Reduce NIS power to less than:

- a. 97% within 2 hours.
- b. 95% within 2 hours.
- c. 91% within 2 hours.
- d. 89% within 2 hours.

**QUESTION: 047**

**A Xenon oscillation caused the Axial Flux Difference ( $\Delta I$ ) meters to display the following values while Unit 3 was at 80% power:**

<b>N-3-41</b>	<b>N-3-42</b>	<b>N-3-43</b>	<b>N-3-44</b>
<b>-14</b>	<b>-15</b>	<b>-20</b>	<b>-21</b>

**Which ONE of the following describes the required operator response?**

- a. Return at least one  $\Delta I$  meter within the Operational Space within 15 minutes.**
- b. Return at least one  $\Delta I$  meter within the Operational Space within 60 minutes.**
- c. Return at least two  $\Delta I$  meters within the Operational Space within 15 minutes.**
- d. Return at least two  $\Delta I$  meters within the Operational Space within 60 minutes.**

QUESTION: 048

Unit 3 operators are responding to a spurious SI signal and are attempting to determine if SI termination criteria are met. The ANPS directs the RCO to check subcooling on QSPDS.

QSPDS displays the following:

SATURATION MARGIN		
	DEG F	PSI
UPPER HEAD	48	633
RCS (MIN)	36	438
CET	28	340

Assuming other SI Termination Criteria are satisfied, which ONE of the following is correct?

The RCO should declare SI Termination Criteria are:

- a. not met after observing the RCS (MIN) value.
- b. not met after observing the CET value.
- c. met after observing the RCS (MIN) value.
- d. met after observing the CET value.

**QUESTION: 049**

**A large break LOCA occurs on Unit 3 while the 3B Sequencer is inoperable.**

**Which ONE of the following describes an effect on the Unit 3 containment?**

**Containment pressure will be higher because only the:**

- a. 3A ECC will autostart.**
- b. 3C ECC will autostart.**
- c. 3A and 3C ECCs will autostart.**
- d. 3B and 3C ECCs will autostart.**

**QUESTION: 050**

**The following conditions exist on Unit 3 while at 100% power:**

- **The 3B ECC is out of service.**
- **A large break LOCA occurs.**
- **After verifying two ECCs are operating, one ECC trips due to overcurrent and cannot be restarted.**

**Which ONE of the following identifies the maximum time allowed to restore a second ECC to operation to ensure equipment environmental qualifications are maintained?**

- a. **8 hours**
- b. **10 hours**
- c. **12 hours**
- d. **24 hours**

**QUESTION: 051**

**Unit 3 is operating at 70% power with all systems operable except the 3C Condensate pump which has its breaker racked out.**

**The 3A Condensate pump breaker trips open.**

**Which ONE of the following describes the correct operator response?**

**Perform the actions of:**

- a. **ONOP-089, "Turbine Runback."**
- b. **ONOP-100, "Fast Load Reduction."**
- c. **GOP-103, "Power Operation to Hot Standby."**
- d. **E-0, "Reactor Trip or Safety Injection."**



**QUESTION: 052**

**Unit 3 is operating at 100% power when the controlling S/G pressure transmitter fails low on the 3A S/G.**

**Which ONE of the following describes the effect this will have on the controlling indicated steam flow and the initial 3A FW Control Valve, FCV-478, response?**

**Indicated steam flow will:**

- a. decrease. The FCV will open.**
- b. decrease. The FCV will close.**
- c. increase. The FCV will open.**
- d. increase. The FCV will close.**

**QUESTION: 053**

**Unit 3 is operating at 100% power when valve CV-2011, "LP HEATERS BYPASS," fails open.**

**Which ONE of the following describes the effect on reactor power and the correct operator response?**

**Reactor power will:**

- a. increase. Borate the RCS.
- b. increase. Reduce turbine load.
- c. decrease. Dilute the RCS.
- d. decrease. Raise turbine load.

**QUESTION: 054**

**With Unit 3 initially at 100% power and all systems in normal alignment, the 3C S/G experiences a main steam line break inside Containment.**

**Which ONE of the following describes the effect this accident will have on the AFW system?**

- a. Train 1 AFW will be lost until the operators open AFSS-3-007.
- b. Train 1 AFW will be lost until the operators close AFSS-3-006.
- c. Train 2 AFW will be lost until the operators open AFSS-3-007.
- d. Train 2 AFW will be lost until the operators close AFSS-3-006.

**QUESTION: 055**

**Which ONE of the following would result in dual train AFW flow for both Units?**

**Bus Stripping on:**

- a. 3A 4KV Bus and 4A 4KV Bus.
- b. 3A 4KV Bus and 4B 4KV Bus
- c. 3B 4KV Bus and 4A 4KV Bus
- d. 3B 4KV Bus and 4B 4KV Bus

**QUESTION 056**

Unit 3 operators have entered ES-1.1, "SI Termination," and are preparing to start a Main Feedwater pump and secure AFW.

The following conditions exist:

- "A" AFW pump is running.
- "B" and "C" AFW pumps are stopped and aligned for auto start.
- The NWE locally starts the 3A Main Feed pump.
- The BOP fails to "red flag" the 3A Main Feed pump control switch semaphore.

Which ONE of the following describes the effect of the BOP's failure to red flag the 3A Main Feed pump control switch semaphore?

- a. "B" and "C" AFW pumps will automatically start.
- b. AFW pump automatic start capability will be degraded.
- c. The 3A Main Feed pump will not trip from an SI signal.
- d. The 3A Main Feed pump will automatically trip in 50 seconds.

**QUESTION: 057**

The following conditions exist on Unit 3:

- The unit was at 100% power.
- A spurious SI occurs.
- The operators are responding per the EOP network and have just transitioned to EOP-ES-1.1, "SI Termination."
- Annunciator A 7/1, PRT HI/LO LEVEL HI PRESS/TEMP, alarms.

Assuming all systems function as designed, which ONE of the following describes the probable cause of this alarm?

- a. A PRZ PORV has lifted.
- b. CVCS Low Pressure relief valve, RV-209, has lifted.
- c. RHR Header to Loops relief valve, RV-706, has lifted.
- d. RCP #1 Seal Leakoff relief valve, RV-382, has lifted.

**QUESTION: 058**

**Operators are investigating an abnormal increase in countrate on PRMS radiation monitor R-14, PLANT VENT, when they discover pressure in Gas Decay Tank (GDT) #4 is decreasing.**

**No planned GDT releases are in progress and the Gas Decay Tank Discharge Valve, RCV-014, is closed.**

**After verifying all valve alignments are correct, which ONE of the following describes the correct operator response?**

**Direct the SNPO to:**

- a. transfer the contents of GDT #4 to another GDT.**
- b. verify both Auxiliary Building Exhaust fans are running.**
- c. stop all running Waste Gas compressors.**
- d. start an additional Waste Gas compressor.**

**QUESTION: 059**

**The Control Room Normal Air Intake radiation monitor, RAI-6642, alarms.**

**Which ONE of the following describes the damper response of the Control Building Ventilation System?**

- a. Ventilation Inlet dampers, D-1A and D-1B - CLOSE.  
East and West Inlet dampers, D-2 and D-3 - OPEN.  
Control Room Recirc. dampers, D-11A and D-11B - OPEN.**
- b. Ventilation Inlet dampers, D-1A and D-1B - OPEN.  
East and West Inlet dampers, D-2 and D-3 - CLOSE.  
Control Room Recirc. dampers, D-11A and D-11B - OPEN.**
- c. Ventilation Inlet dampers, D-1A and D-1B - CLOSE.  
East and West Inlet dampers, D-2 and D-3 - OPEN.  
Control Room Recirc. dampers, D-11A and D-11B - CLOSE.**
- d. Ventilation Inlet dampers, D-1A and D-1B - OPEN.  
East and West Inlet dampers, D-2 and D-3 - CLOSE.  
Control Room Recirc. dampers, D-11A and D-11B - CLOSE.**



**QUESTION: 060**

Unit 3 is at 50% power with the 3C Charging pump out of service.

The RCO notes the following Control Room indications:

- Annunciator G 1/2, "CHARGING PUMP HI SPEED" alarms.
- The only running Charging pump (3A) is in Auto with 100% output demanded.
- PRZ level is 33% and decreasing.

Which ONE of the following describes the required procedural response?

- a. Isolate letdown. If PRZ level continues to decrease, then start the 3B Charging pump and maximize charging flow.
- b. Isolate letdown. If PRZ level continues to decrease, then trip the reactor and turbine and transition to E-0, "Reactor Trip or Safety Injection."
- c. Start the 3B Charging pump and maximize charging flow. If PRZ level continues to decrease, then isolate letdown.
- d. Start the 3B Charging pump and maximize charging flow. If PRZ level continues to decrease, then trip the reactor and turbine and transition to E-0, "Reactor Trip or Safety Injection."

**QUESTION: 061**

Operators are responding to a large break LOCA. They are currently aligning the ECCS system for Hot Leg recirculation. Step 10 of ES-1.4, "Transfer to Hot Leg Recirculation," directs the operators to start the second RHR pump.

Which ONE of the following describes why the operators are directed to start the second RHR pump?

Starting the second RHR pump allows the operators to:

- a. start a second HHSI pump to increase hot leg injection flow.
- b. direct flow simultaneously to the cold legs and to the suction of the HHSI pump.
- c. align alternate hot leg recirculation using RHR Recirculation Isolation valve, 741A.
- d. align alternate hot leg recirculation using Alternate Low Head Injection valve, MOV-872.

**QUESTION: 062**

**Unit 3 is in Mode 5 when RCS loop pressure transmitter, PT-405, fails high.**

**Which ONE of the following identifies the effect of this failure on:**

- 1) PRZ PORV – 455C and PORV – 456**
- 2) Loop 3C RHR Pump Suction Stop Valves, MOV-750 and MOV-751?**

	<u>PORV-455C</u>	<u>PORV-456</u>	<u>MOV-750</u>	<u>MOV-751</u>
a.	OPENS	NONE	NONE	CLOSES
b.	OPENS	NONE	CLOSES	NONE
c.	NONE	OPENS	NONE	CLOSES
d.	NONE	OPENS	CLOSES	NONE

**QUESTION: 063**

**During operation at reduced power the following conditions exist:**

- **Tavg is 560°F.**
- **PRZ level is 45%.**
- **PRZ pressure is 2230 psig.**

**Which ONE of the following describes the PRZ heater status the RCO should verify?**

- a. **Control Group – On.  
Backup Groups – On.**
- b. **Control Group – On.  
Backup Groups – Off.**
- c. **Control Group – Off.  
Backup Groups – On.**
- d. **Control Group – Off.  
Backup Groups – Off.**

**QUESTION: 064**

**Which ONE of the following would result in the OTΔT reactor protection trip setpoint being reduced? Consider each parameter independently.**

- a. **ΔT increasing**
- b. **Tavg increasing**
- c. **PRZ pressure increasing**
- d. **Reactor Power decreasing**

**QUESTION: 065**

**Unit 3 is at 100% power and Annunciator B 9/3, SHUTDOWN ROD OFF TOP/DEVIATION is not operational.**

**Which ONE of the following describes the action that operators must take at least once every 4 hours?**

**Verify RPIs and Step Counters agree within:**

- a. 2 steps.
- b. 12 steps.
- c. 18 steps.
- d. 24 steps.

**QUESTION: 066**

**Unit 3 is operating at 100% power with all systems in their normal configuration, when the Tavg Median Signal Selector, TM-408, fails low.**

**Which ONE of the following describes the plant response?**

- a. Control rods will not move. Charging pump speed will increase.
- b. Control rods will not move. Charging pump speed will decrease.
- c. Control Rods will step in. Charging pump speed will increase.
- d. Control rods will step in. Charging pump speed will decrease.

**QUESTION: 067**

**Unit 3 experienced a large break LOCA. Operators have responded with the EOP network and have completed the actions of ES-1.3, "Transfer to Cold Leg Recirculation." Containment temperature has decreased to 140°F.**

**Which ONE of the following describes the correct Containment Spray Pump (CSP) alignment?**

- a. 1 CSP running with its suction aligned directly to the Containment Recirc. sump.
- b. 1 CSP running with its suction aligned to the Containment Recirc. sump via the RHR pump discharge.
- c. 2 CSPs running with their suctions aligned directly to the Containment Recirc. sump.
- d. 2 CSPs running with their suctions aligned to the Containment Recirc. sump via the RHR pump discharge.



**QUESTION: 068**

**A Containment Purge is in progress per 0-OP-053, "Containment Purge System."**

**Which ONE of the following is the minimum number of Normal Containment Coolers that must be in service to ensure proper operation of Containment Radiation Monitors, R-11 and R-12?**

- a. One
- b. Two
- c. Three
- d. Four

**QUESTION: 069**

**The following refueling conditions exist on Unit 4:**

- **Core off-load is in progress.**
- **A reactor vessel refueling cavity seal failure occurs.**

**Assuming no operator action, which ONE of the following describes the effect on a fuel assembly that is upright in the spent fuel pool upender?**

**The fuel assembly in the upender will be:**

- a. **completely uncovered.**
- b. **partially uncovered.**
- c. **covered with a few inches of water above it.**
- d. **covered with a few feet of water above it.**

**QUESTION: 070**

The following initial conditions existed on Unit 3:

- Reactor power was 80% and stable.
- Tavg was equal to Tref.
- All systems are in automatic.

A small steam leak then occurs on the main steam header.

Which ONE of the following describes the actual reactor power and Tavg (prior to operator action), and the proper operator response?

	<u>Rx Power</u>	<u>Tavg</u>	<u>Operator Response</u>
a.	lower	lower	Reduce Turbine Load
b.	higher	lower	Reduce Turbine Load
c.	lower	higher	Insert Control Rods
d.	higher	higher	Insert Control Rods

**QUESTION: 071**

**The following conditions exist on Unit 3:**

- **The unit is in Mode 3 with Tavg at 545°F.**
- **The Steam Dump to Condenser (SDTC) system Mode Selector switch is in the MAN position.**
- **PT-464, Steam Header Pressure, fails high.**

**Which ONE of the following describes the effect on the SDTC system?**

- a. **Only 2 valves will open and will remain open.**
- b. **Only 2 valves will open and then close when Tavg decreases to 543°F.**
- c. **All 4 valves will open and will remain open.**
- d. **All 4 valves will open and then close when Tavg decreases to 543°F.**

**QUESTION: 072**

**Which ONE of the following identifies the first PRMS detector that should respond to a SGTR and the effect on the detector?**

- a. Condenser Air Ejector Monitor, R-15. R-15 will be automatically isolated.
- b. Condenser Air Ejector Monitor, R-15. R-15 will not be automatically isolated.
- c. Steam Generator Blowdown Sample Monitor, R-19. R-19 will be automatically isolated.
- d. Steam Generator Blowdown Sample Monitor, R-19. R-19 will not be automatically isolated.

**QUESTION: 073**

Unit 3 is at 100% power with its Startup Transformer out of service when an automatic reactor trip occurs.

- The 3A EDG starts and repowers the 3A 4KV Bus.
- The 3B EDG locks out and cannot be restarted.

The Unit 3 ANPS directs the BOP to use 3-ONOP-004.3, "Loss of 3B 4KV Bus," to restore power to the 3B 4KV Bus.

Which ONE of the following describes how power will be restored to the 3B 4KV Bus?

Power will be restored to the 3B 4KV Bus from the:

- a. 3A 4KV Bus.
- b. Unit 4 Startup Transformer.
- c. 3C 4KV Bus.
- d. Station Blackout Tie Line.

**QUESTION: 074**

**The following occurs while Unit 3 is in Mode 1:**

- **DC Bus 3D23 loses power.**

**Which ONE of the following operator actions are correct?**

- a. **Shutdown the unit using GOP-103, "Power Operation to Hot Standby." After the unit is stable in Mode 3, then perform ONOP-003.5, "Loss of DC Buses 3D23 and 3D23A(3B)."**
- b. **Shutdown the unit using GOP-103, "Power Operation to Hot Standby and perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)," concurrently with the actions of GOP-103.**
- c. **Verify the reactor is tripped using E-0, "Reactor Trip or Safety Injection." When the unit is stable, then perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)."**
- d. **Verify the reactor is tripped using E-0, "Reactor Trip or Safety Injection," and perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)," concurrently with the Immediate Actions of E-0.**

**QUESTION: 075**

Unit 3 is operating at 100% power with all systems in normal alignment. 3A EDG is being run for surveillance purposes and is presently tied to the 3A 4KV Bus.

The following events occur:

- A main generator lockout occurs.
- Startup transformer breaker, 3AA05, fails to close and is mechanically bound.
- 3A Reactor Coolant Pump breaker, 3AA01, fails to automatically open.

Which ONE of the following describes the required operator response?

- a. Manually open EDG breaker 3AA20, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and manually close breaker 3AA20.
- b. Manually open EDG breaker 3AA20, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and verify breaker 3AA20 automatically closes.
- c. Verify EDG breaker 3AA20 automatically opens, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and manually close breaker 3AA20.
- d. Verify EDG breaker 3AA20 automatically opens, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and verify breaker 3AA20 automatically closes.



**QUESTION: 076**

**Unit 3 is at 100% power when PRMS R-3-20, Reactor Coolant Letdown, radiation monitor alarms. HP investigates and surveys the area in the Pipe and Valve Room.**

**The HP Supervisor reports the presence of a Hot Spot that is reading 400 mr/hr at 2 feet from the source.**

**Which ONE of the following identifies the distance from the source at which the measured dose rate will be 100 mr/hr?**

- a. 4 feet
- b. 6 feet
- c. 8 feet
- d. 10 feet

**QUESTION: 077**

**Unit 3 was operating at 100% power when the following events occurred:**

- **A Loss of Off Site Power (LOOP)**
- **The 3A1 Circulating Water Pump breaker did not open.**
- **All other systems responded as designed.**

**Which ONE of the following describes the effect on the 3A EDG breaker and 3A Sequencer?**

	<u><b>3A EDG Breaker</b></u>	<u><b>3A Sequencer</b></u>
a.	<b>Remains OPEN</b>	<b>Sequences</b>
b.	<b>Remains OPEN</b>	<b>Does Not Sequence</b>
c.	<b>Automatically CLOSES</b>	<b>Sequences</b>
d.	<b>Automatically CLOSES</b>	<b>Does Not Sequence</b>

**QUESTION: 078**

**Units 3 and 4 are at 100% power when the following events occur:**

- **A loss of instrument air has occurred on both units.**
- **3CM, 3CD, 4CM, and 4CD instrument air compressors are all inoperable.**
- **The NPO has been directed to open the four inch Service Air Supply to Unit 3/Unit 4 Tie Valve.**
- **The NPO reports that the four inch Service Air Supply valve cannot be opened.**

**Which ONE of the following describes the correct operator response?**

**Open the:**

- a. **Service Air Supply valve from Units 1 & 2.**
- b. **Instrument Air Supply valve from Units 1 & 2.**
- c. **Breathing Air Supply cross-tie valve.**
- d. **two inch Service Air Supply to Unit 3/Unit 4 tie valve.**

**QUESTION: 079**

**Both units are at 100% power when a leak occurs in the Main Fire Loop. Loop pressure decreases continuously.**

**Which ONE of the following identifies the first pump to auto start?**

- a. The standby Jockey pump
- b. The standby Service Water pump
- c. The Electric Fire pump
- d. The Diesel Engine Driven Fire pump

**QUESTION: 080**

**The following conditions exist on Unit 3:**

- **The unit has been shut down at Beginning-Of-Life for equipment repairs.**
- **PRZ level is being maintained at 30%.**
- **RCS temperature is 140°F.**

**The following events occur 10 days after the shutdown:**

- **The running RHR pump trips and neither RHR pump can be restarted.**
- **Operators are unable to establish any other method of RCS cooling.**

**Which ONE of the following identifies the time closest to when the RCS will enter Mode 4?**

- a. **12 minutes**
- b. **35 minutes**
- c. **42 minutes**
- d. **50 minutes**

**QUESTION: 081**

**Unit 4 is operating at 100% power with all systems in automatic and all plant parameters at their normal values. Pressurizer PORV, PCV-455C, fails partially open.**

**Which ONE of the following identifies the approximate maximum expected temperature of the steam entering the PRT if the PRT pressure does not exceed 45 psig?**

- a. 228°F
- b. 250°F
- c. 275°F
- d. 290°F

**QUESTION: 082**

**Which ONE of the following describes the effect of a loss of instrument air on the ECC CCW valves?**

**A loss of instrument air will cause the ECC:**

- a. outlet valves to fail open.  
outlet bypass valves to fail open.**
- b. outlet valves to fail open.  
outlet bypass valves to fail closed.**
- c. outlet valves to fail closed.  
outlet bypass valves to fail open.**
- d. outlet valves to fail closed.  
outlet bypass valves to fail closed.**

**QUESTION: 083**

**The 3A Emergency Containment Filter fan has been automatically started by the sequencer.**

**Which ONE of the following conditions will automatically open the solenoid valves SV-3-2905 and SV-3-2906 to supply water to the 3A ECF charcoal filters?**

- a. Containment temperature greater than 180°F.
- b. Containment pressure greater than 20 psig.
- c. Charcoal filter temperature greater than 325°F.
- d. Charcoal filter low air flow.



**QUESTION: 084**

**A reactor and turbine trip occurs on Unit 3 while at 25% power.**

**Which ONE of the following describes the response of the Steam Dump to Condenser (SDTC) system?**

- a. **Only 2 SDTC valves will arm.  
The SDTC system will reduce Tavg to no-load Tavg.**
- b. **Only 2 SDTC valves will arm.  
The SDTC system will reduce Tavg to within 5°F of Tref.**
- c. **All 4 SDTC valves will arm.  
The SDTC system will reduce Tavg to no-load Tavg.**
- d. **All 4 SDTC valves will arm.  
The SDTC system will reduce Tavg to within 5°F of Tref.**

**QUESTION: 085**

**Unit 3 was at 80% power when the 3B Main Feed Pump breaker trips open.**

**Which ONE of the following describes the plant response?**

- a. A cyclic governor runback to 60% power will occur.
- b. A cyclic governor runback to 45% power will occur.
- c. A continuous load limit and governor runback to 60% power will occur.
- d. A continuous load limit and governor runback to 45% power will occur.

**QUESTION: 086**

**Unit 3 was operating at 100% with all systems in normal alignment. An SI signal occurs. All systems function as designed.**

**After sequencing is complete, which ONE of the following describes the number of CCW load(s) attached to the CCW System as it relates to the CCW "Rule of Five"?**

- a. One CCW load
- b. Two CCW loads
- c. Three CCW loads
- d. Four CCW loads

**QUESTION: 087**

**Which ONE of the following is an interlock that must be satisfied to allow opening the Containment personnel air lock outside door while in Mode 1?**

- a. The personnel airlock inside door equalizing valve must be open.**
- b. The personnel airlock outside door equalizing valve must be open.**
- c. Atmospheric pressure must be greater than 1.0 psig above airlock pressure.**
- d. Containment pressure must be greater than 1.0 psig above airlock pressure.**

**QUESTION: 088**

**Which ONE of the following individuals must be notified by the RCO with Administrative Duties (3<sup>rd</sup> RCO) before leaving the Control Room?**

- a. The RCO with Unit Duty
- b. The NWE
- c. The ANPS
- d. The NPS

**QUESTION: 089**

**The following conditions exist on Unit 4:**

- **The operators are performing E-3, "Steam Generator Tube Rupture," in response to a SGTR in the 4A S/G.**
- **The 4B 4KV Bus is de-energized.**
- **CVCS letdown has been re-established.**
- **Containment conditions are normal.**
- **PRZ level is 30%.**
- **4A S/G level is increasing.**

**Which ONE of the following RCO actions is correct?**

- a. **Turn On PRZ Heaters.**
- b. **Decrease RCS Charging Flow.**
- c. **Depressurize the RCS using Normal Spray.**
- d. **Depressurize the RCS using Auxiliary Spray.**

**QUESTION: 090**

**Which ONE of the following describes the purpose of the CCW System Head Tank?**

- a. To preclude steam formation in the ECCs following a LOOP/ LOCA inside containment.**
- b. To preclude in-leakage of radioactive fluids from the CVCS Non-regenerative heat exchanger.**
- c. To ensure NPSH when 3 CCW pumps are running following sequencer automatic start signals.**
- d. To ensure NPSH when the Unit 3 and Unit 4 CCW Systems are cross-tied and only one CCW pump is operating.**

QUESTION: 091

Which ONE of the following correctly identifies the location and the valve failure mode, when isolating instrument air to FCV-3-114A, Primary Water to Blender valve?

	<u>LOCATION</u>	<u>FAILURE MODE</u>
a.	BAST Room	Open
b.	BAST Room	Closed
c.	Charging Pump Room	Open
d.	Charging Pump Room	Closed



**QUESTION: 092**

**The following conditions exist on Unit 4:**

- **The unit is in Mode 3.**
- **The reactor trip breakers are closed.**
- **RCS Tavg is 548°F.**
- **RCS pressure is 2235 psig.**
- **A dilution to obtain the calculated critical boron concentration is in progress.**

**Which ONE of the following is allowed per 4-GOP-301, "Hot Standby to Power Operation"?**

- a. **Testing of the AFW pumps**
- b. **Stopping of an operating RCP**
- c. **Withdrawal of the Shutdown Rods**
- d. **Energization of the PRZ backup heaters**

QUESTION: 093

Which ONE of the following is correct for the Base Continuous Power Ratings for the Unit 3 and Unit 4 Emergency Diesel Generators?

	<u>Unit 3 EDGs</u>	<u>Unit 4 EDGs</u>
a.	2500 KW	2874 KW
b.	2500 KW	2750 KW
c.	2874 KW	2750 KW
d.	2750 KW	2500 KW

**QUESTION: 094**

**Which ONE of the following exposures exceeds an FPL PTN guideline per 0-ADM-600, "Radiation Protection Manual?"**

- a. 3 rems/yr Total Effective Dose Equivalent
- b. 5 rems/yr Lens Dose Equivalent
- c. 20 rems/yr Total Organ Dose Equivalent
- d. 20 rems/yr Shallow Dose Equivalent to the skin

**QUESTION: 095**

**Which ONE of the following is correct when using a frisker for determining the radioactivity of an object?**

- a. The selector switch must be on the X1 (times one) scale and background can be no greater than 300 cpm.
- b. The selector switch must be on the times X100 (times 100) scale and background can be no greater than 300 cpm.
- c. The selector switch must be on the X1 (times one) scale and background must be no greater than 500 cpm.
- d. The selector switch must be in the X100 (times 100) scale and background must be no greater than 500 cpm.

**QUESTION: 096**

**The following conditions exist on Unit 3 while on RHR:**

- **RCS temperature is 300°F.**
- **RCS pressure momentarily spikes to 550 psig.**

**The RCO took the following actions:**

- **Verified the amber and blue lights for MOV-750 and MOV-751, Loop C RHR Pump Suction Stop Valves, were lit.**
- **Depressed and released the override pushbuttons to open MOV-750 and MOV-751.**
- **Determined that MOV-750 and MOV-751 continued to stroke closed.**

**Which ONE of the following describes why MOV-750 and MOV-751 continued to stroke closed?**

- a. **The OMS mode selector switches are in the "Normal" position.**
- b. **The MOVs must stroke to the fully closed position before they will reopen.**
- c. **RCS pressure was too high when the override pushbuttons were depressed.**
- d. **The override pushbuttons need to be held in the depressed position until the yellow lights go out.**

QUESTION: 097

SI has occurred on Unit 3. After exiting E-0, "Reactor Trip of Safety Injection," the following conditions relative to the Critical Safety Functions are observed:

Subcriticality: NIS power ranges are all 2%.  
NIS intermediate ranges' SUR are both +0.2 DPM.

Core Cooling: Six highest CETs read 720°F.

Heat Sink:	<u>3A S/G</u>	<u>3B S/G</u>	<u>3C S/G</u>
NR level:	4%	5%	3%
AFW flow:	125 gpm	125 gpm	125 gpm

Containment: Containment pressure is 10 psig.  
Containment Recirculation Sump level is 450 inches.  
Containment conditions are not adverse.

All other status trees indicate only green or yellow paths.

Which ONE of the following identifies the first procedure to enter?

- FR-S.1, "Response to Nuclear Power Generation/ATWS"
- FR-C.1, "Response to Inadequate Core Cooling"
- FR-H.1, "Response to Loss of Secondary Heat Sink"
- FR-Z.1, "Response to High Containment Pressure"

**QUESTION: 098**

**Which ONE of the following individuals may authorize de-escalation from a Site Area Emergency E-Plan classification?**

- a. Plant Manager
- b. Recovery Manager
- c. Emergency Coordinator
- d. Emergency Control Officer.

**QUESTION: 099**

**The following events occur on Unit 3:**

- **The unit experiences a spurious SI signal.**
- **Startup Transformer breaker 3AA05 fails to close.**
- **All other systems respond as designed.**

**Which ONE of the following identifies the Sequencer Trouble annunciator(s) that will alarm when the operators reset SI?**

- a. **Sequencer 3A only.**
- b. **Sequencer 3A and 3B only.**
- c. **Sequencer 3B, 4A and 4B only.**
- d. **Sequencer 3A, 3B, 4A and 4B.**



**QUESTION: 100**

**Unit 3 operators are performing the Immediate Operator Actions of E-0 "Reactor Trip or Safety Injection."**

**The following conditions exist:**

- **3A 4KV bus is energized.**
- **3B 4KV bus is de-energized.**
- **3D 4KV bus is aligned to 3B 4KV bus.**
- **3C ICW and 3C CCW pump breakers are open.**

**Which ONE of the following is the correct operator action?**

**Verify D bus lockout indicating light is:**

- a. **flashing. Align D bus to A bus by opening the B bus supply breakers, then closing the A bus supply breakers.**
- b. **flashing. Align D bus to A bus by closing the A bus breakers, then opening the B bus breakers.**
- c. **lit (not flashing). Align D bus to A bus by closing the A bus supply breakers, then opening the B bus supply breakers.**
- d. **lit (not flashing). Align D bus to A bus by opening the B bus supply breakers, then closing the A bus supply breakers.**

0	1	2	3	4	5	6	7	8	9	WRITE I.D. NUMBER HERE  MARK I.D. NUMBER HERE  CD
0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	
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0	1	2	3	4	5	6	7	8	9	
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0	1	2	3	4	5	6	7	8	9	

0	1	2	3	4	5	6	7	8	9	WRITE I.D. NUMBER HERE  MARK I.D. NUMBER HERE  CD
0	1	2	3	4	5	6	7	8	9	
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0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	
0	1	2	3	4	5	6	7	8	9	

**PART 1**  
CODE I.D. NUMBER AT LEFT BY FILLING IN THE APPROPRIATE BOXES ACCORDING TO THE EXAMPLE.

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

NAME: RO ANSWER KEY (PTN)

DEPT.: \_\_\_\_\_ DEPT. SUPV. \_\_\_\_\_

DATE: 8-30-99

EXAM TITLE: 1999 NRC WRITTFH EXAM

EXAM NO.: \_\_\_\_\_

TOTAL POINTS: 100

I hereby certify that I will take the exam and abide by the rules of conduct provided by the proctor.

\_\_\_\_\_  
Student's Signature Date

Grader's Name: \_\_\_\_\_  
Score: \_\_\_\_\_ %

\_\_\_\_\_  
Print Signature Date

QC Grader's Name: \_\_\_\_\_  
Score: \_\_\_\_\_ %

\_\_\_\_\_  
Print Signature Date

RAR IE# \_\_\_\_\_



**TURKEY POINT PLANT  
NUCLEAR TRAINING  
DEPARTMENT**

### 1999 RO ANSWER KEY

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

Florida Power & Light Co.

Turkey Point Nuclear Plant

1999 NRC Written Examination

**Senior Reactor Operator (SRO) Exam**

August 30, 1999

*FINAL w/o Reference - R2*

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

**Applicant Information**

Name:	Region: II
Date: August 30, 1999	Facility/Unit: FPL/TURKEY POINT/3&4
License Level: SRO	Reactor Type: W
Start Time:	Finish Time:

**Instructions**

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

**Applicant Certification**

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

\_\_\_\_\_  
Applicant's Signature

**Results**

Examination Value \_\_\_\_\_ Points

Applicant's Score \_\_\_\_\_ Points

Applicant's Grade \_\_\_\_\_ Percent

**QUESTION: 001**

**The following conditions exist on Unit 3:**

- **The Rod Control System is in Manual.**
- **Control Bank C is at 225 steps.**
- **Control Bank D is at 97 steps.**

**The following event occurs:**

- **A Rod Control System malfunction causes continuous rod withdrawal for 10 steps. Rod motion then stops.**

**Which ONE of the following identifies what the RPIs for control banks C and D should indicate?**

- a. **Bank C – 225            Bank D – 97**
- b. **Bank C – 230            Bank D – 97**
- c. **Bank C – 230            Bank D – 107**
- d. **Bank C – 235            Bank D - 107**

**QUESTION: 002**

**The following conditions exist on Unit 3:**

- **The unit is at 100% power**
- **A power supply failure in rod control Power Cabinet 1AC results in one dropped rod in Control Bank A Group 1 and one dropped rod in Control Bank C Group 1.**

**Which ONE of the following actions is correct?**

- a. **Manually runback the turbine.**
- b. **Verify automatic turbine runback.**
- c. **Enter ONOP-28.3 "Dropped RCC" and retrieve both dropped rods.**
- d. **Trip the Reactor and go to E-0 "Reactor Trip Or Safety Injection."**

QUESTION: 003

The following conditions exist on Unit 3:

- The operators are responding to a misaligned D Bank, Group 2, control rod using 3-ONOP-28.1 "RCC Misalignment."
- The appropriate lift coil disconnect switches have been placed to the disconnect position.

Which ONE of the following Power Cabinets will be the source of the Urgent Failure alarm that occurs when the operator initiates rod motion?

- a. 1AC
- b. 1BD
- c. 2AC
- d. 2BD



**QUESTION: 004**

**A large break LOCA occurred while Unit 4 was operating at 100% power. The operators are responding per E-0, "Reactor Trip or Safety Injection".**

**Which ONE of the following describes why the RCO verifies the Feedwater Isolation signal closed the Main and Bypass FW Control valves in step 5 of E-0?**

- a. To ensure the subsequent availability of AFW flowpaths.
- b. To ensure the subsequent availability of secondary heat sink water sources.
- c. To minimize the potential for RCS cooldown due to S/G overfill.
- d. To minimize the potential for containment overpressurization from feedwater addition.

**QUESTION: 005**

**Operators are responding to a LOCA outside Containment using ECA-1.2, "LOCA Outside Containment."**

**If unable to isolate the break, which ONE of the following identifies the procedure ECA-1.2 will direct the operators to transition to?**

- a. E-1, "Loss of Reactor or Secondary Coolant"
- b. ES-1.2, " Post LOCA Cooldown and Depressurization"
- c. ES-1.3, "Transfer to Cold Leg Recirculation"
- d. ECA-1.1, "Loss of Emergency Coolant Recirculation"

**QUESTION: 006**

**Unit 4 operators have just entered E-1 "Loss of Reactor or Secondary Coolant."**

**The following conditions exist:**

- RCS pressure: 1525 psig.
- RCS CET subcooling: 70°F.
- PRZ level: 15%.
- Containment temperature: 165°F.
- S/G NR levels: 4A 4B 4C  
22% 0% 0%

**Which ONE of the following is correct?**

**SI Termination Criteria is not met based on:**

- a. PRZ level.
- b. RCS pressure.
- c. S/G NR levels.
- d. RCS CET Subcooling .

**QUESTION: 007**

**The following conditions exist on Unit 3.**

- **The "POWER BELOW P-8" status lamp is NOT lit.**
- **The 3A RCP experiences a sheared shaft.**

**Which ONE of the following correctly describes the applicable reactor trip logic?**

**The reactor will:**

- a. **trip due to a single RCS loop low flow signal.**
- b. **trip due to a single RCP breaker open signal.**
- c. **not trip because two RCS loops must have low flow signals.**
- d. **not trip because two RCPs must have breaker open signals.**

**QUESTION: 008**

The following conditions exist on Unit 4:

- Operators are performing ES-0.2, "Natural Circulation Cooldown."
- All systems are operable except the RCPs and Channel A of QSPDS.
- The NPS determines a cooldown rate in excess of 25°F/hr is required.

Which ONE of the following describes the correct operator action?

- a. Increase the cooldown rate to a rate not to exceed 60°F/hr and remain in ES-0.2.
- b. Increase the cooldown rate to a rate not to exceed 100°F/hr and remain in ES-0.2.
- c. Transition to ES-0.3, "Natural Circulation Cooldown with Steam Void in Vessel (With RVLMS)."
- d. Transition to ES-0.4, "Natural Circulation Cooldown with Steam Void in Vessel (Without RVLMS)."

**QUESTION: 009**

**The following event occurs while Unit 4 is in Mode 3:**

- **RCS Tavg is 520° F.**
- **Both NIS Source Ranges indicate an unexplained increase in count rate.**
- **The RCO initiates emergency boration per ONOP-046.1 "Emergency Boration."**
- **All equipment functions as designed.**

**Which ONE of the following is correct for emergency boration termination?**

**Emergency boration may be terminated when:**

- a. **Tavg is greater than 525° F.**
- b. **Source Range count rates are stable or decreasing.**
- c. **a minimum of 9 minutes has passed since boration initiation.**
- d. **a minimum of 39 minutes has passed since boration initiation.**

**QUESTION: 010**

**A total loss of CCW occurs on Unit 4 while at 100% power.**

**Which ONE of the following is correct?**

**Damage will occur quickest to the Charging pump:**

- a. oil pump with the Charging pump run at minimum speed.**
- b. oil pump with the Charging pump run at maximum speed.**
- c. fluid drive coupling with the Charging pump run at minimum speed.**
- d. fluid drive coupling with the Charging pump run at maximum speed.**

**QUESTION: 011**

With Unit 4 stable at 2% power, the RCO observes that the Reactor Trip Breakers have no red or green indicating lights lit on the console or on VPB.

Which ONE of the following correctly describes an event that could have caused this condition?

- a. SR NIS N-31 Instrument Power fuse has blown.
- b. SR NIS N-32 Control Power fuse has blown.
- c. IR NIS N-35 Instrument Power fuse has blown.
- d. PR NIS N-41 Control Power fuse has blown.



**QUESTION: 012**

**The following conditions exist on Unit 3:**

- **The unit is at 2% power.**
- **All MSIVs are closed.**
- **A steam line break occurs on the 3A S/G at the safety header.**

**Which ONE of the following describes the plant response given these conditions?**

**SI will occur when:**

- a. **Tavg decreases to 543°F.**
- b. **containment pressure increases to 4 psig.**
- c. **3A S/G pressure decreases to 485 psig.**
- d. **3A S/G pressure decreases to 614 psig.**

**QUESTION: 013**

**Unit 4 operators have just transitioned to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition."**

**The following conditions exist:**

- **AFW is not available.**
- **The "A" Standby Feedwater Pump is being used to maintain S/G inventory.**

**Which ONE of the following indications should be used to control feed water flow?**

**Use changes in:**

- a. **RCS pressure.**
- b. **RCS temperature.**
- c. **PRZ level.**
- d. **S/G pressure.**

**QUESTION: 014**

The following conditions exist on Unit 3:

- The operators have completed the IOAs of ONOP- 014 "Main Condenser Loss of Vacuum."
- The unit was initially at 750 MWe and 26" vacuum with vacuum slowly decreasing.
- The unit is now at 650 MWe and 23" vacuum with vacuum slowly decreasing.

Which ONE of the following is the required operator action?

- a. Continue reducing MWe until vacuum stabilizes at greater than or equal to 20.0" vacuum.
- b. Continue reducing MWe until vacuum stabilizes at greater than or equal to 22" vacuum.
- c. Stabilize the plant and continue to investigate the cause of the low vacuum condition.
- d. Trip the reactor and turbine and perform the actions of E-0, "Reactor Trip or Safety Injection."

**QUESTION: 015**

**Unit 3 experienced a Loss of All AC Power simultaneous with a complete loss of Instrument Air.**

**Operators have restored power to and started the 3A Charging pump.**

**Which ONE of the following correctly describes the effect on CVCS?**

**The letdown flowpath:**

- a. remains open and the charging pump speed goes to minimum.
- b. remains open and the charging pump speed goes to maximum.
- c. isolates and the charging pump speed goes to minimum.
- d. isolates and the charging pump speed goes to maximum.

**QUESTION: 016**

**Unit 3 is in Mode 3 with the following conditions:**

- **A loss of a 120V Vital Instrument Panel has caused VCT level indicator LI-3-115 to indicate zero level.**
- **Annunciator A 4/6 "VCT HI/LO LEVEL" is in alarm.**

**Which ONE of the following is correct for the given conditions?**

**VCT Auto Makeup:**

- a. **initiates and charging pump suction remains aligned to the VCT.**
- b. **initiates and charging pump suction auto swaps to the RWST.**
- c. **is disabled and charging pump suction remains aligned to the VCT.**
- d. **is disabled and charging pump suction auto swaps to the RWST.**

**QUESTION: 017**

**Unit 3 operators have initiated an RCS cooldown while responding to a faulted/ruptured S/G per ECA-3.2, "SGTR With Loss of Reactor Coolant-Saturated Recovery Desired."**

**Which ONE of the following identifies the limitations on the cooldown rate and the reason for initiating the cooldown?**

<u>COOLDOWN RATE</u>	<u>REASON/BASIS</u>
a. 50°F/hr	Minimize radioactive release
b. 50°F/hr	Prevent S/G overfill
c. 100°F/Hr	Minimize radioactive release
d. 100°F/Hr	Prevent S/G overfill

**QUESTION: 018**

**Unit 3 is at 100% power with the 3C ICW Pump out of service.**

**Which ONE of the following describes a situation that would result in a complete loss of ICW flow to the unit?**

**A grass influx that completely blocks flow to the:**

- a. 3A1 and 3A2 Intake Wells.**
- b. 3B1 and 3B2 Intake Wells.**
- c. 3A1 and 3B1 Intake Wells.**
- d. 3A2 and 3B2 Intake Wells.**

**QUESTION: 019**

The fire team is fighting a class C fire in an energized 480 volt Load Center. All available CO<sub>2</sub> extinguishers have been expended and the fire is still not under control.

Which ONE of the following identifies the preferred fire fighting equipment that should be used in this situation?

- a. Fire hoses with fog nozzles
- b. Portable H<sub>2</sub>O extinguishers
- c. Dry Chemical fire extinguishers
- d. Portable Halon fire extinguishers



**QUESTION: 020**

**The following conditions exist:**

- Unit 3 is in Mode 5.
- Unit 4 was initially at 100% power.
- The Control Room has been evacuated due to a fire in the Cable Spreading Room.
- Safe Shutdown conditions have been established on Unit 4.
- Both Units are stable.

**Which ONE of the following identifies the Unit 4 480V Load Centers that will be energized at this time?**

- a. Only A and C Load Centers
- b. A, C and H Load Centers
- c. Only B and D Load Centers
- d. B, D and H Load Centers

**QUESTION: 021**

**Which ONE of the following is an indication or control that is on the Unit 3 Alternate Shutdown Panel?**

- a. 3A EDG voltage indicator
- b. RCS Loop Flow indicator
- c. "C" AFW pump T&T valve control switch
- d. 3A Charging pump control switch

**QUESTION: 022**

**Unit 3 operators are performing step 14 of E-0, "Reactor Trip or Safety Injection" to determine if Containment Spray is required. Containment pressure is 22 psig.**

**Which ONE of the following states the reason for verifying Phase B Isolation has occurred?**

**To ensure:**

- a. the MSIVs are closed due to the high Containment pressure.**
- b. the RCP seals and motors do not overheat.**
- c. that potential release paths from the containment are isolated.**
- d. system alignment is correct for containment spray operation.**

**QUESTION: 023**

**Operators are responding an inadequate core cooling condition using FR-C.1, "Response to Inadequate Core Cooling."**

**Which ONE of the following is correct regarding RCP operation?**

**If an RCP is:**

- a. initially running, it should be left running until it trips by itself.**
- b. initially running, it should be left running until #1 seal delta P trip criteria is met.**
- c. not running, it should be left off until 6% [32%] level is attained in its associated S/G.**
- d. not running, it should be left off until 6% [32%] level is attained in any S/G.**

**QUESTION: 024**

**Operators are performing 3-ONOP-041.4, "Excessive Reactor Coolant System Activity," and have just reduced Tavg to less than 500°F as directed by the procedure.**

**Which ONE of the following describes the basis for reducing Tavg to less than 500°F?**

- a. To block SI in preparation for a controlled cooldown.**
- b. To allow closing the MSIVs in preparation for a controlled cooldown.**
- c. To prevent the release of activity in the event of a main steam line break upstream of the MSIVs.**
- d. To ensure the saturation pressure of the RCS is below the lift pressure of the atmospheric relief valves.**

**QUESTION: 025**

The following conditions exist on Unit 3:

- The unit was initially at 100% power.
- A reactor trip occurred.
- All rods fully insert except Control Bank B Group 2 rods, which remain fully withdrawn.
- Reactor power is 2% and decreasing.
- Intermediate range NIS channels N-35 and N-36 indicate a SUR of -0.3 dpm.
- E-0, "Reactor Trip or Safety Injection" step 4 has been completed.

Which ONE of the following identifies the correct procedure use?

- a. Remain in E-0 and emergency borate while performing E-0.
- b. Transition to FR-S.2, "Response to Loss of Core Shutdown."
- c. Transition to ES-0.1, "Reactor Trip Response" and then emergency borate.
- d. Transition to FR-S.1, "Response to Nuclear Power Generation/ATWS."

**QUESTION: 026**

**The following conditions exist on Unit 4:**

- Low PRZ pressure SI has occurred.
- All 4 HHSI pumps are running.
- PRZ level is increasing.
- RCS pressure is 1450 psig and decreasing.
- HHSI cold leg flow indication (FI-943) is zero.
- PRT pressure and level are increasing.

**Which ONE of the following describes the events that could have caused these conditions?**

- a. A PRZ PORV is open and the HHSI isolation valves, MOV-843A and MOV-843B, failed to open.
- b. A PRZ PORV is open and the HHSI line downstream of the HHSI isolation valves, MOV-843A and MOV-843B, has sheared.
- c. A PRZ Spray valve is open and the HHSI isolation valves, MOV-843A and MOV-843B, failed to open.
- d. A PRZ Spray valve is open and the HHSI line downstream of the HHSI pumps has sheared.

**QUESTION: 027**

Unit 3 operators are responding to a LOCA and have transitioned to E-1 when the STA reports that RCS Cold Leg temperatures are 310°F.

Which ONE of the following describes the correct operator response?

- a. Transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition," and perform the actions of FR-P-1 if RCS pressure is greater than 250 psig.
- b. Transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition," and perform the actions of FR-P-1 if RCS pressure is less than 250 psig.
- c. Transition to FR-P.2, "Response to Anticipated Pressurized Thermal Shock Condition," and perform the actions of FR-P-2 if RCS pressure is greater than 250 psig.
- d. Transition to FR-P.2, "Response to Anticipated Pressurized Thermal Shock Condition," and perform the actions of FR-P-2 if RCS pressure is less than 250 psig.



**QUESTION: 028**

**Unit 3 operators are performing Step 16 of EOP-ES-1.2 "Post LOCA Cooldown and Depressurization."**

**The following conditions exist:**

- **One Unit 3 HHSI pump is running.**
- **One RHR pump is running.**
- **Two Charging pumps are running at maximum flow.**
- **Containment temperature is 178°F.**
- **CET subcooling is 68°F**
- **RCS Thot temperatures are 320°F.**
- **RCS pressure is 260 psig.**
- **No RCPs are available.**
- **PRZ level is stable at 30%.**

**Which ONE of the following describes the operating HHSI/RHR pump configuration when the operators isolate the accumulators?**

- a. **Zero HHSI pumps, Zero RHR pumps.**
- b. **Zero HHSI pumps, One RHR pump.**
- c. **One HHSI pump, Zero RHR pumps.**
- d. **One HHSI pump, One RHR pump.**

**QUESTION: 029**

**Which ONE of the following describes a condition that would prevent successful transition to Cold Leg recirculation?**

- a. Only one of the RHR Pump Suction Stop valves, MOV-750 or MOV-751 can be energized.
- b. Only one of the RHR Suction from RWST valves, MOV-862A or MOV-862B can be energized.
- c. Containment Recirculation Sump Isolation valves MOV-860A and MOV-860B will not open.
- d. Containment Recirculation Sump Isolation valves MOV-860A and MOV-861A will not open.

**QUESTION: 030**

**Unit 4 is in Mode 5 and all loops are filled.**

**The following equipment is out of service:**

- RHR Loop A
- 4C ICW pump
- 4C CCW pump

**Which ONE of the following will result in a loss of RHR required capability per 3-OP-050, "Residual Heat Removal System?"**

**A failure of the:**

- a. 4A EDG.
- b. 4B CCW H/X.
- c. 4A CCW pump.
- d. 4B ICW pump.

**QUESTION: 031**

**Unit 3 is in Mode 1 when operators responded to PRZ pressure transmitter, PT-445, failed high.**

**The following stable conditions now exist:**

- Reactor Power        80%
- Tavg                    572 °F
- PRZ Pressure         2150 psig
- PRZ Level             48%

**Which ONE of the following is the operator response required by Technical Specifications?**

- a.    Restore PRZ level to greater than 48%.
- b.    Restore PRZ pressure to greater than 2200 psig.
- c.    Reduce Tavg to less than 570°F.
- d.    Reduce Reactor Power to less than 75%.

**QUESTION: 032**

**The following conditions exist on Unit 3:**

- **Reactor power is 22% with operators performing a plant startup.**
- **NIS Intermediate range channel N-36 fails high.**

**Which ONE of the following is the correct operator response?**

- a. **Enter E-0, "Reactor Trip or Safety Injection."**
- b. **Place the N-36 LEVEL TRIP switch in BYPASS and continue the power ascension.**
- c. **Place the N-36 LEVEL TRIP switch in BYPASS and reduce power below permissive P-6.**
- d. **Place the N-36 LEVEL TRIP switch in BYPASS and reduce power below permissive P-10.**

**QUESTION: 033**

**The following conditions exist:**

- Unit 3 is at 100% power.
- PRMS Channel R-15 (Condenser Air Ejector monitor) has alarmed.
- At 0800, 3C S/G tube leakage is calculated to be 110 GPD.
- At 0900, 3C S/G tube leakage is calculated to be 160 GPD.

**Which ONE of the following is the correct operator response?**

- a. Increase S/G sampling frequency and return to procedure and step in effect.
- b. Place the unit in Mode 3 within 1 hour.
- c. Place the unit in Mode 3 within 6 hours.
- d. Trip the reactor and enter E-0 "Reactor Trip or Safety Injection."

**QUESTION: 034**

The following has occurred on Unit 3:

- Operators are responding to a SGTR.
- They are performing a cooldown in E-3, "Steam Generator Tube Rupture," to increase subcooling prior to RCS depressurization.
- The STA informs the crew that a Red Path exists on the Integrity Status Tree.

Which ONE of the following describes the correct operator response?

If the RCPs are:

- a. running , then stop the cooldown, and continue performing E-3.
- b. running, then continue the cooldown, and continue performing E-3.
- c. not running, then stop the cooldown, and transition to FR-P.1.
- d. not running, then continue the cooldown and continue performing E-3.

**QUESTION: 035**

**Which ONE of the following describes the basis for verifying AFW flow is greater than 390 gpm following a loss of main feedwater event?**

**390 gpm is the minimum AFW flow required in the event:**

- a. an ATWS occurs.
- b. only one AFW pump is running.
- c. any S/G level is below 6% NR.
- d. all S/G levels are below 6% NR.



**QUESTION: 036**

**Unit 3 operators have entered FR-H.1 "Response to Loss of Secondary Heat Sink."**

**The following conditions exist:**

- **No Main Feedwater Pumps are available.**
- **No Auxiliary Feedwater Pumps are available.**
- **The RCPs are off.**
- **Annunciator E 2/6 "HI-HI SG LVL TURBINE TRIP/FEEDWATER ISOLATION is in alarm.**
- **The operators are preparing to re-establish feedwater using a Standby Steam Generator Feedwater Pump.**

**Which ONE of the following describes the minimum Control Room action(s) required to re-establish feed flow to the S/Gs?**

**Reset:**

- a. **SI**
- b. **Phase A**
- c. **Feedwater Isolation**
- d. **SI and Feedwater Isolation**

**QUESTION: 037**

**The following conditions exist on Unit 3:**

- The unit has a normal electrical lineup.
- 3C ICW pump is running.
- A loss of the normal DC control power supply to the 3D 4KV Bus occurs.

**Which ONE of the following describes the indications that would now exist on VPA for the 3C ICW pump?**

- a. Red light on - Normal amps
- b. Green light on - No amps
- c. Red and Green lights off - Normal amps
- d. Red and Green lights off. - No amps

**QUESTION: 038**

**Which ONE of the following describes the Immediate Operator Action(s) of 0-ONOP-066, "High Area Radiation Monitoring System Alarm," in the event Annunciator X 4/1, ARMS HI RADIATION, alarms?**

**Identify the alarming channel(s) at the ARMS panel and then:**

- a. announce the alarm over the plant page system.
- b. notify Security to restrict entry to the affected areas.
- c. press the ALARM ACK pushbutton on the ARMS control panel.
- d. cross-check the alarming ARMS channel(s) with PRMS channel(s) in the affected area.

**QUESTION: 039**

**Unit 4 operators are responding to a LOCA and have entered E-1 "Loss of Reactor or Secondary Coolant."**

- The TSC is not yet operational.
- Containment temperature peaked at 200°F and has dropped to 170°F.
- Containment radiation peaked at  $1.3 \times 10^6$  R/hr and has dropped to  $1.2 \times 10^5$  R/hr.

**Which ONE of the following is correct?**

**Intact S/G levels should be maintained in the NR between:**

- a. 6% and 32%
- b. 15% and 32%
- c. 15% and 50%
- d. 32% and 50%

**QUESTION: 040**

**Unit 4 operators have entered 0-ONOP-13, "Loss of Instrument Air" in response to Annunciator I 6/1, INST AIR SYSTEM HI TEMP/LO PRESS.**

**The following conditions exist:**

- **All available air compressors are running.**
- **Instrument Air pressure indicator, PI-4-1444, is 60 psig and stable.**

**Which ONE of the following identifies the equipment that will be affected?**

**Unit 4:**

- a. **MSIVs will fail closed.**
- b. **Feedwater Reg Valves will fail closed.**
- c. **EDG Fuel Oil Transfer capability will be lost.**
- d. **Train 1 AFW FCV automatic operation will be lost.**

**QUESTION: 041**

Unit 4 is at 100% power with all systems operating in automatic and all switches in their normal positions.

PRZ level transmitter LT-459 fails low.

Which ONE of the following describes the plant response?

- a. Charging flow will decrease.  
Letdown will isolate.
- b. Charging flow will decrease.  
Letdown will remain in service.
- c. Charging flow will increase.  
Letdown will isolate.
- d. Charging flow will increase.  
Letdown will remain in service.

**QUESTION: 042**

**The following conditions exist with Unit 3 at 100% power and all systems operable:**

- **3D 4KV Bus is aligned to 3A 4KV Bus.**
- **3B and 3C ICW Pumps are running.**

**The following events occur:**

- **A loss of offsite power (LOOP) occurs on Unit 3.**
- **The 3B EDG fails to start.**

**Which ONE of the following describes the ICW pump configuration when sequencing is complete (assume no operator response)?**

- a. **No ICW pumps will be running.**
- b. **Only the 3A ICW pump will be running.**
- c. **Only the 3C ICW pump will be running.**
- d. **The 3A and 3C ICW pumps will be running.**

**QUESTION: 043**

**Unit 4 operators are performing FR-H.2 "Response to S/G Overpressure."**

**Current conditions are as follows:**

- 4A S/G pressure is 1135 psig.
- 4A S/G level has risen to 60%.
- RCS Thot temperatures are 520°F.
- All three RCPs are running.

**Which ONE of the following describes how to correctly reduce pressure in the 4A S/G?**

- a. Stop the 4A RCP.
- b. Dump steam from the 4A S/G.
- c. Dump steam from the unaffected S/Gs.
- d. Reduce 4A S/G inventory using the S/G blowdown system.



**QUESTION: 044**

Unit 3 is stable at 75% power with all systems in automatic and Tavg matched with Tref.

The following events occur:

- 3A Steam Generator Feed pump breaker trips open.
- Generator load has stabilized following the turbine runback.

The RCO observes the following indications:

- Tavg: 555°F and decreasing
- Tref 559°F and stable
- Control Rods Inserting

Which ONE of the following describes the correct immediate operator action?

- a. Maintain rods in AUTO and if rods continue to insert, adjust turbine load to match Tavg to Tref.
- b. Maintain rods in AUTO and if rods continue to insert, adjust boron concentration to match Tavg to Tref.
- c. Place rods in MANUAL and if rods continue to insert, adjust turbine load to match Tavg to Tref.
- d. Place rods in MANUAL and if rods continue to insert, adjust boron concentration to match Tavg to Tref.

**QUESTION: 045**

**The following plant conditions exist:**

- **Containment Phase "A" isolation has occurred.**
- **The isolation signal has not yet been reset.**

**Which ONE of the following describes the effect this condition will have on RCP Number 1 seal leak off flow?**

**Number 1 seal leak off flow will:**

- a. **decrease because VCT level has increased.**
- b. **decrease because the backpressure has increased.**
- c. **go to zero because RCP Seal Return to VCT valve, MOV-381, is closed.**
- d. **go to zero because #1 Seal Leakoff Isolation valves, 303A, 303B, and 303C are closed.**

**QUESTION: 046**

**A reactor startup is being performed on Unit 3. The following conditions apply:**

- **The ECC estimated critical rod height is D bank at 110 steps.**
- **The initial highest source range count rate was N-31 at 250 cps.**
- **The current N-31 count rate is 1000 cps.**
- **Based on the current N-31 count rate, the 1/M plot predicts criticality at D bank, 180 steps.**
- **Integrated rod worth for D-110 is 490 pcm.**
- **Integrated rod worth for D-180 is 160 pcm.**

**Which ONE of the following is the correct operator response?**

- a. **Do not continue the reactor startup. Obtain permission from the NPS to continue.**
- b. **Do not continue the reactor startup. Obtain permission from the Reactor Supervisor to continue.**
- c. **Continue the reactor startup. If the prediction is still D-180 after the next doubling, obtain permission from the NPS to continue.**
- d. **Continue the reactor startup. If the prediction is still D-180 after the next doubling, obtain permission from the Reactor Supervisor to continue.**

**QUESTION: 047**

**Which ONE of the following describes the purpose of the interlocks between CVCS Letdown Isolation valve, LCV-460, and the Letdown Orifice Isolation valves, 200A, 200B, & 200C?**

**The interlocks prevent damage to:**

- a. LCV-460 upon depressurization of the letdown line.
- b. CV-200A, 200B, 200C upon depressurization of the letdown line.
- c. the Regenerative Heat Exchanger upon subsequent repressurization of the letdown line.
- d. RV-203, Letdown Relief Valve, upon subsequent repressurization of the letdown line.

**QUESTION: 048**

**The following conditions exist on Unit 3:**

- **Reactor power is stable at  $10^{-8}$  amps.**
- **“PRZ Pressure Control Channel” PT-444 fails high.**

**Assuming no operator action, which ONE of the following describes the response of the plant to this condition?**

- a. **The reactor will trip when PRZ pressure increases to 2385 psig.**
- b. **PRZ pressure will stabilize at approximately 2000 psig .**
- c. **The reactor will trip when PRZ pressure decreases to 1835 psig.**
- d. **SI actuation will occur when PRZ pressure decreases to 1730 psig.**

**QUESTION: 049**

**Unit 3 is at 100% power and Annunciator B 9/3, SHUTDOWN ROD OFF TOP/DEVIATION is not operational.**

**Which ONE of the following describes the action that operators must take at least once every 4 hours?**

**Verify RPIs and Step Counters agree within:**

- a. 2 steps.
- b. 12 steps.
- c. 18 steps.
- d. 24 steps.

**QUESTION: 050**

Unit 3 is stable at 98% power. Reactor Engineering has performed QPTR calculations using a full core flux map and core exit thermocouples. Both calculations reveal the QPTR value is 1.03.

Which ONE of the following describes the required operator response?

Reduce NIS power to less than:

- a. 97% within 2 hours.
- b. 95% within 2 hours.
- c. 91% within 2 hours.
- d. 89% within 2 hours.

**QUESTION: 051**

**A Xenon oscillation caused the Axial Flux Difference ( $\Delta I$ ) meters to display the following values while Unit 3 was at 80% power:**

<b>N-3-41</b>	<b>N-3-42</b>	<b>N-3-43</b>	<b>N-3-44</b>
<b>-14</b>	<b>-15</b>	<b>-20</b>	<b>-21</b>

**Which ONE of the following describes the required operator response?**

- a. Return at least one  $\Delta I$  meter within the Operational Space within 15 minutes.**
- b. Return at least one  $\Delta I$  meter within the Operational Space within 60 minutes.**
- c. Return at least two  $\Delta I$  meters within the Operational Space within 15 minutes.**
- d. Return at least two  $\Delta I$  meters within the Operational Space within 60 minutes.**



**QUESTION: 052**

**Unit 3 operators are responding to a spurious SI signal and are attempting to determine if SI termination criteria are met. The ANPS directs the RCO to check subcooling on QSPDS.**

**QSPDS displays the following:**

<b>SATURATION MARGIN</b>		
	<b>DEG F</b>	<b>PSI</b>
<b>UPPER HEAD</b>	<b>48</b>	<b>633</b>
<b>RCS (MIN)</b>	<b>36</b>	<b>438</b>
<b>CET</b>	<b>28</b>	<b>340</b>

**Assuming other SI Termination Criteria are satisfied, which ONE of the following is correct?**

**The RCO should declare SI Termination Criteria are:**

- a. not met after observing the RCS (MIN) value.
- b. not met after observing the CET value.
- c. met after observing the RCS (MIN) value.
- d. met after observing the CET value.

**QUESTION: 053**

**A large break LOCA occurs on Unit 3 while the 3B Sequencer is inoperable.**

**Which ONE of the following describes an effect on the Unit 3 containment?**

**Containment pressure will be higher because only the:**

- a. 3A ECC will autostart.
- b. 3C ECC will autostart.
- c. 3A and 3C ECCs will autostart.
- d. 3B and 3C ECCs will autostart.

**QUESTION: 054**

Unit 3 experienced a large break LOCA. Operators have responded with the EOP network and have completed the actions of ES-1.3, "Transfer to Cold Leg Recirculation." Containment temperature has decreased to 140°F.

Which ONE of the following describes the correct Containment Spray Pump (CSP) alignment?

- a. 1 CSP running with its suction aligned directly to the Containment Recirc. sump.
- b. 1 CSP running with its suction aligned to the Containment Recirc. sump via the RHR pump discharge.
- c. 2 CSPs running with their suctions aligned directly to the Containment Recirc. sump.
- d. 2 CSPs running with their suctions aligned to the Containment Recirc. sump via the RHR pump discharge.

**QUESTION: 055**

**Unit 3 is operating at 70% power with all systems operable except the 3C Condensate pump which has its breaker racked out.**

**The 3A Condensate pump breaker trips open.**

**Which ONE of the following describes the correct operator response?**

**Perform the actions of:**

- a. ONOP-089, "Turbine Runback."
- b. ONOP-100, "Fast Load Reduction."
- c. GOP-103, "Power Operation to Hot Standby."
- d. E-0, "Reactor Trip or Safety Injection."

**QUESTION: 056**

**Unit 3 is operating at 100% power when the controlling S/G pressure transmitter fails low on the 3A S/G.**

**Which ONE of the following describes the effect this will have on the controlling indicated steam flow and the initial 3A FW Control Valve, FCV-478, response?**

**Indicated steam flow will:**

- a. decrease. The FCV will open.
- b. decrease. The FCV will close.
- c. increase. The FCV will open.
- d. increase. The FCV will close.

**QUESTION: 057**

**With Unit 3 initially at 100% power and all systems in normal alignment, the 3C S/G experiences a main steam line break inside Containment.**

**Which ONE of the following describes the effect this accident will have on the AFW system?**

- a. Train 1 AFW will be lost until the operators open AFSS-3-007.
- b. Train 1 AFW will be lost until the operators close AFSS-3-006.
- c. Train 2 AFW will be lost until the operators open AFSS-3-007.
- d. Train 2 AFW will be lost until the operators close AFSS-3-006.

**QUESTION 058**

Unit 3 operators have entered ES-1.1, "SI Termination," and are preparing to start a Main Feedwater pump and secure AFW.

The following conditions exist:

- "A" AFW pump is running.
- "B" and "C" AFW pumps are stopped and aligned for auto start.
- The NWE locally starts the 3A Main Feed pump.
- The BOP fails to "red flag" the 3A Main Feed pump control switch semaphore.

Which ONE of the following describes the effect of the BOP's failure to red flag the 3A Main Feed pump control switch semaphore?

- a. "B" and "C" AFW pumps will automatically start.
- b. AFW pump automatic start capability will be degraded.
- c. The 3A Main Feed pump will not trip from an SI signal.
- d. The 3A Main Feed pump will automatically trip in 50 seconds.

**QUESTION: 059**

The following occurs while Unit 3 is in Mode 1:

- DC Bus 3D23 loses power.

Which ONE of the following operator actions are correct?

- a. Shutdown the unit using GOP-103, "Power Operation to Hot Standby." After the unit is stable in Mode 3, then perform ONOP-003.5, "Loss of DC Buses 3D23 and 3D23A(3B)."
- b. Shutdown the unit using GOP-103, "Power Operation to Hot Standby and perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)," concurrently with the actions of GOP-103.
- c. Verify the reactor is tripped using E-0, "Reactor Trip or Safety Injection." When the unit is stable, then perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)."
- d. Verify the reactor is tripped using E-0, "Reactor Trip or Safety Injection," and perform ONOP-003.5, "Loss of DC Buses 3D23 and D23A(3B)," concurrently with the Immediate Actions of E-0.



**QUESTION: 060**

**The following conditions exist on Unit 3:**

- The unit was at 100% power.
- A spurious SI occurs.
- The operators are responding per the EOP network and have just transitioned to EOP-ES-1.1, "SI Termination."
- Annunciator A 7/1, PRT HI/LO LEVEL HI PRESS/TEMP, alarms.

**Assuming all systems function as designed, which ONE of the following describes the probable cause of this alarm?**

- a. A PRZ PORV has lifted.
- b. CVCS Low Pressure relief valve, RV-209, has lifted.
- c. RHR Header to Loops relief valve, RV-706, has lifted.
- d. RCP #1 Seal Leakoff relief valve, RV-382, has lifted.

**QUESTION: 061**

**Operators are investigating an abnormal increase in countrate on PRMS radiation monitor R-14, PLANT VENT, when they discover pressure in Gas Decay Tank (GDT) #4 is decreasing.**

**No planned GDT releases are in progress and the Gas Decay Tank Discharge Valve, RCV-014, is closed.**

**After verifying all valve alignments are correct, which ONE of the following describes the correct operator response?**

**Direct the SNPO to:**

- a. transfer the contents of GDT #4 to another GDT.**
- b. verify both Auxiliary Building Exhaust fans are running.**
- c. stop all running Waste Gas compressors.**
- d. start an additional Waste Gas compressor.**

**QUESTION: 062**

**The Control Room Normal Air Intake radiation monitor, RAI-6642, alarms.**

**Which ONE of the following describes the damper response of the Control Building Ventilation System?**

- a.    **Ventilation Inlet dampers, D-1A and D-1B - CLOSE.  
East and West Inlet dampers, D-2 and D-3 - OPEN.  
Control Room Recirc. dampers, D-11A and D-11B - OPEN.**
- b.    **Ventilation Inlet dampers, D-1A and D-1B - OPEN.  
East and West Inlet dampers, D-2 and D-3 - CLOSE.  
Control Room Recirc. dampers, D-11A and D-11B - OPEN.**
- c.    **Ventilation Inlet dampers, D-1A and D-1B - CLOSE.  
East and West Inlet dampers, D-2 and D-3 - OPEN.  
Control Room Recirc. dampers, D-11A and D-11B - CLOSE.**
- d.    **Ventilation Inlet dampers, D-1A and D-1B - OPEN.  
East and West Inlet dampers, D-2 and D-3 - CLOSE.  
Control Room Recirc. dampers, D-11A and D-11B - CLOSE.**

**QUESTION: 063**

**The following conditions exist on Unit 3:**

- **The unit has been shut down at Beginning-Of-Life for equipment repairs.**
- **PRZ level is being maintained at 30%.**
- **RCS temperature is 140°F.**

**The following events occur 10 days after the shutdown:**

- **The running RHR pump trips and neither RHR pump can be restarted.**
- **Operators are unable to establish any other method of RCS cooling.**

**Which ONE of the following identifies the time closest to when the RCS will enter Mode 4?**

- a. **12 minutes**
- b. **35 minutes**
- c. **42 minutes**
- d. **50 minutes**

**QUESTION: 064**

**A reactor and turbine trip occurs on Unit 3 while at 25% power.**

**Which ONE of the following describes the response of the Steam Dump to Condenser (SDTC) system?**

- a. **Only 2 SDTC valves will arm.  
The SDTC system will reduce Tavg to no-load Tavg.**
- b. **Only 2 SDTC valves will arm.  
The SDTC system will reduce Tavg to within 5°F of Tref.**
- c. **All 4 SDTC valves will arm.  
The SDTC system will reduce Tavg to no-load Tavg.**
- d. **All 4 SDTC valves will arm.  
The SDTC system will reduce Tavg to within 5°F of Tref.**

**QUESTION: 065**

**Unit 3 was operating at 100% with all systems in normal alignment. An SI signal occurs. All systems function as designed.**

**After sequencing is complete, which ONE of the following describes the number of CCW load(s) attached to the CCW System as it relates to the CCW "Rule of Five"?**

- a. One CCW load
- b. Two CCW loads
- c. Three CCW loads
- d. Four CCW loads

**QUESTION: 066**

**The following conditions exist on Unit 3:**

- **The unit is in Mode 1.**
- **The operators have entered 0-ONOP-013 "Loss of Instrument Air."**
- **Instrument air pressure is 70 psig and slowly decreasing.**
- **All available instrument air compressors are running.**

**Which ONE of the following would require the unit to be tripped?**

**Isolating Instrument Air to the:**

- a. **Intake area.**
- b. **Control Room.**
- c. **Containment Building.**
- d. **Unit 3 Main Steam Platform.**

**QUESTION: 067**

Unit 3 is at 50% power with the 3C Charging pump out of service.

The RCO notes the following Control Room indications:

- Annunciator G 1/2, "CHARGING PUMP HI SPEED" alarms.
- The only running Charging pump (3A) is in Auto with 100% output demanded.
- PRZ level is 33% and decreasing.

Which ONE of the following describes the required procedural response?

- a. Isolate letdown. If PRZ level continues to decrease, then start the 3B Charging pump and maximize charging flow.
- b. Isolate letdown. If PRZ level continues to decrease, then trip the reactor and turbine and transition to E-0, "Reactor Trip or Safety Injection."
- c. Start the 3B Charging pump and maximize charging flow. If PRZ level continues to decrease, then isolate letdown.
- d. Start the 3B Charging pump and maximize charging flow. If PRZ level continues to decrease, then trip the reactor and turbine and transition to E-0, "Reactor Trip or Safety Injection."



**QUESTION: 068**

Operators are responding to a large break LOCA. They are currently aligning the ECCS system for Hot Leg recirculation. Step 10 of ES-1.4, "Transfer to Hot Leg Recirculation," directs the operators to start the second RHR pump.

Which ONE of the following describes why the operators are directed to start the second RHR pump?

Starting the second RHR pump allows the operators to:

- a. start a second HHSI pump to increase hot leg injection flow.
- b. direct flow simultaneously to the cold legs and to the suction of the HHSI pump.
- c. align alternate hot leg recirculation using RHR Recirculation Isolation valve, 741A.
- d. align alternate hot leg recirculation using Alternate Low Head Injection valve, MOV-872.

QUESTION: 069

Unit 3 is in Mode 5 when RCS loop pressure transmitter, PT-405, fails high.

Which ONE of the following identifies the effect of this failure on:

- 1) PRZ PORV – 455C and PORV – 456
- 2) Loop 3C RHR Pump Suction Stop Valves, MOV-750 and MOV-751?

	<u>PORV-455C</u>	<u>PORV-456</u>	<u>MOV-750</u>	<u>MOV-751</u>
a.	OPENS	NONE	NONE	CLOSES
b.	OPENS	NONE	CLOSES	NONE
c.	NONE	OPENS	NONE	CLOSES
d.	NONE	OPENS	CLOSES	NONE

**QUESTION: 070**

**During operation at reduced power the following conditions exist:**

- **Tavg is 560°F.**
- **PRZ level is 45%.**
- **PRZ pressure is 2230 psig.**

**Which ONE of the following describes the PRZ heater status the RCO should verify?**

- a. **Control Group – On.  
Backup Groups – On.**
- b. **Control Group – On.  
Backup Groups – Off.**
- c. **Control Group – Off.  
Backup Groups – On.**
- d. **Control Group – Off.  
Backup Groups – Off.**

**QUESTION: 071**

**Which ONE of the following would result in the OTΔT reactor protection trip setpoint being reduced? Consider each parameter independently.**

- a. **ΔT increasing**
- b. **Tavg increasing**
- c. **PRZ pressure increasing**
- d. **Reactor Power decreasing**

**QUESTION: 072**

**Unit 3 is operating at 100% power with all systems in their normal configuration, when the Tavg Median Signal Selector, TM-408, fails low.**

**Which ONE of the following describes the plant response?**

- a. Control rods will not move. Charging pump speed will increase.
- b. Control rods will not move. Charging pump speed will decrease.
- c. Control Rods will step in. Charging pump speed will increase.
- d. Control rods will step in. Charging pump speed will decrease.

**QUESTION: 073**

**The following refueling conditions exist on Unit 4:**

- **Core off-load is in progress.**
- **A reactor vessel refueling cavity seal failure occurs.**

**Assuming no operator action, which ONE of the following describes the effect on a fuel assembly that is upright in the spent fuel pool upender?**

**The fuel assembly in the upender will be:**

- a. **completely uncovered.**
- b. **partially uncovered.**
- c. **covered with a few inches of water above it.**
- d. **covered with a few feet of water above it.**

**QUESTION: 074**

The following initial conditions existed on Unit 3:

- Reactor power was 80% and stable.
- $T_{avg}$  was equal to  $T_{ref}$ .
- All systems are in automatic.

A small steam leak then occurs on the main steam header.

Which ONE of the following describes the actual reactor power and  $T_{avg}$  (prior to operator action), and the proper operator response?

	<u>Rx Power</u>	<u><math>T_{avg}</math></u>	<u>Operator Response</u>
a.	lower	lower	Reduce Turbine Load
b.	higher	lower	Reduce Turbine Load
c.	lower	higher	Insert Control Rods
d.	higher	higher	Insert Control Rods

**QUESTION: 075**

**The following conditions exist on Unit 3:**

- **The unit is in Mode 3 with Tavg at 545°F.**
- **The Steam Dump to Condenser (SDTC) system Mode Selector switch is in the MAN position.**
- **PT-464, Steam Header Pressure, fails high.**

**Which ONE of the following describes the effect on the SDTC system?**

- a. **Only 2 valves will open and will remain open.**
- b. **Only 2 valves will open and then close when Tavg decreases to 543°F.**
- c. **All 4 valves will open and will remain open.**
- d. **All 4 valves will open and then close when Tavg decreases to 543°F.**



**QUESTION: 076**

**Which ONE of the following identifies the first PRMS detector that should respond to a SGTR and the effect on the detector?**

- a. **Condenser Air Ejector Monitor, R-15. R-15 will be automatically isolated.**
- b. **Condenser Air Ejector Monitor, R-15. R-15 will not be automatically isolated.**
- c. **Steam Generator Blowdown Sample Monitor, R-19. R-19 will be automatically isolated.**
- d. **Steam Generator Blowdown Sample Monitor, R-19. R-19 will not be automatically isolated.**

**QUESTION: 077**

**Unit 3 is at 100% power with its Startup Transformer out of service when an automatic reactor trip occurs.**

- **The 3A EDG starts and repowers the 3A 4KV Bus.**
- **The 3B EDG locks out and cannot be restarted.**

**The Unit 3 ANPS directs the BOP to use 3-ONOP-004.3, "Loss of 3B 4KV Bus," to restore power to the 3B 4KV Bus.**

**Which ONE of the following describes how power will be restored to the 3B 4KV Bus?**

**Power will be restored to the 3B 4KV Bus from the:**

- a. **3A 4KV Bus.**
- b. **Unit 4 Startup Transformer.**
- c. **3C 4KV Bus.**
- d. **Station Blackout Tie Line.**

**QUESTION: 078**

Unit 3 is operating at 100% power with all systems in normal alignment. 3A EDG is being run for surveillance purposes and is presently tied to the 3A 4KV Bus.

The following events occur:

- A main generator lockout occurs.
- Startup transformer breaker, 3AA05, fails to close and is mechanically bound.
- 3A Reactor Coolant Pump breaker, 3AA01, fails to automatically open.

Which ONE of the following describes the required operator response?

- a. Manually open EDG breaker 3AA20, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and manually close breaker 3AA20.
- b. Manually open EDG breaker 3AA20, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and verify breaker 3AA20 automatically closes.
- c. Verify EDG breaker 3AA20 automatically opens, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and manually close breaker 3AA20.
- d. Verify EDG breaker 3AA20 automatically opens, strip the 3A 4KV Bus using 3-ONOP-004.2, "Loss of 3A 4KV Bus," and verify breaker 3AA20 automatically closes.

**QUESTION: 079**

Unit 3 is at 100% power when PRMS R-3-20, Reactor Coolant Letdown, radiation monitor alarms. HP investigates and surveys the area in the Pipe and Valve Room.

The HP Supervisor reports the presence of a Hot Spot that is reading 400 mr/hr at 2 feet from the source.

Which ONE of the following identifies the distance from the source at which the measured dose rate will be 100 mr/hr?

- a. 4 feet
- b. 6 feet
- c. 8 feet
- d. 10 feet

**QUESTION: 080**

**Unit 3 was operating at 100% power when the following events occurred:**

- **A Loss of Off Site Power (LOOP)**
- **The 3A1 Circulating Water Pump breaker did not open.**
- **All other systems responded as designed.**

**Which ONE of the following describes the effect on the 3A EDG breaker and 3A Sequencer?**

	<u><b>3A EDG Breaker</b></u>	<u><b>3A Sequencer</b></u>
a.	<b>Remains OPEN</b>	<b>Sequences</b>
b.	<b>Remains OPEN</b>	<b>Does Not Sequence</b>
c.	<b>Automatically CLOSES</b>	<b>Sequences</b>
d.	<b>Automatically CLOSES</b>	<b>Does Not Sequence</b>

**QUESTION: 081**

Units 3 and 4 are at 100% power when the following events occur:

- A loss of instrument air has occurred on both units.
- 3CM, 3CD, 4CM, and 4CD instrument air compressors are all inoperable.
- The NPO has been directed to open the four inch Service Air Supply to Unit 3/Unit 4 Tie Valve.
- The NPO reports that the four inch Service Air Supply valve cannot be opened.

Which ONE of the following describes the correct operator response?

Open the:

- a. Service Air Supply valve from Units 1 & 2.
- b. Instrument Air Supply valve from Units 1 & 2.
- c. Breathing Air Supply cross-tie valve.
- d. two inch Service Air Supply to Unit 3/Unit 4 tie valve.

**QUESTION: 082**

**Both units are at 100% power when a leak occurs in the Main Fire Loop. Loop pressure decreases continuously.**

**Which ONE of the following identifies the first pump to auto start?**

- a. The standby Jockey pump
- b. The standby Service Water pump
- c. The Electric Fire pump
- d. The Diesel Engine Driven Fire pump

**QUESTION: 083**

**Unit 4 is at 100% power.**

**Which ONE of the following conditions, per Tech. Specs., would require action to be taken within one hour to prevent a plant shutdown?**

- a. RCS Tavg is 543°F.
- b. RCS pressure boundary leakage is 1 gpm.
- c. Containment pressure is 3.1 psig.
- d. Containment temperature is 122°F.



**QUESTION: 084**

**A large break LOCA occurred on Unit 4.**

**In accordance with ODI-CO-028, "Conduct of Crew Briefs," Which ONE of the following describes when a crew brief should be held during performance of the EOPs?**

- a. After Step 4 of E-0 is complete.
- b. After Step 16 of E-0 is complete.
- c. Upon transitioning from E-0.
- d. Upon making the Emergency Classification.

**QUESTION: 085**

**Which ONE of the following identifies the minimum shift manning requirements with one unit in Mode 1 and the other unit in Mode 5?**

	<b>NPS</b>	<b>SRO</b>	<b>RO</b>	<b>AO</b>	<b>STA</b>
<b>a.</b>	1	2	3	3	1
<b>b.</b>	1	1	3	3	1
<b>c.</b>	1	1	3	3	0
<b>d.</b>	1	1	2	3	1

**QUESTION: 086**

**Unit 4 is in Mode 3 and PRZ pressure is 2235 psig.**

**Which ONE of the following conditions results in HHSI Loop B hot leg check valve, 4-874B, having acceptable leakage in accordance with Tech. Specs.?**

- a. The currently measured leakage is 5.5 gpm.
- b. The previously measured leakage was 0.5 gpm and the currently measured leakage is 3.0 gpm.
- c. The previously measured leakage was 2.0 gpm and the currently measured leakage is 3.7 gpm.
- d. The previously measured leakage was 4.0 gpm and the currently measured leakage is 4.4 gpm.

**QUESTION: 087**

**Engineering is analyzing Spent Fuel Pool Heat Exchanger performance and requests the Operations Department to swap to the low SFP pump suction, from the currently configured high SFP pump suction as described in the FSAR.**

**Which ONE of the following describes the required action(s) to comply with Engineering's request?**

- a. A "One Time Only" approved OTSC is required.**
- b. Stationing an operator as a Human Clearance is required.**
- c. An approved Safety Evaluation and Temporary Procedure are required.**
- d. Operations Manager approval is required and the NRC Resident must be on site.**

**QUESTION: 088**

**A Safety Evaluation has been performed on a proposed plant change and the results reveal that the margin of safety, as defined in the basis of Tech. Specs, will be reduced.**

**Which ONE of the following is correct regarding implementation of the proposed change?**

- a. **An Unreviewed Safety Question exists.  
NRC authorization is required prior to implementation.**
- b. **An Unreviewed Safety Question:exists.  
NRC authorization is NOT required prior to implementation.**
- c. **An Unreviewed Safety Question does NOT exist.  
NRC authorization is required prior to implementation.**
- d. **An Unreviewed Safety Question does NOT exist.  
NRC authorization is NOT required prior to implementation.**

**QUESTION: 089**

**Unit 3 is at 100% power.**

**Mechanical Maintenance is planning to erect a scaffold over Redundant Safety Related Equipment to perform trouble shooting activities.**

**Which ONE of the following identifies the highest level of approval required for the erection of this scaffolding?**

- a. ANPS
- b. NPS
- c. Operations Supervisor
- d. Operations Manager

**QUESTION: 090**

The following conditions exist:

- Unit 3 is in Mode 1.
- Unit 4 is in Mode 3.

Which ONE of the following correctly states the Condensate Storage Tanks system minimum indicated volume required by Technical Specifications and its basis?

	<u>VOLUME</u>	<u>BASIS</u>
a.	210,000 gal.	Provides sufficient volume to cooldown the RCS to below 350°F within 15 hours.
b.	210,000 gal.	Provides sufficient volume to maintain the RCS at Hot Standby for approximately 23 hours.
c.	420,000 gal.	Provides sufficient volume to cooldown the RCS to below 350°F within 15 hours.
d.	420,000 gal.	Provides sufficient volume to maintain the RCS at Hot Standby for approximately 23 hours.

**QUESTION: 091**

**A spent fuel assembly is suspended from the manipulator crane when a Refueling Cavity seal failure occurs.**

**Which ONE of the following describes the correct manipulator operator response?**

- a. Insert the assembly into the upender and unlatch it.**
- b. Insert the assembly into the upender and leave it latched.**
- c. Return the assembly to the reactor core and unlatch it.**
- d. Return the assembly to the reactor core and leave it latched.**



**QUESTION: 092**

**Rod Control is in automatic with reactor and turbine power stable.**

**Which ONE of the following rod control inputs will result in control rod speed of 40 steps per minute?**

**Tavg greater than Tref by:**

- a. 2.75°F**
- b. 3.0°F**
- c. 3.25°F**
- d. 4.0°F**

**QUESTION: 093**

**As the NPS you have been asked to approve the attached Liquid Release Permit.**

**Which ONE of the following identifies why you should not approve the permit?**

- a. The specific activity of the tank is too high.
- b. The specific activity is for the wrong tank.
- c. The  $\Sigma$  C/EC limit has been exceeded.
- d. The Administrative Release limit has been exceeded.

**QUESTION: 094**

**Which ONE of the following conditions would prevent the use of the Post Accident Containment Vent system to purge Containment atmosphere to the in-service Gas Decay Tank (GDT), following a LOCA?**

- a. Containment pressure is 15 psig.
- b. Containment temperature is 120°F.
- c. In-service GDT Oxygen concentration is 1%.
- d. In-service GDT Hydrogen concentration is 3%.

**QUESTION: 095**

**The following conditions exist on Unit 3:**

- **The ANPS is reading ECA-2.1, "Uncontrolled Depressurization of All Steam Generators," step 3, "Control Feed Flow to Minimize RCS Cooldown."**
- **The operator observes 3B S/G pressure is now increasing.**

**Which ONE of the following is the correct operator action?**

- a. **Return to step 1 of ECA-2.1.**
- b. **Continue in ECA-2.1 from the present step.**
- c. **Transition to E-2, "Faulted Steam Generator."**
- d. **Transition to E-1, "Loss of Reactor or Secondary Coolant."**

**QUESTION: 096**

Unit 4 is operating at 100% power with the 4A EDG out of service when the following sequence of events occur:

- The operators respond to an ATWS using FR-S.1, "Response to Nuclear Power Generation/ATWS."
- The reactor trips due to a loss of off-site power.
- The 4B EDG locks out and cannot be restarted.

Which ONE of the following describes the correct operator response?

- a. Complete the actions of FR-S.1 and then go to ECA-0.0, "Loss of All AC Power." Power will be restored to a 4KV bus using the appropriate ONOP upon completion of ECA-0.0.
- b. Complete the actions of FR-S.1 and then go to ECA-0.0, "Loss of All AC Power." Power will be restored to a 4KV bus using the appropriate ONOP while performing the actions of ECA-0.0.
- c. Stop performance of FR-S.1 and immediately go to ECA-0.0, "Loss of All AC Power." Power will be restored to a 4KV bus using the appropriate ONOP upon the completion of ECA-0.0.
- d. Stop performance of FR-S.1 and immediately go to ECA-0.0, "Loss of All AC Power." Power will be restored to a 4KV bus using the appropriate ONOP while performing the actions of ECA-0.0.

**QUESTION: 097**

**Unit 3 is at 100 % power when all Unit 3 annunciators are suddenly blacked out. No reactor trip signals are generated and the plant remains at full power.**

**Which ONE of the following describes the correct operator response?**

- a. **Maintain the plant stable and dispatch an operator to DC Bus 3D01.**
- b. **Maintain the plant stable and dispatch an operator to DC Bus 3D23.**
- c. **Trip the reactor and turbine and dispatch an operator to DC Bus 3D01.**
- d. **Trip the reactor and turbine and dispatch an operator to DC Bus 3D23.**

**QUESTION: 098**

**Which ONE of the following would require the Emergency Coordinator to direct Chemistry personnel to perform O-EPIP-20126, "Off-site Dose Calculations"?**

- a. A Site Area Emergency has been declared.
- b. An Owner Controlled Area Evacuation has been implemented.
- c. PRMS R-14, Plant Vent, has increased by a factor of 20.
- d. Airborne radioactivity levels outside of plant buildings are 10% of DAC.

**QUESTION: 099**

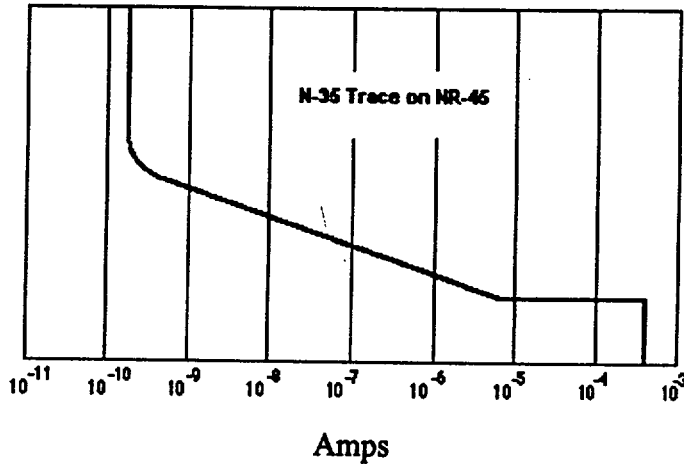
**Which ONE of the following is the minimum PARs that shall be issued for a declared General Emergency?**

- a. Shelter all people within a 2 mile radius from the plant and 5 miles in the down wind sectors.
- b. Shelter all people within a 2 mile radius from the plant and 10 miles in the down wind sectors.
- c. Evacuate all people within a 2 mile radius from the plant and shelter all people between 2 and 5 miles in the down wind sectors.
- d. Evacuate all people within a 2 mile radius from the plant and shelter all people between 2 and 10 miles in the down wind sectors.



**QUESTION: 100**

Unit 3 was operating at 100% power when the reactor tripped. The RCO observes the following Intermediate Range trace on NIS recorder NR-45:



Which ONE of the following statements is correct?

- a. N-35 is under compensated.  
The NIS Source Ranges will automatically energize.
- b. N-35 is under compensated.  
The NIS Source Ranges will not automatically energize.
- c. N-35 is over compensated.  
The NIS Source Ranges will automatically energize.
- d. N-35 is over compensated.  
The NIS Source Ranges will not automatically energize.

0	1	2	3	4	5	6	7	8	9	WRITE I.D. NUMBER HERE	CD
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		

0	1	2	3	4	5	6	7	8	9	WRITE I.D. NUMBER HERE	7 9 4 0 6 8 5 3 2
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		
0	1	2	3	4	5	6	7	8	9		

**PART 1**  
CODE I.D. NUMBER AT LEFT BY FILLING IN THE APPROPRIATE BOXES ACCORDING TO THE EXAMPLE.

KEY

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

NAME: SRO ANSWER KEY (PTN)

DEPT.: \_\_\_\_\_ DEPT. SUPV. \_\_\_\_\_

DATE: 8-30-99

EXAM TITLE: 1999 NRC WRITTEN EXAM

EXAM NO.: \_\_\_\_\_

TOTAL POINTS: 100

I hereby certify that I will take the exam and abide by the rules of conduct provided by the proctor.

\_\_\_\_\_  
Student's Signature Date

Grader's Name: \_\_\_\_\_  
Score: \_\_\_\_\_ %

\_\_\_\_\_  
Print Signature Date

QC Grader's Name: \_\_\_\_\_  
Score: \_\_\_\_\_ %

\_\_\_\_\_  
Print Signature Date

RAR IE# \_\_\_\_\_



**TURKEY POINT PLANT  
NUCLEAR TRAINING  
DEPARTMENT**



### 1999 SRO ANSWER KEY

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