U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Docket Nos.	50-387; 50-388
License Nos.	NPF-14; NPF-22
Report Nos.	96-12 (OL)
Licensee:	Pennsylvania Power and Light Company
Facility:	Susquehanna Steam Electric Station, Units 1 and 2
Dates:	October 21 - 24, 1996
Chief Examiner:	T. Walker, Sr. Operations Engineer, Region I
Examiners:	C. Sisco, Operations Engineer, Region I J. Caruso, Operations Engineer, Region I
Approved by:	Glenn W. Meyer, Chief, Operator Licensing and Human Performance Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Susquehanna Steam Electric Station, Units 1 and 2
Inspection Report 50-387/96-12 (OL) and 50-388/96-12 (OL)

Operations

Four of five applicants passed the operating test, but only one of four applicants passed the written examination. (One applicant had previously passed the written examination and was granted a waiver.) The examiners noted areas of consistently strong performance on the operating test, including annunciator response and use of self-checking techniques. However, some minor areas of weak performance were noted on the operating test. A number of generic weaknesses were identified on the written examination and the overall performance of the applicants was weak on the written examinations (Section O5.1).

The facility review of the written examination during the development process was weak. A significant number of technical errors in the questions and answers resulted in a number of changes following administration of the examination and indicated a poor review of the technical accuracy of the submitted examinations (Section 05.1).

Report Details

I. Operations

O5 Operator Training and Qualifications

O5.1 Operator Initial Examinations

a. Scope

The examiners administered initial examinations to two reactor (RO) and three senior reactor operator (SRO) applicants in accordance with NUREG-1021, "Examiner Standards," Revision 7 and the pilot examination guidelines contained in Generic Letter 95-06, "Changes in the Operator Licensing Program."

b. Observations and Findings

The results of the initial examinations are summarized below:

	SRO Pass/Fail	RO Pass/Fail	Overall Pass/Fail
Written	0/3	1/0*	1/3
Operating	2/1	2/0	4/1
Overall	0/3	2/0	2/3

* One RO applicant was granted a waiver of the written examination and the administrative and simulator portions of the operating test.

PP&L developed the examination materials and administered the written examination. The NRC staff reviewed and approved the examination materials, administered the operating tests, and graded the examinations. The PP&L staff who were involved with the examination material development and review signed security agreements to ensure that the examinations were not compromised.

The facility submitted post-exam comments on 22 questions on the written examinations (attachment 3). The NRC staff's resolution of these comments is described in attachment 4. Eight questions were deleted from the SRO and RO examinations. Six questions on the SRO examination and three questions on the RO examination had two correct answers. The answers to three questions on the SRO examination and four questions on the RO examination were changed. The majority of the changes had to be made due to technical errors in the questions and answers. The quantity of post-exam comments and changes indicated a weak review by the facility prior to submittal of the examination.

Based on the grading of the written examination, the following questions were missed by at least three of the applicants, indicating a weakness in understanding of the subject:

SRO 7:	Knowledge of definition of promptly reportable event
SRO 13: RO 10:	Knowledge of approval requirements for operation of tagged equipment
SRO 22: RO 23:	Ability to determine recirculation pump start limitations
SRO 28: RO 30:	Knowledge of shutdown cooling valve interlocks
SRO 39: RO 47:	Knowledge of the response of reactor water level indication during reactor pressure vessel (RPV) cooldown
SRO 57:	Ability to determine RPV heatup rate
SRO 64:	Knowledge of the reason for the sequence of reenergizing busses following a loss of power
SRO 66: RO 70:	Knowledge of the effect of a station blackout on safety relief valve (SRV) instrumentation
SRO 73: RO 78:	Knowledge of primary containment control emergency operating procedure (EOP) entry conditions
SRO 90: RO 95:	Ability to determine usability of RPV water level instrumentation

During the operating tests, consistent strong performance was noted in annunciator response, anticipation of plant response during routine and off-normal operations, and use of self-checking (STAR) techniques. During performance of the dynamic simulator scenarios a significant weakness was identified when a crew failed to terminate and prevent RPV injection prior to rapid depressurization of the RPV when it had not been determined that the reactor would remain shutdown under all conditions without boron. The examiners also noted a number of vague directions and informal communications during the dynamic scenarios.

Review of UFSAR Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the updated final safety analysis report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR descriptions. While performing the examination activities discussed in this report, the examiners reviewed portions of the UFSAR that related to the

selected examination activities, questions or topic areas. The particular sections reviewed were section 6.3.2.2.1, concerning high pressure coolant injection (HPCI) system design and sections 6.2.3, 6.5.3.2, 9.4.1, and 9.4.2, concerning secondary containment and reactor building ventilation design and operation. The specific areas reviewed were consistent with the UFSAR.

c. Conclusions

Both RO applicants and 2 of 3 SRO applicants passed the operating test. However, only one RO applicant passed the written examination. (The other RO applicant was granted a waiver of the written examination.) All three SRO applicants failed the written examination. A number of generic weaknesses were identified on the written examinations and overall applicant performance was weak on the written examinations.

The facility review of the written examination during the development process was weak. A significant number of technical errors in the questions and answers resulted in a number of changes following administration of the examination which indicated a poor review of the technical accuracy of the examinations.

V. Management Meetings

X1 Exit Meeting Summary

At the conclusion of the examination, the examiners discussed their observations of the examination process with members of PP&L management. PP&L management acknowledged the examiner observations. The training department provided comments and proposed resolutions on the written examinations. They indicated that a more in-depth review of the examinations would be performed and any additional comments would be provided within five working days. The PP&L personnel present at the exit included the following:

T. Markowski, Dayshift Supervisor, Operations
A. Fitch, Supervisor, Operations Instruction
C. Fedako, Operations Training Supervisor
R. Wehry, Nuclear Licensing

Attachments:
1. SRO Examination and Answer Key
2. RO Examination and Answer Key
3. Facility Comments
4. NRC Resolution of Facility Comments
5. Simulator Fidelity Report

ATTACHMENT 1

SRO EXAMINATION AND ANSWER KEY

U.S. NUCLEAR REGULATORY COMMISSION
SENIOR REACTOR OPERATOR LICENSING EXAMINATION

FACILITY: Susquehanna 1 & 2

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 10/21/96

APPLICANT: MASTER

INSTRUCTIONS TO APPLICANT:

Points for each question are indicated in parentheses after the question. To pass this examination, you must achieve an overall grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

NUMBER QUESTIONS	TOTAL POINTS	APPLICANT'S POINTS	APPLICANT'S OVERALL GRADE
92	92.0		

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

Candidate's Signature

QUESTION: 1 (1.0)

A surveillance is to be performed by a Nuclear Plant Operator(NPO) in the field.

Select the required method for assuring that the working copy is current.

a. Page checking the procedure against a control room copy.

b. Verifying the Procedure Change Control Forms (PCAFs) are the same as the control room copy.

c. Verifying the PCAFs are the same as a list of PCAFs provided by the Document Control Center.

d. Verifying the current revision of working copy against the current controlled index.

QUESTION: 2 (1.0)

Which activity may be performed without reference to the procedure?

a. Initiation of Suppression Pool Spray due to suppression chamber pressure approaching 13 psig.

b. Initiation of Suppression Pool Cooling to support HPCI testing.

c. Restarting a Reactor Feedpump that has tripped on high water level.

d. Bypassing RSCS when directed by EO-100-113, Level/Power Control.

QUESTION: 3 (1.0)

A surveillance procedure requires that a specific valve be confirmed in the closed position before starting a pump.

Which of the following describes the required action to "confirm" the position of the valve?

a. Before starting the pump the operator observes the valve closed indicating light is lit. Initialing the step is required by the operator.

b. Before starting the pump the operator verifies the normal position on the P&ID.

c. Before starting the pump the operator verifies the position on the system checklist (CL). Initialing the step is required by the operator.

d. Before starting the pump the operator is required to attempt movement in the closed direction.

QUESTION: 4 (1.0)

Given the following conditions:

- One ADS valve has been inoperable for 14 days.
- A surveillance is required on HPCI which will require HPCI to be declared inoperable.
- Performance of the surveillance will require entry into Technical Specifications 3.0.3.

Who is required to give permission to voluntarily enter Technical Specification 3.0.3?

a. Manager - Nuclear Operations

b. Plant Operations Review Committee

c. Vice President - Nuclear Operations

d. Nuclear Regulatory Commission - Region 1

QUESTION: 5 (1.0)

An operator accepts 4 hours of overtime on the first day back on a normal day shift following a weeks vacation.

Without Plant Manager approval, what is the maximum time the operator can work the next day?

a. 4 hours.

b. 8 hours.

c. 12 hours.

d. 16 hours.

QUESTION: 6 (1.0)

The Shift Supervisor is absent from the control room to meet with the Day Shift Supervisor when both feed pumps trip on one unit causing it to trip from 98% power. The other unit is at 83% power.

Who is to assume the control room command function for Emergency Operating Procedures?

a. Unit supervisor for the affected unit.

b. Unit supervisor for the unaffected unit.

c. Unit supervisor for Unit 1.

d. Unit supervisor for Unit 2.

QUESTION: 7 (1.0)

A promptly reportable event is defined as an event that requires verbal notification of the NRC within:

a. 1 hour

b. 4 hours

c. 24 hours

d. 72 hours

QUESTION: 8 (1.0)

Given the following conditions:

- Conditions are being established to perform a surveillance on a diesel generator.
- A situation requires the engineer who will observe the test to leave the plant.
- The engineer is expected to return later in the day.
- The test cannot be performed without the engineer present.

An Aborted Evolution Control Log is required to be completed when it is determined that:

a. the test will be delayed.

b. the diesel will NOT be immediately returned to a normal lineup.

c. test will NOT be restarted until the next shift.

d. the test will NOT be restarted within one hour.

QUESTION: 9 (1.0)

The core is being refueled following an outage. When is the Refuel Supervisor required to be on the refuel floor?

a. At all times, except for break periods.

b. At all times specified by the Refueling Manager.

c. At all times when the Refueling Manager is NOT on the refuel floor.

d. At all times unless the Refueling Manager is an SRO with an active license.

QUESTION: 10 (1.0)

The control room communicator is:

a. the second PCO from the unaffected unit.

b. the Assistant Unit Supervisor.

c. a designated Nuclear Plant Operator from the unaffected unit.

d. the Shift Technical Advisor.

QUESTION: 11 (1.0)

Site Accountability is required to be performed for:

a. any Alert declaration.

b. all declarations with potential for core damage.

c. all declarations with potential for radiological release.

d. all declarations where the Emergency Director deems it necessary.

QUESTION: 12 (1.0)

Given the following conditions:

- A main steam line isolation occurred due to a resin intrusion into the vessel.
- The main steam line isolation is determined to require an Alert declaration.
- Following MSIV closure no emergency conditions exist.

Which of the following actions should be taken?

a. Declare an Alert. Allow Technical Support Center to evaluate if additional actions need to be taken before terminating the emergency.

b. Provide courtesy notifications to agencies that an emergency condition had occurred, but was terminated prior to notification.

c. Declare an Alert and complete required notifications, but include termination of the emergency in the same notification.

d. Declare an Alert and complete required notifications. After assuring no emergency conditions exist, terminate the emergency and perform a separate notification.

QUESTION: 13 (1.0)

A valve is tagged with a pink tag during an outage. Repositioning/operation of the valve can be approved by which one of the following individuals or combinations of individuals?

a. Only the work group

b. Only Shift Supervision

c. Shift Supervision and the Operations Outage Supervisor

d. The work group and Shift Supervision

QUESTION: 14 (1.0)

Which of the following items will require a bypass to be documented in accordance with NDAP-QA-0484?

a. Maintenance is to be performed on a temperature control valve controller. A temporary controller is installed. Maintenance is expected to take 21 days due to parts NOT being available.

b. A temporary hose is installed per a work authorization for 4 days to flush newly installed fire water piping.

c. Test instrumentation is installed to monitor the performance of a heat exchanger for 6 days. Existing system isolation valves are used to place the test instrumentation in service.

d. An instrumentation technician installs a chart recorder for CRD timing in accordance with a Surveillance Operations procedure.

QUESTION: 15 (1.0)

As of 10/21/1996 your annual dose was 250 mrem. Without a dose extension in place, what is maximum dose you can receive between now and 12/31/96?

a. 750 mrem.

b. 1750 mrem.

c. 3750 mrem

d. 4750 mrem.

QUESTION: 16 (1.0)

D bundle from location 23-03 is being transferred from the core during core off-load. A leak has occurred quiring an operator to enter containment to investigate.

What is the maximum elevation that the operator can go to in the containment?

a. 738'

b. 752'

c. 767'

d. 779'

QUESTION: 17 (1.0)

Given the following conditions:

- The Assistant Unit Supervisor(AUS) has had to leave site due to illness.
- A replacement AUS has not arrived.
- A fire has occurred on Unit 2.

C o will function as the fire brigade leader?

a. One of the Unit Supervisors.

b. The senior Nuclear Plant Operator on the fire brigade.

c. The senior individual from the security department on the fire brigade.

d. The Plant Control Operator designated as the backup fire brigade leader.

QUESTION: 18 (1.0)

The reactor is operating at 95% power when a scram signal is generated due to a turbine trip.

Which condition will PREVENT the backup scram valves from venting the scram air header?

a. 125 VDC to ONE of the backup scram valves is deenergized.

b. The check valve bypassing one of the backup scram valves fails closed.

c. RPS Trip System "B" does NOT deenergize.

D

d. The backup scram valve closest in the air flow path to the scram pilot valves fails to reposition.

QUESTION: 19 (1.0)

deleted
TOW 11/15/96

Given the following conditions:

- Reactor power is being raised from 35% to 40% using control rods.
- Rods are being withdrawn in a group with withdrawal limits of 24.
- A rod is withdrawn to position 28.

Select the required action for the rod that is withdrawn to position 28.

a. Insert to 00.

b. Leave at 28 and contact the Reactor Engineer.

c. Immediately reposition back to 24, then continue rod withdrawal.

d. Position to 24, then contact Reactor Engineer for direction.

QUESTION: 20 (1.0)

deleted
TOW 11/15/96

Given the following conditions:

- Reactor power is 48%.
- Current date is 10/21/96.
- Current time is 0930.
- Rod 30-47 is at position 48.
- Rod 30-47 was determined to be stuck at 1130 on 10/20/96.
- All required Technical Specifications were completed for rod 30-47.
- An accumulator alarm is received for rod 26-39 due to a nitrogen leak.
- Repair time for the nitrogen leak is 12 hours.

What is the maximum time that rod 26-39 can remain withdrawn from the core?

a. 1 hour

b. 8 hours

c. 9 hours

d. There is no time restriction for rod insertion.

QUESTION: 21 (1.0)

Given the following conditions:

- Reactor power is 20%.
- An EHC fluid leak has occurred.
- The recirculation pumps trip.

What caused the recirculation pumps to trip?

a. Low ETS pressure.

b. Turbine stop valve closure.

c. Reactor vessel water level decreasing to -5 inches.

d. Reactor pressure increasing to 1150 psig.

QUESTION: 22 (1.0)

Given the following conditions:

- A reactor cooldown is progress.
- Recirculation pump 1A was secured at 0815 due to concerns with seal leakage.
- At 0930 Recirculation pump 1B was inadvertently tripped.
- At 0945 the 1B pump is restarted.
- The 1B pump is tripped again at 0950.

What is the earliest time the 1B pump is allowed to be started?

a. 1000

b. 1005

c. 1030

d. 1035

QUESTION: 23 (1.0)

Due to an instrumentation failure, Reactor Recirculation pump 1A speed cannot be changed from the control room.

Which of the following is an acceptable combination for adjusting recirculation flow locally?

a. The Reactor Engineer monitors a licensed operator raising flow.

b. An SRO supervises an NPO decreasing flow to comply with an off normal procedure.

c. A licensed operator decreases flow.

d. A non-licensed operator is on the phones with the PCO to reduce flow.

QUESTION: 24 (1.0)

A "Recirc MG Speed Control Signal Failure" alarm has annunciated for the "B" recirculation pump.

The effect on operation of the "B" recirculation pump is that pump speed:

a. can ONLY be varied by the individual controller in manual.

b. will run to minimum due to the low output signal from the controller.

c. will remain at its present value due to a scoop tube lock.

d. will remain at its present value due to loss of power to the scoop tube positioning motor.

QUESTION: 25 (1.0)

Given the following conditions:

- The Unit 1 RHR LOOP A/B MAN INIT switches (HS-E11-1S20A and B) have been armed and depressed.
- The C ESW pump fails to start.

If the operator performs NO other actions, which of the following lists the RHR pumps that will be operating without cooling?

a. RHR pumps 1A and 1C.

b. RHR pumps 1B and 1C.

c. RHR pumps 1C and 1D.

d. RHR pumps 1A and 1D.

QUESTION: 26 (1.0)

Given the following conditions:

- Unit 2 power is 49 %.
- SO-249-002, "Quarterly RHR System Flow Verification is in progress on loop A.
- System flow is 9800 gpm.
- The heat exchanger bypass valve is closed.
- A manual LPCI initiation signal is received.

Which valve will immediately reposition?

a. Heat exchanger bypass valve (F048).

b. LPCI injection flow control valve (F017).

c. LPCI injection outboard valve (F015).

d. Minimum flow valve (F007).

QUESTION: 27 (1.0)

deleted TDW 11/15/96

Given the following:

- A LOCA has occurred outside the containment and cannot be isolated.
- RPV level is -100 inches and decreasing.
- Essential 480 Volt MCC 1B210 has deenergized due to a spurious trip signal to the feeder breaker.
- RPS is reenergized from the alternate source.

Which of the following functions will NOT operate?

a. Core Spray initiation.

b. LPCI initiation.

c. Minimum flow protection for RHR.

d. Recirculation pump discharge valve closure.

QUESTION: 28 (1.0)

Given the following conditions:

- Reactor pressure is 65 psig.
- RHR loop A is operating in Shutdown Cooling.
- RHR loop B is aligned for automatic LPCI injection.
- RPV level decreases to -4 inches before cause is corrected.

What condition will cause the isolation signal to the RHR Outboard Injection Valve (F015B) to be reset ?

a. Reactor pressure increases to 145 psig.

b. The operator depresses the RHR LOOP A SHUTDOWN CLG RESET pushbutton.

c. Reactor water level is returned to 24 inches.

d. Drywell pressure increases to 2.2 psig.

QUESTION: 29 (1.0)

With HPCI in operation, loss of a single 480 VAC bus that supplies HPCI component(s) will:

a. prevent restarting HPCI following a shutdown.

b. prevent isolation of HPCI on a break in the steam line.

c. limit the available cooling to the HPCI room.

d. cause a loss of governor control.

QUESTION: 30 (1.0)

Given the following conditions:

- A LOCA signal has been generated on Unit 1 due to a loss of drywell cooling.
- Core spray responds correctly to this condition.
- A LOCA signal is generated on Unit 2.

Select the response of Unit 1 and Unit 2 Core Spray Pumps to the Unit 2 LOCA signal.

a. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2A, 2B, 2C and 2D start.

b. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2A and 2C start.

c. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2B and 2D start.

d. Core Spray Pumps 1B and 1D trip. Core Spray Pumps 2B and 2D start.

QUESTION: 31 (1.0)

Given the following conditions:

- Control rods failed to insert on a scram from high SDV volume.
- Following the attempted scram reactor power is 25%.
- Standby liquid control was initiated per the EOPs.
- The "B" SLC pump tripped.
- Boron injection flow rate is 38 gpm.
- MSIV's are open.

Which of the following CANNOT be assured?

a. That SLC will be able to inject sufficient boron to achieve Hot Shutdown Boron Weight.

b. That suppression pool temperature will remain below the Heat Capacity Temperature Limit.

c. That boron will be injected fast enough to overcome reactivity addition due to xenon and cooldown.

d. That adequate shutdown margin can be achieved when the reactor is at 100 F.

QUESTION: 32 (1.0)

Unit 1 is at 100%

Level transmitter "A" for the north SDV is determined to be inoperable and level switch "B" for the south SDV is determined to be inoperable.

What action, if any, is required to be taken?

a. NO action required.

b. Trip RPS "A" within 6 hours.

c. Per action 1 of Table 3.3.1-1 be in Hot Shutdown within 12 hours.

d. Enter LCO 3.0.3.

QUESTION: 33 (1.0)

Given the following:

- Unit 2 reactor power is 7%.
- The reactor mode switch is in STARTUP.

Which of the following will cause a scram signal to be generated?

a. The turbine is tripped during the turbine startup process.

b. The MSIVs close due to a loss of vacuum signal.

c. Reactor pressure reaches 1050 psig.

d. Mode switches for APRMs "A" and "B" are placed in STANDBY.

QUESTION: 34 (1.0)

Given the following conditions:

- Unit 1 is at 30%.
- A control rod is attempted to be moved from position 8 to 12.
- NO rod movement is observed on the Standby Information Panel (SIP).

Which of the following can be used for positive determination of rod movement?

a. OD-7 live data.

b. Full core display FULL IN- FULL OUT.

c. RWM indication.

d. RSCS indication.

QUESTION: 35 (1.0)

Given the following conditions:

- TIP traces are being performed.
- RPV level decreases to -5 inches on a level transient.
- An isolation signal is NOT generated.
- The mode switch is in AUTOMATIC.

Which of the following describes the actions required to withdraw the TIP?

a. Place the MANUAL switch to REV. The ball valve should automatically close when the TIP is withdrawn.

b. Place the MODE switch to MANUAL, then place the MANUAL switch to REV. The ball valve should automatically close when the TIP is withdrawn.

c. Place the MANUAL switch to REV. The ball valve will have to be manually closed.

d. Place the MODE switch to MANUAL, then place the MANUAL switch to REV. The ball valve will have to be manually closed.

QUESTION: 36 (1.0)

Given the following overlap data:

- A IRM is marked at 50/125 on Range 2 and 16/40 on Range 3.
- C IRM is marked at 75/125 on Range 2 and 24/40 on Range 3.
- F IRM is marked on 60/125 on Range 2 and 15/40 on Range 3.
- H IRM is marked on 25/125 on Range 2 and 8/40 on Range 3.

What action should be taken?

a. Continue the reactor startup.

b. Within 6 hours trip the "B" RPS channel.

c. Within 12 hours be in at least HOT SHUTDOWN.

d. Within 1 hour insert all control rods and lock the mode switch in Shutdown.

QUESTION: 37 (1.0)

Given the following conditions:

- Unit 2 is at 73% power.
- Flow unit A output fails downscale.

Placing the Division I Flow Unit bypass joystick to "A" will:

a. bypass all existing rod blocks.

b. bypass ONLY the comparator mismatch rod block.

c. change the flow input to APRMs "A", "C" and "E" to flow unit "C".

d. change the flow input to RBM "A" to flow unit "C".

QUESTION: 38 (1.0)

Given the following conditions:

- Unit 2 reactor power is 38%.
- LPRM 48-33 fails upscale.
- Bypassed LPRMs: 16-33, 40-57, 32-33, 56-25, 32-49.

What is the response to bypassing LPRM 48-33?

a. The rod block will clear and rod withdrawal can continue.

b. APRM "A" will be inoperable causing a rod block and half scram.

c. APRM "A" will be inoperable but NO rod block will be generated.

d. The rod block will clear after the function switch is returned to OPERATE from STANDBY.

QUESTION: 39 (1.0)

Given the following conditions:

- A Loss of Coolant Accident occurred.
- A cooldown is in progress.
- During the cooldown fuel zone level indication was constant at -150 inches.

During the cooldown actual water level:

a. was constant at -150 inches.

b. decreased from -150 inches.

c. decreased to -150 inches.

d. increased from -150 inches.

QUESTION: 40 (1.0)

During a surveillance, RCIC Turbine Exhaust to Suppression Pool Valve (F059) breaker trips before the amber light goes out when the valve is being opened.

What will be the effect on RCIC if an initiation signal is received?

a. The trip throttle valve will be tripped.

b. The turbine will startup, then trip on high exhaust pressure.

c. The turbine will operate at a lower speed due to the exhaust pressure.

d. The Steam to RCIC Turbine valve (F045) will NOT open.

QUESTION: 41 (1.0)

Given the following:

- t=0 sec LOCA occurs.
- t=2 sec High Drywell signal is generated and all equipment responds as required.
- t=20 sec ECCS LOOP A & B RX LO LEVEL (-129) alarms.
- t=48 sec ECCS LOOP A & B RX LO LEVEL (-129) clears.
- t=60 sec ECCS LOOP A & B RX LO LEVEL (-129) alarms.

When will ADS initiate?

a. t=104 sec.

b. t=122 sec.

c. t=134 sec.

d. t=162 sec.

QUESTION: 42 (1.0)

With a LOCA signal present, the drywell ventilation fans:

a. will run automatically in slow speed.

b. can be manually operated in slow speed.

c. CANNOT be operated.

d. can be manually operated in fast speed, but ONLY if the LOCA signal is overridden.

QUESTION: 43 (1.0)

Given the following conditions:

- Refueling is in progress.
- Mode switch is placed in STARTUP.

Which of the following describes restriction on refuel platform operation?

a. The refuel platform can be moved over the core, but the fuel hoist CANNOT be raised if loaded.

b. The refuel platform can be moved over the core, but the fuel hoist CANNOT be lowered.

c. If all control rods are inserted, the refuel platform CAN be moved over the core.

d. The refuel platform CANNOT be moved over the core.

QUESTION: 44 (1.0)

Given the following conditions:

- Unit 2 is operating at 48%.
- A steam leak occurs on the steam line to the reactor feed pumps.
- A reactor scram occurs on low water level.
- The operator takes all immediate actions for a scram.

Which of the following will cause a main steam line isolation?

a. Main steam line pressure decreases to 850 psig.

b. Condenser vacuum decreases to 15" hg.

c. Turbine building tunnel temperature increases to 168 F.

d. The operator arms and depresses NSSSS switches A and B.

QUESTION: 45 (1.0)

Given the following:

- Reactor power - 50%
- EHC Load Limit set at 65%
- Maximum Combined Flow Limiter at 115%.
- An electrical failure occurs that causes the pressure set signal to decrease 10 psi.

Refer to the attached drawing of the Electro-Hydraulic Control Logic (Figure 8) .

Assume reactor pressure remains constant.

Identify the response of the EHC system.

a. The TCVs and bypass valves will remain in their present positions.

b. The TCVs will open to pass 60% flow and the bypass valves will remain closed.

c. The TCVs will open to pass 65% flow and the bypass valves will remain closed.

d. The TCVs will open to pass 65% flow and the bypass valves will open to pass 17-18% flow.

QUESTION: 46 (1.0)

RCIC is operating to maintain level following a Main Steam Line Isolation. A hydraulic leak occurs on the line to the governor valve.

Which of the following describes the response of the governor valve?

a. Governor valve will close as oil pressure is lost.

b. Governor valve will open as oil pressure is lost.

c. Turbine speed will decrease, but RCIC flow controller will attempt to reopen the governor valve.

d. Governor valve position will remain constant.

QUESTION: 47 (1.0)

Given the following conditions:

- Unit 1 is at 84% power.
- Narrow Range level "A" is selected for input to the Feedwater level control.
- Testing is performed on Narrow Range Level channel "C".
- The instrument technician inserts a zero differential pressure signal to the "A" Narrow Range Level instrument instead of Narrow Range Level "C".

Select the response to this condition.

a. A feedpump trip and turbine trip due to the I & C signal input.

b. A reactor scram due to low RPV level.

c. A high vessel level condition causes a feedpump and turbine trip.

d. A high vessel level condition without a feedpump and turbine trip.

QUESTION: 48 (1.0)

deleted TOW 11/15/96

Given the following conditions:

- Standby gas treatment is a normal lineup.
- A Unit 1 high drywell signal is received.
- Standby gas treatment responds as required.
- All zone differential pressures are -.27".

Select the response if Zone II differential pressure decreases to -.23".

a. Outside air dampers will modulate closed.

b. Outside air dampers will modulate open.

c. Recirculation plenum suction dampers will modulate open.

d. Standby gas treatment fan inlet vanes will modulate open.

QUESTION: 49 (1.0)

Given the following:

- ESS Bus 1A201 has just been transferred from T-101 to T-201.
- The NORMAL supply breaker control switch is in the NORMAL AFTER CLOSE position.

Select the response to loss of ESS T-201.

a. Normal Supply breaker 1A20101 will close immediately on the trip of T-201.

b. Normal Supply breaker 1A20101 will close after ESS bus voltage is < 20% for .5 sec.

c. Normal Supply breaker 1A20101 will close after a 25 second time delay.

d. Diesel Generator Emergency Source breaker will close after its interlocks for automatic closing are met.

QUESTION: 50 (1.0)

Which of the following describes the operation of the automatic transfer switches used to supply 480 volt busses 1(2)B219 and 1(2)B229?

a. The ATS transfers to alternate immediately on a loss of normal power. It must be manually returned to the normal supply.

b. The ATS transfers to alternate immediately on a loss of normal power. It will transfer to normal immediately upon restoration of power to the normal bus.

c. The ATS transfers to alternate following a time delay to allow the diesel to reenergize the bus. It must be manually returned to the normal supply.

d. The ATS transfers to alternate following a time delay to allow the diesel to reenergize the bus. It automatically transfers to the normal supply following a 5 minute delay after reenergizing the bus.

QUESTION: 51 (1.0)

A surveillance performed on Division I 125 VDC battery 1D610 provided the following results:

- Reactor power is 89%.
- Maximum pilot cell float voltage - 2.18 volts.
- Minimum pilot cell float voltage - 2.12 volts.
- Maximum float voltage for all cells - 2.19 volts.
- Minimum float voltage for all cells - 2.08 volts.

How long is allowed before all float voltages must be greater than or equal to 2.13 volts?

a. 2 hours.

b. 24 hours.

c. 6 days.

d. 7 days.

QUESTION: 52 (1.0)

An equalizing charge is in progress on Battery 1D650. RCIC should only be operated in emergency situations because the high voltage will cause:

a. the RCIC speed controller to oscillate.

b. RCIC system indications to read high.

c. RCIC equipment to degrade.

d. overcurrent trips to occur on system components.

QUESTION: 53 (1.0) deleted TDW 11/15/96

An operator observes that several parameters on a control panel have exceeded their alarm setpoint but have NOT caused alarms to occur. All annunciator lights illuminate when an annunciator test is performed. This indicates that power from:

a. either 125 VDC or 120 VAC to annuciators for that panel is lost.

b. both 125 VDC and 120 VAC to annunciators for that panel is lost.

c. only 125 VDC power to the annunciators for that panel is lost.

d. only 120 VAC power to the annunciators for that panel is lost.

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QUESTION: 54 (1.0)

A diesel engine is being shutdown from panel 0C653 following a start from an inadvertent LOCA signal.

Resetting the local annunciators is prohibited because:

a. A governor failure causes the engine to speed up to 675 rpm.

b. The operator depresses the stop pushbutton in the control room.

c. Excessive loads are placed on the diesel.

d. The jacket water cooling pump fails.

QUESTION: 55 (1.0)

A diesel engine is being shutdown from panel 0C653 following a start from an inadvertent LOCA signal.

Resetting the local annunciators is prohibited because:

a. the diesel will stop without a proper cooldown.

b. the fuel racks will cycle.

c. all trips will be bypassed.

d. the HI PRIORITY TROUBLE annunciator in the control room will be bypassed.

QUESTION: 56 (1.0)

Select the alternate source of cooling for the Unit 1 Emergency Switchgear Room Coolers.

a. Reactor Building Chilled Water

b. Control Structure Chilled Water

c. Emergency Service Water

d. Service Water

QUESTION: 57 (1.0)

Given the following temperature readings for Reactor Steam Dome Temperature, as monitored on PMS, during heatup:

- 0745 - 212 F
- 0800 - 212 F
- 0815 - 225 F
- 0830 - 255 F
- 0845 - 280 F

When the logs are reviewed at 0850 it is determined that:

a. the temperature at 0900 must be less than 312 F.

b. the temperature at 0900 must be less than 302 F.

c. Technical Specifications should have been entered at 0830.

d. using data given compliance with Technical Specifications heatup rate CANNOT be verified.

QUESTION: 58 (1.0)

Zone III isolation signal has been generated.

Which of the following describes the response of the Control Room Emergency Outside Air Supply System (CREOASS) filter unit response?

a. Both CREOASS units start and take a suction on both outside air and the control room.

b. One CREOASS unit starts and takes a suction ONLY on outside air.

c. One CREOASS unit starts and takes a suction on outside air and the control room.

d. Both CREOASS units start but ONLY one takes a suction on outside air.

QUESTION: 59 (1.0)

Given the following conditions:

- A reactor recirculation pump has tripped.
- Core flow is 42 Mlbm/hr.
- Reactor power is 45%.
- APRM oscillations are observed to be approx. 5% peak to peak.

Which of the following is the first action that should be taken to suppress the flux oscillations?

a. Restart the tripped recirculation pump.

b. Increase core flow to greater than 55 Mlbm/hr.

c. Insert CRAM rods.

d. Insert control rods using Shutdown Control Rod Sequence.

QUESTION: 60 (1.0)

Following a trip of a reactor recirculation pump, entry into the LCO for single loop operation will:

a. always be required.

b. only be required if operating with pump speed greater than 80% of rated pump speed.

c. only be required if the recirculation pump is NOT started within 6 hours.

d. only be required if the pump is isolated.

QUESTION: 61 (1.0)

Given the following conditions:

- Reactor Recirculation pump B is tripped.
- Total core flow recorder reads 34 Mlbm/hr.
- Loop A Loop flow indicator reads 37 Mlbm/hr.
- Loop B Loop flow indicator reads 3 Mlbm/hr.

What is actual core flow?

a. 31 Mlbm/hr.

b. 34 Mlbm/hr.

c. 37 Mlbm/hr.

d. 40 Mlbm/hr.

QUESTION: 62 (1.0)

The reactor is operating at 37% power when a loss of vacuum occurs. With NO operator action, the cause for the reactor scram will be:

a. turbine stop valve fast closure due to a turbine trip.

b. reactor low water level due to a feed pump trip.

c. main steam line isolation due to low vacuum.

d. reactor high pressure due to bypass valve closure.

QUESTION: 63 (1.0)

A station blackout has occurred. RCIC should be operated:

a. at maximum flow, allowing it to automatically shutdown on high level and restart on low level.

b. at maximum flow, manually starting and stopping RCIC as needed to maintain level.

c. by closing the injection valve when injection is NOT required.

d. by minimizing starting and stopping of RCIC.

QUESTION: 64 (1.0)

Station Power Restoration, EO-000-031, provides a specific sequence for reenergizing busses from an off-site source to AVOID:

a. diesel generators tripping on overspeed when loads are transferred to off-site power.

b. underfrequency condition on off-site sources due to manually reenergizing non-emergency busses.

c. undervoltage condition caused when a ECCS initiation signal is present.

d. starting equipment automatically without operator action.

QUESTION: 65 (1.0)

During a station blackout on Unit 1, emergency lube oil pumps for RFPT, Reactor Recirculation Motor Generator Sets, and the Turbine Generator should be secured:

a. immediately after determining a station blackout has occurred.

b. as soon as the equipment supplied stops rotating.

c. as required, based on other equipment being supplied by the 250 VDC battery.

d. within 30 minutes of the station blackout.

QUESTION: 66 (1.0)

Given the following:

- A station blackout has occurred.
- MAIN STEAM SRV LEAKING is alarming.
- MAIN STEAM DIV 1 SRV OPEN is clear.
- MAIN STEAM DIV 2 SRV OPEN is clear.

Based on this information, what is the status of SRVs and equipment to monitor SRVs?

a. An SRV is leaking. The acoustic monitors fail during a station blackout.

b. All SRVs are closed. Tailpipe temperature indications fail high during a station blackout.

c. Status of the SRVs is unknown because the annunciators are indications of loss of power to instrumentation.

d. An SRV has opened, then reclosed, causing the acoustic monitors to clear.

QUESTION: 67 (1.0)

125 VDC bus 1D634 is deenergized and a diesel start signal is received.

Which of the following describes the effect on Diesel Generator "C"?

a. The diesel will automatically start but the output breaker can only be shut manually.

b. The diesel generator will NOT automatically start.

c. The diesel generator will automatically start but in droop mode.

d. The diesel generator will start but the automatic trips will be disabled.

QUESTION: 68 (1.0)

Following an automatic scram signal, the goal of placing the reactor MODE switch to SHUTDOWN is to:

a. shift full core display to Full In - Full Out.

b. ensure that a scram signal seals in for 10 seconds.

c. ensure the Main Steam Isolation valves CLOSE to prevent rapid cooldown.

d. ensure a signal is generated to close the Scram Discharge Volume Vent and Drain valves.

QUESTION: 69 (1.0)

Given the following conditions:

- Unit 2 reactor power is 92%.
- An oscillation occurred on turbine control system.
- SRV PSV-2F013G has lifted at its required setpoint but failed to fully reclose.
- Reactor power increased to 97% but then returned to 93%.

When is the reactor required to be scrammed?

a. Immediately

b. After attempts to close the valve from the control room are unsuccessful

c. Within 2 minutes

d. Before suppression pool temperature reaches 105 F

QUESTION: 70 (1.0)

The Reactor Core Isolation Cooling (RCIC) system initiated at -30 inches due to NO other injection systems operating. RCIC then raised level to +54 inches.

Identify the response of the RCIC to the high level and subsequent level decrease to -30 inches.

a. RCIC turbine trips on high level and must be manually reset to allow the turbine to restart at -30 inches.

b. Steam to RCIC Turbine valve (F045) will close on high level and the high level seal-in must be manually reset to allow F045 to reopen at -30 inches.

c. The RCIC Steam Supply Outboard Isolation Valve (F008) goes shut on high level and reopens at -30 inches.

d. Steam to RCIC Turbine valve (F045) will close on high level and the high level seal-in is automatically reset to allow F045 to reopen at -30 inches.

QUESTION: 71 (1.0)

Given the following conditions:

- Unit 1 is operating at 97% power.
- CORE SPRAY LOOP A IN LEAKAGE-HI PRESS annunciator has alarmed.
- Prior to the annunciator unidentified leakage was 3.5 gpm.
- Prior to the annunciator identified leakage was 20 gpm.
- Leak rate to core spray is determined to be 1.3 gpm.

Technical specifications will:

a. NOT be entered.

b. be entered due to exceeding the unidentified leakage limit.

c. be entered due to exceeding the total leakage limit.

d. be entered due to exceeding the limit for reactor coolant system pressure isolation valve leakage.

QUESTION: 72 (1.0)

Unit 1 is operating at 98% power when a steam flow input signal to the Feedwater Level Control System fails to zero output.

With no operator action reactor vessel level will:

a. increase to greater than the high level alarm but less than the feedpump and turbine trip.

b. increase to greater than the feedpump and turbine trip.

c. decrease to less than the low level alarm but above the scram setpoint.

d. decrease to less than the scram setpoint.

QUESTION: 73 (1.0)

Given the following conditions:

- HPCI is being operated for a surveillance.
- Suppression pool temperature is 94 F.

Select the status of performing EO-100-103, and Technical Specification LCO entry.

a. PC Control, EO-100-103, has been entered but LCO entry is NOT required.

b. PC Control, EO-100-103, has been entered and LCO entry is required.

c. PC Control, EO-100-103, has NOT been entered and LCO entry is NOT required.

d. PC Control, EO-100-103, has NOT been entered, but LCO entry is required.

QUESTION: 74 (1.0)

Given the following conditions:

- Reactor power is 65%.
- Core flow is 60 Mlbm/hr.
- A loss of feedwater heating has occurred.

Recirculation flow is required to immediately be reduced:

a. until core flow is 55 Mlbm/hr.

b. until core flow is 45 Mlbm/hr.

c. as low as possible without entering Region I of the Power to Flow curve.

d. until power is 45%.

QUESTION: 75 (1.0)

A loss of feedwater heating has occurred. Reducing recirculation flow is performed to:

a. avoid exceeding 100% power.

b. preclude the possibility of fuel failure due to Pellet Clad Interaction.

c. reduce the subcooling of the feedwater entering the reactor.

d. reduce local power faster than can be performed by control rod insertion.

QUESTION: 76 (1.0)

Following a control room evacuation what mechanism is used to close the MSIVs if they were not closed from the control room?

a. Pull fuses for AC & DC to the MSIV solenoids.

b. Isolate and bleed off air to outboard MSIVs.

c. Trip NSSS with jumpers.

d. Deenergize RPS power.

QUESTION: 77 (1.0)

Given the following conditions:

- A control room evacuation has occurred.
- Time allowed performance of all control room actions prior to evacuation.

What will be the method of pressure control prior to transferring control to the Remote Shutdown Panel?

a. Turbine bypass valves.

b. HPCI operating in CST to CST mode.

c. SRVs operating in relief mode.

d. SRVs operating in safety mode.

QUESTION: 78 (1.0)

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Given the following conditions:

- Unit 2 is shutdown.
- 2A RBCCW and 2A TBCCW are aligned to ESW.
- Loop A of ESW is isolated from the diesel generators.
- A loss of off-site power occurs.
- Diesel generator output breaker 1B20104 fails to close.
- ESW pump "B" fails to start when required.
- Assume no operator actions are taken.

If diesel generators "B" and "D" are required to be tripped, indicate when they must be tripped? Base tripping time from the time that ESW pump "B" fails to start.

a. DG "B" - 3.5 minutes DG "D" - 3.5 minutes.

b. DG "B" - 7 minutes DG "D" - 7 minutes.

c. DG "B" - 3.5 minutes DG "D" can continue to run.

d. DG "B" - 3.5 minutes DG "D" - 7 minutes.

QUESTION: 79 (1.0)

Which of the following describes how a loss of RBCCW can result in a Main Steam Line Isolation?

a. Containment Instrument Gas will be lost resulting in closure of the inboard MSIVs.

b. Instrument Air will be lost resulting in closure of the outboard MSIVs.

c. Main Steam Line Tunnel High Temperature Isolation will result due to the loss of cooling to the tunnel area.

d. Main Steam Line Tunnel High Differential Temperature Isolation will result due to loss of cooling to the tunnel area.

QUESTION: 80 (1.0)

On a loss of instrument air the reactor should be scrammed at what pressure to avoid what conditions from occurring.

a. 80 psig to prevent erratic operation of air operated valves.

b. 80 psig to prevent abnormal flux patterns from drifting control rods.

c. 65 psig to ensure the scram occurs prior to significant scram discharge volume inleakage from occurring.

d. 65 psig to ensure drifting rods do not occur due to outlet scram valves opening without the inlet scram valves opening.

QUESTION: 81 (1.0)

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During a transfer of 4KV ESS Bus 1D(1A204) from alternate to normal power the bus is momentarily deenergized then reenergized.

With NO operator action, a reactor scram will occur:

a. when the bus is reenergized.

b. due to loss of containment cooling.

c. due to loss of RBCCW to the recirculation pump.

d. due to loss of containment instrument gas.

QUESTION: 82 (1.0)

N-149-001, Loss of Shutdown Cooling Mode, requires that alternate methods of decay heat removal be ified based on plant conditions.

Systems are identified as an alternate method of decay heat removal must be capable of removing sufficient heat to:

a. prevent core damage.

b. prevent changing plant modes.

c. remove the entire decay heat load of the core.

d. allow time to restore RHR flow.

QUESTION: 83 (1.0)

Given the following conditions:

- Cooldown is in progress.
- Temperature is 284 F.
- Both recirculation pumps are out of service.
- Reactor water level is 35 inches.
- A loss of the running RHR pump has occurred.

Of the listed RPV levels, which would be the minimum acceptable one hour after the RHR pump is lost?

a. 32"

b. 40"

c. 48"

d. 55"

QUESTION: 84 (1.0)

With a complete loss of RPS "B" power, which of the following identifies ALL RHR loops available to provide shutdown cooling?

a. RHR "A" from the control room.

b. RHR "A" from the control room and RHR "B" from the Remote Shutdown Panel.

c. RHR "B" from the Remote Shutdown Panel.

d. Either loop of RHR from the control room and RHR "B" from the Remote Shutdown Panel.

QUESTION: 85 (1.0)

Given the following conditions:

- Unit 1 power is 95%.
- All control rods are withdrawn.
- 1A CRD pump is inoperable.
- 1B CRD pump has tripped on overcurrent.
- Rod 27-14 has an accumulator alarm due to water leakage.

Which of the following conditions requires scramming the reactor?

a. High temperature alarms are received on two control rods.

b. 10 minutes has elapsed without CRD flow.

c. An accumulator alarm is received on rod 23-42.

d. One attempt to restart the 1B CRD pump fails.

QUESTION: 86 (1.0)

The Refueling SRO indicates that a bundle has been damaged in movement. The control room observes increasing radiation levels on the refuel floor and in the ventilation.

Which of the following describes the evacuations that should be performed?

a. Evacuate the refuel floor except for those persons attempting to place the bundle in a safe location.

b. Upon receiving a recommendation from HP evacuate the refuel floor.

c. Immediately evacuate the refuel floor.

d. Evacuate the refuel floor when requested by the Refueling SRO or any radiation alarm is received.

QUESTION: 87 (1.0)

Given the following conditions:

- A LOCA has occurred.
- Reactor water level is -110" and increasing.
- Suppression chamber pressure is 30 psig.
- Drywell temperature is 300°F.
- Suppression pool level is 40 ft.
- Drywell pressure is 32 psig.

Which action should be performed when adequate core cooling is established, thereby allowing RHR to be used for containment control?

a. Initiate ONLY suppression chamber sprays.

b. Initiate ONLY drywell sprays.

c. Initate BOTH suppression chamber and drywell sprays.

d. Do NOT initiate either suppression chamber or drywell spray.

QUESTION: 88 (1.0)

Which of the following describes operation of the Drywell Spray Outboard Isolation Valve (F016A/B)?

a. FO16A/B can be opened using only the valve control switch under any condition.

b. F016A/B can only be opened if the Drywell Spray Inboard Isolation Valve F021A/B is opened first.

c. F016A/B will automatically close when drywell pressure decreases to less than 1.72 psig.

d. F016A/B will open with a LOCA signal present when the white light above the "LOCA ISOLATION MANUAL OVERRIDE" switch is illuminated.

QUESTION: 89 (1.0)

Given the following conditions:

- Unit 1 was operating at 98% power.
- A spurious Main Steam Line isolation occurred.
- SRVs are cycling on high RPV pressure.

Which of the following describes how RPV pressure is to be controlled?

a. Allowing SRVs to operate automatically to control pressure.

b. Manually opening the SRVs that are cycling to reduce pressure.

c. Manually opening the SRVs in alphabetical order to reduce pressure.

d. Manually opening SRVs that discharge to the lowest temperature area of the suppression pool.

QUESTION: 90 (1.0)

Given the following conditions:

- A LOCA has occurred causing elevated drywell temperatures.
- Drywell temperature is 220 F.
- Extended Range instruments are decreasing from a level of -40".

From the choices provided, select the lowest level at which Extended Range level instruments are still usable?

a. -80"

b. -110"

c. -130"

d. -150"

QUESTION: 91 (1.0)

Given the following conditions:

- A LOCA has occurred.
- Suppression pool level is 18 ft.
- Core Spray flow is 6000 gpm.
- RHR "A" loop flow is 11,500 gpm with RHR "A" pump in operation.
- RHR "B" loop is NOT available.
- RPV level is STABLE at -155 inches.

While maintaining RPV level stable, which of the following is an acceptable change in flow?

a. Decrease core spray flow to 5500 gpm. Raise RHR pump "A" flow to maximum.

b. Trip the RHR pump and increase core spray flow to maximum.

c. Trip the core spray pumps and start RHR "C". Increase RHR flow to maintain level constant.

d. Decrease core spray flow to 5500 gpm and maintain RHR pump "A" flow at its present value.

QUESTION: 92 (1.0)

While operating at 98%, a leak has occurred on piping connected to the Suppression Pool causing a suppression pool level to decrease.

Select the condition that will require a reactor scram to be inserted. (Assume all other actions of EOPs are performed when required).

a. Primary Containment Control is entered on low suppression pool level.

b. Suppression pool temperature results in delta Thc being exceeded.

c. Suppression pool level is approaching 12".

d. Within one hour of entering Primary Containment Control on low suppression pool level.

QUESTION: 93 (1.0)

When using RCIC for level control in RPV Control, which of the following protective features can be bypassed?

a. Low RPV pressure isolation.

b. High exhaust pressure trip.

c. RCIC automatic suction transfer to suppression pool.

d. RCIC isolation signals on low suction pressure.

QUESTION: 94 (1.0)

Given the following conditions:

- An MSIV isolation occurred.
- The reactor failed to scram on the isolation and power is approximately 20%.
- The pressure transient caused a leak in the HPCI pipe routing area.
- RPV level is being maintained constant at -120".
- SLC failed to inject requiring the backup method of boron injection to be initiated.
- Main steam line drains are open for pressure control.
- Control rods are being inserted manually.
- Temperature in the MSL general area on 683' is 130 F.

Which of the following systems can be secured?

a. HPCI

b. RCIC

c. MSL drains

d. CRD

QUESTION: 95 (1.0)

Given the following conditions:

- Reactor power is 98%.
- CORE SPRAY LOOP A IN LEAKAGE-HIGH PRESSURE has alarmed.
- CORE SPRAY LOOP A PUMP ROOM FLOODED has alarmed.
- Core Spray Pump Room temperature is 140 F.
- RB Sump Room temperature is 140 F.
- A high alarm is present for RB Sump Room ARM.
- The RB Sump Room ARM is reading upscale.

In addition to isolating Core Spray, what course of action is required?

a. Operate all available RB ventilation and CS room coolers.

b. Commence a normal reactor shutdown.

c. Scram and rapidly depressurize.

d. Scram and cooldown at normal cooldown rates.

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QUESTION: 96 (1.0)

Given the following conditions:

- A LOCA has occurred into the Reactor Building.
- Reactor building temperatures on elevation 749' are above max safe temperature (212 F).
- The operator observes that Wide Range indicator decreases to < -155 inches.
- Subsequently the operator observes that the Wide Range indicator is -150 inches and increasing.

Based on these indications the actual water level:

a. is BELOW the bottom tap of the instrument but actual RPV level CAN be verified increasing.

b. is BELOW the bottom tap of the instrument and actual water level CANNOT be verified increasing.

c. is ABOVE the bottom tap of the instrument and actual RPV level CAN be verified increasing.

d. is ABOVE the bottom tap of the instrument but actual water level CANNOT be verified increasing.

QUESTION: 97 (1.0)

EO-100-113, Level/Power Control, prohibits use of which system for maintaining level in the target band?

a. Feedwater

b. RCIC

c. LPCI

d. Core Spray

QUESTION: 98 (1.0)

During a failure to scram water level was lowered to -70 inches and maintained.

Which of the following is an adverse effect of maintaining level at -70 inches instead of -90 inches?

a. Increased power oscillations will occur.

b. Power reduction will be less than at lower levels.

c. RPV level control will be more difficult.

d. Natural circulation flow will be less.

QUESTION: 99 (1.0)

Given the following conditions:

- A failure to scram occurred following a loss of two feed pumps at 88% power.
- Boron is being injected.
- The main condenser is available.

When are MSIVs required to be reopened?

a. Only if water level is deliberately lowered to the target zone.

b. Only if necessary to stabilize pressure below 1087 psig.

c. The plant conditions listed require reopening the MSIVs.

d. If ONLY five SRVs can be opened during rapid depressurization.

QUESTION: 100 (1.0)

Given the following:

- A Site Area Emergency was declared due to offsite radiation release.
- Main steam is discharging into the turbine building via a leak that cannot be isolated.

What actions should be taken with RPV pressure?

a. Limit cooldown to that caused by the steam line break.

b. Cooldown at rates less than 100 F/hour.

c. Cooldown at rates greater than 100 F/hour.

d. Rapidly depressurize.

MASTER KEY

SRO 1 d + a TDW 11/15/96
SRO 2 d
SRO 3 a
SRO 4 a
SRO 5 b
SRO 6 c
SRO 7 c
SRO 8 c
SRO 9 a
SRO 10 a
SRO 11 a
SRO 12 c
SRO 13 d
SRO 14 a + b TDW 11/15/96
SRO 15 b
SRO 16 b
SRO 17 a
SRO 18 c
~~SRO 19 a~~ TDW 11/15/96
~~SRO 20 b c RRB MEMO~~ TDW 11/15/96
SRO 21 d
SRO 22 d
SRO 23 c
SRO 24 c
SRO 25 ~~b~~ d RRB MEMO TDW 11/15/96

SRO 26 a
~~SRO 27 a~~ TDW 11/15/96
SRO 28 a
SRO 29 c
SRO 30 d
SRO 31 c
SRO 32 b
SRO 33 d
SRO 34 a
SRO 35 ~~a~~ b TDW 11/15/96
SRO 36 a
SRO 37 b
SRO 38 c
SRO 39 c
SRO 40 d
SRO 41 d
SRO 42 b
SRO 43 d
SRO 44 d
SRO 45 d
SRO 46 b
SRO 47 b
~~SRO 48 c~~ TDW 11/15/96
SRO 49 d
SRO 50 d

MASTER KEY

SRO 51 d

SRO 52 c

~~SRO 53 c~~ TDW 11/15/96

~~SRO 54 a~~ TDW 11/15/96

SRO 55 b

SRO 56 b

SRO 57 d

SRO 58 ~~c~~ b RRD 10/24/96 TDW 11/15/96

SRO 59 c + d TDW 11/15/96

SRO 60 a

SRO 61 d

SRO 62 a

SRO 63 d

SRO 64 c

SRO 65 d

SRO 66 a

SRO 67 b

SRO 68 b

SRO 69 a

SRO 70 d

SRO 71 d

SRO 72 c

SRO 73 a

SRO 74 a

SRO 75 b

SRO 76 d

SRO 77 c

~~SRO 78 a~~ TDW 11/15/96

SRO 79 a

SRO 80 c

~~SRO 81 d~~ TDW 11/15/96

SRO 82 c

SRO 83 c

SRO 84 c

SRO 85 c

SRO 86 c

SRO 87 a

SRO 88 d

SRO 89 c/b RRD 10/24/96 TDW 11/15/96

SRO 90 c

SRO 91 c ~~/a RRD 10/24/96 TDW 11/15/96~~

SRO 92 c

SRO 93 a

SRO 94 c

SRO 95 c + b TDW 11/15/96

~~SRO 96 a b RRD 10/24/96 TDW 11/15/96~~ STSTC (not deleted)
b ord TDW 11/26/96

SRO 97 d

SRO 98 b

SRO 99 c

SRO 100 b

ATTACHMENT 2

RO EXAMINATION AND ANSWER KEY

U.S. NUCLEAR REGULATORY COMMISSION
REACTOR OPERATOR LICENSING EXAMINATION

FACILITY: Susquehanna 1 & 2

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 10/21/96

APPLICANT: MASTER

INSTRUCTIONS TO APPLICANT:

Points for each question are indicated in parentheses after the question. To pass this examination, you must achieve an overall grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

NUMBER QUESTIONS	TOTAL POINTS	APPLICANT'S POINTS	APPLICANT'S OVERALL GRADE
92	92.0		

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

Candidate's Signature

QUESTION: 1 (1.0)

Which activity may be performed without reference to the procedure?

a. Initiation of Suppression Pool Spray due to suppression chamber pressure approaching 13 psig.

b. Initiation of Suppression Pool Cooling to support HPCI testing.

c. Restarting a Reactor Feedpump that has tripped on high water level.

d. Bypassing RSCS when directed by EO-100-113, Level/Power Control.

QUESTION: 2 (1.0)

A surveillance procedure requires that a specific valve be confirmed in the closed position before starting a pump.

Which of the following describes the required action to "confirm" the position of the valve?

a. Before starting the pump the operator observes the valve closed indicating light is lit. Initialing the step is required by the operator.

b. Before starting the pump the operator verifies the normal position on the P&ID.

c. Before starting the pump the operator verifies the position on the system checklist (CL). Initialing t step is required by the operator.

d. Before starting the pump the operator is required to attempt movement in the closed direction.

QUESTION: 3 (1.0)

Given the following conditions:

- One ADS valve has been inoperable for 14 days.
- A surveillance is required on HPCI which will require HPCI to be declared inoperable.
- Performance of the surveillance will require entry into Technical Specifications 3.0.3.

Who is required to give permission to voluntarily enter Technical Specification 3.0.3?

a. Manager - Nuclear Operations

b. Plant Operations Review Committee

c. Vice President - Nuclear Operations

d. Nuclear Regulatory Commission - Region 1

QUESTION: 4 (1.0)

An operator accepts 4 hours of overtime on the first day back on a normal day shift following a weeks vacation.

Without Plant Manager approval, what is the maximum time the operator can work the next day?

a. 4 hours.

b. 8 hours.

c. 12 hours.

d. 16 hours.

QUESTION: 5 (1.0)

The Unit 1 Plant Control Operator assigned the AT THE CONTROLS (ATC) duties is required to discuss the results of a test in the Shift Supervisor office. It is expected to take approximately 10 minutes for the discussion.

Select the allowable action for the operator to attend the meeting in the Shift Supervisors office.

The PCO with the ATC duties is required to:

a. turn over responsibility to an extra PCO NOT assigned to either unit.

b. turn over responsibility to the Unit Supervisor, provided the other PCO assigned to the unit is in the control room.

c. conduct a formal turnover to the other PCO assigned to the unit.

d. inform the Unit Supervisor of his/her location during the absence.

QUESTION: 6 (1.0)

Given the following conditions:

- Conditions are being established to perform a surveillance on a diesel generator.
- A situation requires the engineer who will observe the test to leave the plant.
- The engineer is expected to return later in the day.
- The test cannot be performed without the engineer present.

An Aborted Evolution Control Log is required to be completed when it is determined that:

a. the test will be delayed.

b. the diesel will NOT be immediately returned to a normal lineup.

c. test will NOT be restarted until the next shift.

d. the test will NOT be restarted within one hour.

QUESTION: 7 (1.0)

The control room communicator is:

a. the second PCO from the unaffected unit.

b. the Assistant Unit Supervisor.

c. a designated Nuclear Plant Operator from the unaffected unit.

d. the Shift Technical Advisor.

QUESTION: 8 (1.0)

Which of the following lists ALL emergency classifications when accountability to be performed?

a. An Unusual Event or above.

b. An Alert or above.

c. A Site Area Emergency or above.

d. Classifications when the potential for release exists.

QUESTION: 9 (1.0)

You are directed to unlock and close a normally locked open RHR valve.

After the valve is closed the locking device is to be:

a. reapplied to the valve locking it in the closed position.

b. locked to the operator or a fixed object in close proximity of the component.

c. tagged and turned over to the shift supervisor.

d. tagged and turned over to the system operating engineer.

QUESTION: 10 (1.0)

A valve is tagged with a pink tag during an outage. Repositioning/operation of the valve can be approved by which one of the following individuals or combinations of individuals?

a. Only the work group

b. Only Shift Supervision

c. Shift Supervision and the Operations Outage Supervisor

d. The work group and Shift Supervision

QUESTION: 11 (1.0)

A motor operated valve is required to be used for protective blocking.

Which of the following is an acceptable method for closing the valve?

a. Close the valve until closed indication appears. Hold the control switch in closed position for 5 seconds.

b. Place torque switch in the circuit. Close the valve from the Control Room until closed indication appears.

c. Close the valve from the control room, then manually close the valve locally.

d. Close the valve from the control room, then verify closed indication locally.

QUESTION: 12 (1.0)

As of 10/21/1996 your annual dose was 250 mrem. Without a dose extension in place, what is maximum dose you can receive between now and 12/31/96?

a. 750 mrem.

b. 1750 mrem.

c. 3750 mrem

d. 4750 mrem.

QUESTION: 13 (1.0)

During normal plant conditions, who is responsible for controlling access and conduct of personnel in the Unit Control Room?

a. PCO assigned at the controls responsibility.

b. Second PCO assigned to the unit.

c. Unit Supervisor.

d. Shift Supervisor.

QUESTION: 14 (1.0)

Control rod hydraulic system is aligned for normal operation. The drive water pressure control valve is throttled in the closed direction for 2 seconds.

Which parameter will increase?

a. Drive water pressure

b. Cooling water pressure

c. Drive water flow

d. Cooling water flow

QUESTION: 15 (1.0)

The reactor is operating at 95% power when a scram signal is generated due to a turbine trip.

Which condition will PREVENT the backup scram valves from venting the scram air header?

a. 125 VDC to ONE of the backup scram valves is deenergized.

b. The check valve bypassing one of the backup scram valves fails closed.

c. RPS Trip System "B" does NOT deenergize.

d. The backup scram valve closest in the air flow path to the scram pilot valves fails to reposition.

QUESTION: 16 (1.0)

Given the following:

- Reactor startup is in progress.
- Reactor pressure is 550 psig.
- A reactor scram occurs.
- A scram inlet valve fails to open.

Which of the follow describes the response of the control rod with the closed scram inlet valve?

a. The rod will NOT insert.

b. The rod will partially insert.

c. The rod will fully insert within an acceptable time.

d. The rod will fully insert but may NOT be within an acceptable time.

QUESTION: 17 (1.0)

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Given the following conditions:

- Reactor power is being raised from 35% to 40% using control rods.
- Rods are being withdrawn in a group with withdrawal limits of 24.
- A rod is withdrawn to position 28.

Select the required action for the rod that is withdrawn to position 28.

a. Insert to 00.

b. Leave at 28 and contact the Reactor Engineer.

c. Immediately reposition back to 24, then continue rod withdrawal.

d. Position to 24, then contact Reactor Engineer for direction.

QUESTION: 18 (1.0)

Given the following conditions:

- Reactor power is 8%.
- A control rod is being withdrawn from position 12 to 24.
- The rod has failed reed switches at position 18 and 20.

Which of the following describes the actions required to withdraw the control rod?

a. The rod will NOT have to be bypassed in RSCS to withdraw to position 20 but will have to be bypassed to withdraw to position 22.

b. The rod will have to be bypassed in RSCS to withdraw to position 20.

c. A substitute position will NOT be required to withdraw to position 20 but will be required to withdraw to position 22.

d. A substitute position will be required to withdraw to both positions 20 and 22.

QUESTION: 19 (1.0)

Given the following conditions:

- Reactor is subcritical.
- Rods are being withdrawn for startup.
- All RWM group 9 rods have been withdrawn to the withdrawal limit.
- Rod 14-19 is assigned to RWM group 11.
- The PCO selects rod 14-19.

The RWM will:

a. latch up to group 11.

b. display a SELECT error and a WITHDRAW error.

c. display ONLY a SELECT error.

d. display a SELECT error and an INSERT error.

QUESTION: 20 (1.0)

Given the following:

- A Rod Worth Minimizer rod group has insert and withdrawal limits of notch 12 and 24.
- Rod withdrawal is being performed.

To prevent withdrawal errors from being generated when the next rod group is latched, all rods in this rod group are required to be at:

a. position 24.

b. position 22 or 24.

c. position 24 or 26.

d. positions 22, 24 or 26.

QUESTION: 21 (1.0)

Given the following conditions:

- Reactor power is 63%.
- RECIRC PUMP A SEAL STAGE HI/LO FLOW annunciator has just been received.
- Second stage seal pressure is 475 psig.

These parameters are an indication of:

a. failure of the second stage seal.

b. failure of both seals.

c. blockage of the second stage seal.

d. blockage of the first stage seal.

QUESTION: 22 (1.0)

Given the following conditions:

- Reactor power is 20%.
- An EHC fluid leak has occurred.
- The recirculation pumps trip.

What caused the recirculation pumps to trip?

a. Low ETS pressure.

b. Turbine stop valve closure.

c. Reactor vessel water level decreasing to -5 inches.

d. Reactor pressure increasing to 1150 psig.

QUESTION: 23 (1.0)

Given the following conditions:

- A reactor cooldown is progress.
- Recirculation pump 1A was secured at 0815 due to concerns with seal leakage.
- At 0930 Recirculation pump 1B was inadvertently tripped.
- At 0945 the 1B pump is restarted.
- The 1B pump is tripped again at 0950.

What is the earliest time the 1B pump is allowed to be started?

a. 1000

b. 1005

c. 1030

d. 1035

QUESTION: 24 (1.0)

Due to an instrumentation failure, Reactor Recirculation pump 1A speed cannot be changed from the control room.

Which of the following is an acceptable combination for adjusting recirculation flow locally?

a. The Reactor Engineer monitors a licensed operator raising flow.

b. An SRO supervises an NPO decreasing flow to comply with an off normal procedure.

c. A licensed operator decreases flow.

d. A non-licensed operator is on the phones with the PCO to reduce flow.

QUESTION: 25 (1.0)

Given the following:

- Reactor power is 90%.
- Total core flow is 90 Mlbm/hr.
- Operating on the 100% rod line.
- 8 control rods are inserted from position 24 to 12.

After the rods are inserted, which of the following can be the expected value for core flow?

a. 86 Mlbm/hr

b. 88 Mlbm/hr

c. 90 Mlbm/hr

d. 92 Mlbm/hr

QUESTION: 26 (1.0)

Given the following conditions:

- The Unit 1 RHR LOOP A/B MAN INIT switches (HS-E11-1S20A and B) have been armed and depressed.
- The C ESW pump fails to start.

If the operator performs NO other actions, which of the following lists the RHR pumps that will be operating without cooling?

a. RHR pumps 1A and 1C.

b. RHR pumps 1B and 1C.

c. RHR pumps 1C and 1D.

d. RHR pumps 1A and 1D.

QUESTION: 27 (1.0)

Given the following conditions:

- Unit 2 power is 49 %.
- SO-249-002, "Quarterly RHR System Flow Verification is in progress on loop A.
- System flow is 9800 gpm.
- The heat exchanger bypass valve is closed.
- A manual LPCI initiation signal is received.

Which valve will immediately reposition?

a. Heat exchanger bypass valve (F048).

b. LPCI injection flow control valve (F017).

c. LPCI injection outboard valve (F015).

d. Minimum flow valve (F007).

QUESTION: 28 (1.0)

Given the following conditions:

- Reactor water cleanup isolation valve (F004) is closed.
- Reactor water cleanup isolation valve (F001) is open.

Which of the following occurred?

a. RWCU equipment room temperature increased to 138 F.

b. Standby liquid control switch was placed to START.

c. RPV level decreased to +2 inches.

d. Non-regenerative heat exchanger outlet temperature reached 135 F.

QUESTION: 29 (1.0)

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Given the following:

- A LOCA has occurred outside the containment and cannot be isolated.
- RPV level is -100 inches and decreasing.
- Essential 480 Volt MCC 1B210 has deenergized due to a spurious trip signal to the feeder breaker.
- RPS is reenergized from the alternate source.

Which of the following functions will NOT operate?

a. Core Spray initiation.

b. LPCI initiation.

c. Minimum flow protection for RHR.

d. Recirculation pump discharge valve closure.

QUESTION: 30 (1.0)

Given the following conditions:

- Reactor pressure is 65 psig.
- RHR loop A is operating in Shutdown Cooling.
- RHR loop B is aligned for automatic LPCI injection.
- RPV level decreases to -4 inches before cause is corrected.

What condition will cause the isolation signal to the RHR Outboard Injection Valve (F015B) to be reset ?

a. Reactor pressure increases to 145 psig.

b. The operator depresses the RHR LOOP A SHUTDOWN CLG RESET pushbutton.

c. Reactor water level is returned to 24 inches.

d. Drywell pressure increases to 2.2 psig.

QUESTION: 31 (1.0)

Given the following conditions:

- HPCI initiated on low water level.
- Level has been restored to the normal band with feedwater.
- Drywell pressure is .02 psig.
- HPCI initiation signal has been reset.

What is the required method to shutdown HPCI?

a. Depress the HPCI manual isolation pushbuttons.

b. Reduce controller output to zero. When turbine speed is 2200 rpm trip the turbine.

c. Trip the HPCI Turbine, then close HPCI Turbine Steam Supply valve.

d. Close the HPCI Turbine Steam Supply valve, then reset the HPCI Turbine.

QUESTION: 32 (1.0)

With HPCI in operation, loss of a single 480 VAC bus that supplies HPCI component(s) will:

a. prevent restarting HPCI following a shutdown.

b. prevent isolation of HPCI on a break in the steam line.

c. limit the available cooling to the HPCI room.

d. cause a loss of governor control.

QUESTION: 33 (1.0)

Given the following conditions:

- A LOCA signal has been generated on Unit 1 due to a loss of drywell cooling.
- Core spray responds correctly to this condition.
- A LOCA signal is generated on Unit 2.

Select the response of Unit 1 and Unit 2 Core Spray Pumps to the Unit 2 LOCA signal.

a. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2A, 2B, 2C and 2D start.

b. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2A and 2C start.

c. Core Spray Pumps 1A and 1C trip. Core Spray Pumps 2B and 2D start.

d. Core Spray Pumps 1B and 1D trip. Core Spray Pumps 2B and 2D start.

QUESTION: 34 (1.0)

The differential pressure measured by the core spray header leak detection differential pressure cell:

a. is approx. +3.5 psi at power and goes to a negative value if a break occurs between the vessel wall and the core shroud.

b. is approx. -3.5 psi at power and goes to a positive value if a break occurs between the vessel wall and the core shroud.

c. is approx. -3.5 psi at power and goes to 0 if a break occurs between the vessel wall and the core shroud.

d. is approx. 0 psi at power and goes to a negative value if a break occurs between the vessel wall and the core shroud.

QUESTION: 35 (1.0)

Given the following conditions:

- An ATWS has occurred.
- Standby liquid control was initiated.
- Instrument air has been lost to the Reactor Building.

Which of the following lists ALL valid indication(s) for determining when to secure Standby Liquid Control?

a. Local digital indication.

b. Local analog indication.

c. Control room indication.

d. Local digital indication and control room indication.

QUESTION: 36 (1.0)

Given the following:

- The "A" level transmitter on the south SDV trips.
- Approximately 10 minutes later the "D" level switch on the north SDV trips.

Select the RPS response, if any.

a. Initially RPS "A" trips but can be reset and at 10 minutes RPS "B" trips.

b. Neither RPS "A" or RPS "B" trips initially or at 10 minutes.

c. Initially RPS "A" trips and a full scram occurs at 10 minutes.

d. Initially RPS "A" and "B" remain energized and a full scram occurs at 10 minutes.

QUESTION: 37 (1.0)

The "A1" scram group light for RPS "A" is NOT lit on 1C609 and a BACKUP SCRAM/GROUP PILOT SCRAM SYSTEM "A" POWER FAILURE alarm is in on 1C651.

What will be the effect if RPS "B" power is transferred from alternate to normal?

a. 1/4 of the scram pilot valves for RPS "B" will deenergize.

b. 1/2 of the scram pilot valves for RPS "A" will deenergize.

c. 1/4 of the control rods will scram.

d. 1/2 of the control rods will scram.

QUESTION: 38 (1.0)

Given the following:

- Unit 2 reactor power is 7%.
- The reactor mode switch is in STARTUP.

Which of the following will cause a scram signal to be generated?

a. The turbine is tripped during the turbine startup process.

b. The MSIVs close due to a loss of vacuum signal.

c. Reactor pressure reaches 1050 psig.

d. Mode switches for APRMs "A" and "B" are placed in STANDBY.

QUESTION: 39 (1.0)

Given the following conditions:

- Unit 1 is at 30%.
- A control rod is attempted to be moved from position 8 to 12.
- NO rod movement is observed on the Standby Information Panel (SIP).

Which of the following can be used for positive determination of rod movement?

a. OD-7 live data.

b. Full core display FULL IN- FULL OUT.

c. RWM indication.

d. RSCS indication.

QUESTION: 40 (1.0)

Given the following conditions:

- TIP traces are being performed.
- RPV level decreases to -5 inches on a level transient.
- An isolation signal is NOT generated.
- The mode switch is in AUTOMATIC.

Which of the following describes the actions required to withdraw the TIP?

a. Place the MANUAL switch to REV. The ball valve should automatically close when the TIP is withdrawn.

b. Place the MODE switch to MANUAL, then place the MANUAL switch to REV. The ball valve should automatically close when the TIP is withdrawn.

c. Place the MANUAL switch to REV. The ball valve will have to be manually closed.

d. Place the MODE switch to MANUAL, then place the MANUAL switch to REV. The ball valve will have to be manually closed.

QUESTION: 41 (1.0)

Given the following conditions:

- Recirculation flow unit A - 50%.
- Recirculation flow unit C - 55%.
- Control rod 22-27 is withdrawn.

Without setting up the Rod Block Monitor Setpoint, the Rod Block Monitor "A" will block rod withdrawal at:

a. 58%.

b. 61%.

c. 63%.

d. 64%.

QUESTION: 42 (1.0)

Given the following overlap data:

- A IRM is marked at 50/125 on Range 2 and 16/40 on Range 3.
- C IRM is marked at 75/125 on Range 2 and 24/40 on Range 3.
- F IRM is marked on 60/125 on Range 2 and 15/40 on Range 3.
- H IRM is marked on 25/125 on Range 2 and 8/40 on Range 3.

Which of the following lists ALL IRMs listed above that are operable?

a. IRM A

b. IRM A & C

c. IRM A, C & F

d. IRM A, C & H

QUESTION: 43 (1.0)

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Given the following conditions:

- Unit 1 is at 5%.
- The mode switch is in STARTUP.
- All IRMs are on Range 9.
- APRM power is raised to 11% using control rods..

Which of the following lists ALL alarms and protective signals received for this condition.

a. APRM UPSCALE alarm and ROD BLOCK.

b. APRM UPSCALE alarm, ROD BLOCK and SCRAM.

c. IRM UPSCALE alarm and ROD BLOCK.

d. IRM UPSCALE alarm, ROD BLOCK and SCRAM.

QUESTION: 44 (1.0)

Given the following conditions:

- Unit 2 is at 73% power.
- Flow unit A output fails downscale.

Placing the Division I Flow Unit bypass joystick to "A" will:

a. bypass all existing rod blocks.

b. bypass ONLY the comparator mismatch rod block.

c. change the flow input to APRMs "A", "C" and "E" to flow unit "C".

d. change the flow input to RBM "A" to flow unit "C".

QUESTION: 45 (1.0)

On a loss of "A" ESS bus what will be the status of power to the Division I APRMs?

a. Deenergized, but can be energized from Aux Bus 11A.

b. Deenergized, but can be energized from ESS Bus "C".

c. Energized from ESS Bus "C".

d. Energized from Aux Bus 11A.

QUESTION: 46 (1.0)

Given the following conditions:

- Unit 2 reactor power is 38%.
- LPRM 48-33 fails upscale.
- Bypassed LPRMs: 16-33, 40-57, 32-33, 56-25, 32-49.

What is the response to bypassing LPRM 48-33?

a. The rod block will clear and rod withdrawal can continue.

b. APRM "A" will be inoperable causing a rod block and half scram.

c. APRM "A" will be inoperable but NO rod block will be generated.

d. The rod block will clear after the function switch is returned to OPERATE from STANDBY.

QUESTION: 47 (1.0)

Given the following conditions:

- A Loss of Coolant Accident occurred.
- A cooldown is in progress.
- During the cooldown fuel zone level indication was constant at -150 inches.

During the cooldown actual water level:

a. was constant at -150 inches.

b. decreased from -150 inches.

c. decreased to -150 inches.

d. increased from -150 inches.

QUESTION: 48 (1.0)

During a surveillance, RCIC Turbine Exhaust to Suppression Pool Valve (F059) breaker trips before the amber light goes out when the valve is being opened.

What will be the effect on RCIC if an initiation signal is received?

a. The trip throttle valve will be tripped.

b. The turbine will startup, then trip on high exhaust pressure.

c. The turbine will operate at a lower speed due to the exhaust pressure.

d. The Steam to RCIC Turbine valve (F045) will NOT open.

QUESTION: 49 (1.0)

Given the following:

- t=0 sec LOCA occurs.
- t=2 sec High Drywell signal is generated and all equipment responds as required.
- t=20 sec ECCS LOOP A & B RX LO LEVEL (-129) alarms.
- t=48 sec ECCS LOOP A & B RX LO LEVEL (-129) clears.
- t=60 sec ECCS LOOP A & B RX LO LEVEL (-129) alarms.

When will ADS initiate?

a. t=104 sec.

b. t=122 sec.

c. t=134 sec.

d. t=162 sec.

QUESTION: 50 (1.0)

With a LOCA signal present, the drywell ventilation fans:

a. will run automatically in slow speed.

b. can be manually operated in slow speed.

c. CANNOT be operated.

d. can be manually operated in fast speed, but ONLY if the LOCA signal is overridden.

QUESTION: 51 (1.0)

Given the following conditions:

- Refueling is in progress.
- Mode switch is placed in STARTUP.

Which of the following describes restriction on refuel platform operation?

a. The refuel platform can be moved over the core, but the fuel hoist CANNOT be raised if loaded.

b. The refuel platform can be moved over the core, but the fuel hoist CANNOT be lowered.

c. If all control rods are inserted, the refuel platform CAN be moved over the core.

d. The refuel platform CANNOT be moved over the core.

QUESTION: 52 (1.0)

Given the following conditions:

- Unit 2 is operating at 48%.
- A steam leak occurs on the steam line to the reactor feed pumps.
- A reactor scram occurs on low water level.
- The operator takes all immediate actions for a scram.

Which of the following will cause a main steam line isolation?

a. Main steam line pressure decreases to 850 psig.

b. Condenser vacuum decreases to 15" hg.

c. Turbine building tunnel temperature increases to 168 F.

d. The operator arms and depresses NSSSS switches A and B.

QUESTION: 53 (1.0)

Given the following:

- Reactor power - 50%
- EHC Load Limit set at 65%
- Maximum Combined Flow Limiter at 115%.
- An electrical failure occurs that causes the pressure set signal to decrease 10 psi.

Refer to the attached drawing of the Electro-Hydraulic Control Logic (Figure 8) .

Assume reactor pressure remains constant.

Identify the response of the EHC system.

a. The TCVs and bypass valves will remain in their present positions.

b. The TCVs will open to pass 60% flow and the bypass valves will remain closed.

c. The TCVs will open to pass 65% flow and the bypass valves will remain closed.

d. The TCVs will open to pass 65% flow and the bypass valves will open to pass 17-18% flow.

QUESTION: 54 (1.0)

RCIC is operating to maintain level following a Main Steam Line Isolation. A hydraulic leak occurs on the line to the governor valve.

Which of the following describes the response of the governor valve?

a. Governor valve will close as oil pressure is lost.

b. Governor valve will open as oil pressure is lost.

c. Turbine speed will decrease, but RCIC flow controller will attempt to reopen the governor valve.

d. Governor valve position will remain constant.

QUESTION: 55 (1.0)

Given the following conditions:

- Unit 1 is at 84% power.
- Narrow Range level "A" is selected for input to the Feedwater level control.
- Testing is performed on Narrow Range Level channel "C".
- The instrument technician inserts a zero differential pressure signal to the "A" Narrow Range Level instrument instead of Narrow Range Level "C".

Select the response to this condition.

a. A feedpump trip and turbine trip due to the I & C signal input.

b. A reactor scram due to low RPV level.

c. A high vessel level condition causes a feedpump and turbine trip.

d. A high vessel level condition without a feedpump and turbine trip.

QUESTION: 56 (1.0)

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Given the following conditions:

- Standby gas treatment is a normal lineup.
- A Unit 1 high drywell signal is received.
- Standby gas treatment responds as required.
- All zone differential pressures are -.27".

Select the response if Zone II differential pressure decreases to -.23".

a. Outside air dampers will modulate closed.

b. Outside air dampers will modulate open.

c. Recirculation plenum suction dampers will modulate open.

d. Standby gas treatment fan inlet vanes will modulate open.

QUESTION: 57 (1.0)

Given the following:

- ESS Bus 1A201 has just been transferred from T-101 to T-201.
- The NORMAL supply breaker control switch is in the NORMAL AFTER CLOSE position.

Select the response to loss of ESS T-201.

a. Normal Supply breaker 1A20101 will close immediately on the trip of T-201.

b. Normal Supply breaker 1A20101 will close after ESS bus voltage is < 20% for .5 sec.

c. Normal Supply breaker 1A20101 will close after a 25 second time delay.

d. Diesel Generator Emergency Source breaker will close after its interlocks for automatic closing are met.

QUESTION: 58 (1.0)

Which of the following describes the operation of the automatic transfer switches used to supply 480 volt busses 1(2)B219 and 1(2)B229?

a. The ATS transfers to alternate immediately on a loss of normal power. It must be manually returned to the normal supply.

b. The ATS transfers to alternate immediately on a loss of normal power. It will transfer to normal immediately upon restoration of power to the normal bus.

c. The ATS transfers to alternate following a time delay to allow the diesel to reenergize the bus. It must be manually returned to the normal supply.

d. The ATS transfers to alternate following a time delay to allow the diesel to reenergize the bus. It automatically transfers to the normal supply following a 5 minute delay after reenergizing the bus.

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QUESTION: 59 (1.0)

An operator observes that several parameters on a control panel have exceeded their alarm setpoint but have NOT caused alarms to occur. All annunciator lights illuminate when an annunciator test is performed. This indicates that power from:

a. either 125 VDC or 120 VAC to annuciators for that panel is lost.

b. both 125 VDC and 120 VAC to annunciators for that panel is lost.

c. only 125 VDC power to the annunciators for that panel is lost.

d. only 120 VAC power to the annunciators for that panel is lost.

deleted TOW 11/15/96

QUESTION: 60 (1.0)

A diesel engine is being shutdown from panel 0C653 following a start from an inadvertent LOCA signal.

Resetting the local annunciators is prohibited because:

a. A governor failure causes the engine to speed up to 675 rpm.

b. The operator depresses the stop pushbutton in the control room.

c. Excessive loads are placed on the diesel.

d. The jacket water cooling pump fails.

QUESTION: 61 (1.0)

A diesel engine is being shutdown from panel 0C653 following a start from an inadvertent LOCA signal.

Resetting the local annunciators is prohibited because:

a. the diesel will stop without a proper cooldown.

b. the fuel racks will cycle.

c. all trips will be bypassed.

d. the HI PRIORITY TROUBLE annunciator in the control room will be bypassed.

QUESTION: 62 (1.0)

D ect the alternate source of cooling for the Unit 1 Emergency Switchgear Room Coolers.

a. Reactor Building Chilled Water

b. Control Structure Chilled Water

c. Emergency Service Water

d. Service Water

QUESTION: 63 (1.0)

Given the following temperature readings for Reactor Steam Dome Temperature during a heatup:

- 0800 - 242 F
- 0815 - 263 F
- 0830 - 289 F
- 0845 - 313 F

Per GO-100-002, what is the maximum allowable temperature at 0900?

C a. 332 F.

b. 338 F.

c. 342 F.

d. 363 F.

QUESTION: 64 (1.0)

A zone III isolation signal has been generated.

Which of the following describes the response of the Control Room Emergency Outside Air Supply System (CREOASS) filter unit response?

a. Both CREOASS units start and take a suction on both outside air and the control room.

b. One CREOASS unit starts and takes a suction ONLY on outside air.

c. One CREOASS unit starts and takes a suction on outside air and the control room.

D d. Both CREOASS units start but ONLY one takes a suction on outside air.

QUESTION: 65 (1.0)

Given the following conditions:

- A reactor recirculation pump has tripped.
- Core flow is 42 Mlbm/hr.
- Reactor power is 45%.
- APRM oscillations are observed to be approx. 5% peak to peak.

Which of the following is the first action that should be taken to suppress the flux oscillations?

a. Restart the tripped recirculation pump.

b. Increase core flow to greater than 55 Mlbm/hr.

c. Insert CRAM rods.

d. Insert control rods using Shutdown Control Rod Sequence.

QUESTION: 66 (1.0)

Following a trip of a reactor recirculation pump, entry into the LCO for single loop operation will:

a. always be required.

b. only be required if operating with pump speed greater than 80% of rated pump speed.

c. only be required if the recirculation pump is NOT started within 6 hours.

d. only be required if the pump is isolated.

QUESTION: 67 (1.0)

Given the following conditions:

- Reactor Recirculation pump B is tripped.
- Total core flow recorder reads 34 Mlbm/hr.
- Loop A Loop flow indicator reads 37 Mlbm/hr.
- Loop B Loop flow indicator reads 3 Mlbm/hr.

What is actual core flow?

a. 31 Mlbm/hr.

b. 34 Mlbm/hr.

c. 37 Mlbm/hr.

d. 40 Mlbm/hr.

QUESTION: 68 (1.0)

The reactor is operating at 37% power when a loss of vacuum occurs. With NO operator action, the cause for the reactor scram will be:

a. turbine stop valve fast closure due to a turbine trip.

b. reactor low water level due to a feed pump trip.

c. main steam line isolation due to low vacuum.

d. reactor high pressure due to bypass valve closure.

QUESTION: 69 (1.0)

A station blackout has occurred. RCIC should be operated:

a. at maximum flow, allowing it to automatically shutdown on high level and restart on low level.

b. at maximum flow, manually starting and stopping RCIC as needed to maintain level.

c. by closing the injection valve when injection is NOT required.

d. by minimizing starting and stopping of RCIC.

QUESTION: 70 (1.0)

Given the following:

- A station blackout has occurred.
- MAIN STEAM SRV LEAKING is alarming.
- MAIN STEAM DIV 1 SRV OPEN is clear.
- MAIN STEAM DIV 2 SRV OPEN is clear.

Based on this information, what is the status of SRVs and equipment to monitor SRVs?

a. An SRV is leaking. The acoustic monitors fail during a station blackout.

b. All SRVs are closed. Tailpipe temperature indications fail high during a station blackout.

c. Status of the SRVs is unknown because the annunciators are indications of loss of power to instrumentation.

d. An SRV has opened, then reclosed, causing the acoustic monitors to clear.

QUESTION: 71 (1.0)

125 VDC bus 1D634 is deenergized and a diesel start signal is received.

Which of the following describes the effect on Diesel Generator "C"?

a. The diesel will automatically start but the output breaker can only be shut manually.

b. The diesel generator will NOT automatically start.

c. The diesel generator will automatically start but in droop mode.

d. The diesel generator will start but the automatic trips will be disabled.

QUESTION: 72 (1.0)

Following an automatic scram signal, the goal of placing the reactor MODE switch to SHUTDOWN is to:

a. shift full core display to Full In - Full Out.

b. ensure that a scram signal seals in for 10 seconds.

c. ensure the Main Steam Isolation valves CLOSE to prevent rapid cooldown.

d. ensure a signal is generated to close the Scram Discharge Volume Vent and Drain valves.

QUESTION: 73 (1.0)

Given the following conditions:

- A reactor scram occurs due to two feedpumps tripping at 84% power.
- Reactor water level is -5 inches and recovering due to HPCI.
- Rods remain at positions 18, 42 and 26.
- The Shift Supervisor announces that EOPs are being entered before any immediate actions of ON-100-101, Scram, are performed.

The reactor operator should initiate ARI:

a. when directed by ON-100-101, to enter Level/Power Control at step LQ/Q-7.

b. as an immediate action of OP-AD-001, Operations Policies and Work Practices.

c. when time allows actions of ON-100-001, Scram, to be performed.

d. when directed by the steps of EO-100-113, Level/Power Control.

QUESTION: 74 (1.0)

Given the following conditions:

- Unit 2 reactor power is 92%.
- An oscillation occurred on turbine control system.
- SRV PSV-2F013G has lifted at its required setpoint but failed to fully reclose.
- Reactor power increased to 97% but then returned to 93%.

When is the reactor required to be scrammed?

a. Immediately

b. After attempts to close the valve from the control room are unsuccessful

c. Within 2 minutes

d. Before suppression pool temperature reaches 105 F

QUESTION: 75 (1.0)

The Reactor Core Isolation Cooling (RCIC) system initiated at -30 inches due to NO other injection systems operating. RCIC then raised level to +54 inches.

Identify the response of the RCIC to the high level and subsequent level decrease to -30 inches.

a. RCIC turbine trips on high level and must be manually reset to allow the turbine to restart at -30 inches.

b. Steam to RCIC Turbine valve (F045) will close on high level and the high level seal-in must be manually reset to allow F045 to reopen at -30 inches.

c. The RCIC Steam Supply Outboard Isolation Valve (F008) goes shut on high level and reopens at -30 inches.

d. Steam to RCIC Turbine valve (F045) will close on high level and the high level seal-in is automatically reset to allow F045 to reopen at -30 inches.

QUESTION: 76 (1.0)

Given the following conditions:

- Unit 1 is operating at 97% power.
- Unidentified leakage is 3.5 gpm.
- Identified leakage is 20 gpm.
- Leakage to the equipment drain sump increases by 1.8 gpm over the next 24 hours.

Technical specifications will:

a. NOT be entered.

b. be entered due to exceeding the unidentified leakage limit.

c. be entered due to exceeding the limit for an increase unidentified leakage.

d. exceeding the total leakage limit.

QUESTION: 77 (1.0)

Unit 1 is operating at 98% power when a steam flow input signal to the Feedwater Level Control System fails to zero output.

With no operator action reactor vessel level will:

a. increase to greater than the high level alarm but less than the feedpump and turbine trip.

b. increase to greater than the feedpump and turbine trip.

c. decrease to less than the low level alarm but above the scram setpoint.

d. decrease to less than the scram setpoint.

QUESTION: 78 (1.0)

Given the following conditions:

- HPCI is being operated for a surveillance.
- Suppression pool temperature is 94 F.

Select the status of performing EO-100-103, and Technical Specification LCO entry.

a. PC Control, EO-100-103, has been entered but LCO entry is NOT required.

b. PC Control, EO-100-103, has been entered and LCO entry is required.

c. PC Control, EO-100-103, has NOT been entered and LCO entry is NOT required.

d. PC Control, EO-100-103, has NOT been entered, but LCO entry is required.

QUESTION: 79 (1.0)

Given the following conditions:

- Reactor power is 65%.
- Core flow is 60 Mlbm/hr.
- A loss of feedwater heating has occurred.

Recirculation flow is required to immediately be reduced:

a. until core flow is 55 Mlbm/hr.

b. until core flow is 45 Mlbm/hr.

c. as low as possible without entering Region I of the Power to Flow curve.

d. until power is 45%.

QUESTION: 80 (1.0)

A loss of feedwater heating has occurred. Reducing recirculation flow is performed to:

a. avoid exceeding 100% power.

b. preclude the possibility of fuel failure due to Pellet Clad Interaction.

c. reduce the subcooling of the feedwater entering the reactor.

d. reduce local power faster than can be performed by control rod insertion.

QUESTION: 81 (1.0)

Given the following conditions:

- A reactor startup is in progress.
- Reactor pressure is 825 psig and being increased with rod withdrawal.
- A reactor scram occurs due to IRM upscale on range 8.
- Two control rods are at position 10 and 12.

EOP-100-113, Level/Power Control, will:

a. be entered from EO-100-102, RPV Control, until all RPV Control entry conditions are clear.

b. be entered from EO-100-102, RPV Control, until both control rods are fully inserted.

c. NOT be entered.

d. be entered from ON-100-101, Scram, for direction to insert the control rods.

QUESTION: 82 (1.0)

Following a control room evacuation what mechanism is used to close the MSIVs if they were not closed from the control room?

a. Pull fuses for AC & DC to the MSIV solenoids.

b. Isolate and bleed off air to outboard MSIVs.

c. Trip NSSS with jumpers.

d. Deenergize RPS power.

QUESTION: 83 (1.0)

Given the following conditions:

- A control room evacuation has occurred.
- Time allowed performance of all control room actions prior to evacuation.

What will be the method of pressure control prior to transferring control to the Remote Shutdown Panel?

a. Turbine bypass valves.

b. HPCI operating in CST to CST mode.

c. SRVs operating in relief mode.

d. SRVs operating in safety mode.

QUESTION: 84 (1.0)

Which of the following is the entry condition for EO-100-105, Radioactivity Release Control?

a. A Site Area Emergency is declared due to radiological release rates.

b. An Alert is declared due to off-site radiological release.

c. Projected dose is approaching the Site Area Emergency declaration criteria.

d. Projected dose is approaching the General Emergency declaration criteria.

QUESTION: 85 (1.0)

deleted TRW 11/15/96

Given the following conditions:

- Unit 2 is shutdown.
- 2A RBCCW and 2A TBCCW are aligned to ESW.
- Loop A of ESW is isolated from the diesel generators.
- A loss of off-site power occurs.
- Diesel generator output breaker 1B20104 fails to close.
- ESW pump "B" fails to start when required.
- Assume no operator actions are taken.

If diesel generators "B" and "D" are required to be tripped, indicate when they must be tripped? Base tripping time from the time that ESW pump "B" fails to start.

a. DG "B" - 3.5 minutes DG "D" - 3.5 minutes.

b. DG "B" - 7 minutes DG "D" - 7 minutes.

c. DG "B" - 3.5 minutes DG "D" can continue to run.

d. DG "B" - 3.5 minutes DG "D" - 7 minutes.

QUESTION: 86 (1.0)

Which of the following describes how a loss of RBCCW can result in a Main Steam Line Isolation?

a. Containment Instrument Gas will be lost resulting in closure of the inboard MSIVs.

b. Instrument Air will be lost resulting in closure of the outboard MSIVs.

c. Main Steam Line Tunnel High Temperature Isolation will result due to the loss of cooling to the tunnel area.

d. Main Steam Line Tunnel High Differential Temperature Isolation will result due to loss of cooling to the tunnel area.

QUESTION: 87 (1.0)

On a loss of instrument air the reactor should be scrammed at what pressure to avoid what conditions from occurring.

a. 80 psig to prevent erratic operation of air operated valves.

b. 80 psig to prevent abnormal flux patterns from drifting control rods.

c. 65 psig to ensure the scram occurs prior to significant scram discharge volume inleakage from occurring.

d. 65 psig to ensure drifting rods do not occur due to outlet scram valves opening without the inlet scram valves opening.

QUESTION: 88 (1.0) deleted TOW 11/15/94

During a transfer of 4KV ESS Bus 1D(1A204) from alternate to normal power the bus is momentarily deenergized then reenergized.

With NO operator action, a reactor scram will occur:

a. when the bus is reenergized.

b. due to loss of containment cooling.

c. due to loss of RBCCW to the recirculation pump.

d. due to loss of containment instrument gas.

QUESTION: 89 (1.0)

Given the following conditions:

- Cooldown is in progress.
- Temperature is 284 F.
- Both recirculation pumps are out of service.
- Reactor water level is 35 inches.
- A loss of the running RHR pump has occurred.

Of the listed RPV levels, which would be the minimum acceptable one hour after the RHR pump is lost?

a. 32"

b. 40"

c. 48"

d. 55"

QUESTION: 90 (1.0)

With a complete loss of RPS "B" power, which of the following identifies ALL RHR loops available to provide shutdown cooling?

a. RHR "A" from the control room.

b. RHR "A" from the control room and RHR "B" from the Remote Shutdown Panel.

c. RHR "B" from the Remote Shutdown Panel.

d. Either loop of RHR from the control room and RHR "B" from the Remote Shutdown Panel.

QUESTION: 91 (1.0)

Given the following conditions:

- Unit 1 power is 95%.
- All control rods are withdrawn.
- 1A CRD pump is inoperable.
- 1B CRD pump has tripped on overcurrent.
- Rod 27-14 has an accumulator alarm due to water leakage.

Which of the following conditions requires scramming the reactor?

a. High temperature alarms are received on two control rods.

b. 10 minutes has elapsed without CRD flow.

c. An accumulator alarm is received on rod 23-42.

d. One attempt to restart the 1B CRD pump fails.

QUESTION: 92 (1.0)

The Refueling SRO indicates that a bundle has been damaged in movement. The control room observes increasing radiation levels on the refuel floor and in the ventilation.

Which of the following describes the evacuations that should be performed?

a. Evacuate the refuel floor except for those persons attempting to place the bundle in a safe location.

b. Upon receiving a recommendation from HP evacuate the refuel floor.

c. Immediately evacuate the refuel floor.

d. Evacuate the refuel floor when requested by the Refueling SRO or any radiation alarm is received.

QUESTION: 93 (1.0)

Which of the following describes operation of the Drywell Spray Outboard Isolation Valve (F016A/B)?

a. FO16A/B can be opened using only the valve control switch under any condition.

b. F016A/B can only be opened if the Drywell Spray Inboard Isolation Valve F021A/B is opened first.

c. F016A/B will automatically close when drywell pressure decreases to less than 1.72 psig.

d. F016A/B will open with a LOCA signal present when the white light above the "LOCA ISOLATIO MANUAL OVERRIDE" switch is illuminated.

QUESTION: 94 (1.0)

Given the following conditions:

- Unit 1 was operating at 98% power.
- A spurious Main Steam Line isolation occurred.
- SRVs are cycling on high RPV pressure.

Which of the following describes how RPV pressure is to be controlled?

a. Allowing SRVs to operate automatically to control pressure.

b. Manually opening the SRVs that are cycling to reduce pressure.

c. Manually opening the SRVs in alphabetical order to reduce pressure.

d. Manually opening SRVs that discharge to the lowest temperature area of the suppression pool.

QUESTION: 95 (1.0)

Given the following conditions:

- A LOCA has occurred causing elevated drywell temperatures.
- Drywell temperature is 220 F.
- Extended Range instruments are decreasing from a level of -40".

From the choices provided, select the lowest level at which Extended Range level instruments are still usable?

a. -80"

b. -110"

c. -130"

d. -150"

QUESTION: 96 (1.0)

Given the following conditions:

- A LOCA has occurred.
- Suppression pool level is 18 ft.
- Core Spray flow is 6000 gpm.
- RHR "A" loop flow is 11,500 gpm with RHR "A" pump in operation.
- RHR "B" loop is NOT available.
- RPV level is STABLE at -155 inches.

While maintaining RPV level stable, which of the following is an acceptable change in flow?

a. Decrease core spray flow to 5500 gpm. Raise RHR pump "A" flow to maximum.

b. Trip the RHR pump and increase core spray flow to maximum.

c. Trip the core spray pumps and start RHR "C". Increase RHR flow to maintain level constant.

d. Decrease core spray flow to 5500 gpm and maintain RHR pump "A" flow at its present value.

QUESTION: 97 (1.0)

Given the following conditions:

- An MSIV isolation occurred.
- The reactor failed to scram on the isolation and power is approximately 20%.
- The pressure transient caused a leak in the HPCI pipe routing area.
- RPV level is being maintained constant at -120".
- SLC failed to inject requiring the backup method of boron injection to be initiated.
- Main steam line drains are open for pressure control.
- Control rods are being inserted manually.
- Temperature in the MSL general area on 683' is 130 F.

Which of the following systems can be secured?

a. HPCI

b. RCIC

c. MSL drains

d. CRD

QUESTION: 98 (1.0)

Given the following conditions:

- A LOCA has occurred into the Reactor Building.
- Reactor building temperatures on elevation 749' are above max safe temperature (212 F).
- The operator observes that Wide Range indicator decreases to ≤ -155 inches.
- Subsequently the operator observes that the Wide Range indicator is -150 inches and increasing.

Based on these indications the actual water level:

a. is BELOW the bottom tap of the instrument but actual RPV level CAN be verified increasing.

b. is BELOW the bottom tap of the instrument and actual water level CANNOT be verified increasing.

c. is ABOVE the bottom tap of the instrument and actual RPV level CAN be verified increasing.

d. is ABOVE the bottom tap of the instrument but actual water level CANNOT be verified increasing.

QUESTION: 99 (1.0)

EO-100-113, Level/Power Control, prohibits use of which system for maintaining level in the target band?

a. Feedwater

b. RCIC

c. LPCI

d. Core Spray

QUESTION: 100 (1.0)

Given the following conditions:

- A failure to scram has occurred.
- Reactor water level has been lowered to -140" for power control.
- Control Rod insertion actions are being performed.

Which method of control rod insertion CANNOT be performed?

a. Individually scramming control rods.

b. Driving rods

c. Drifting rods with cooling water pressure.

d. Venting HCU overpiston line.

Master key

RO 1	d
RO 2	a
RO 3	a
RO 4	b
RO 5	c
RO 6	c
RO 7	a
RO 8	b
RO 9	b
RO 10	d
RO 11	c
RO 12	b
RO 13	c
RO 14	a
RO 15	c
RO 16	~~c~~ d RRB 10/24/96 TDW 11/15/96
~~RO 17~~	~~a~~ TDW 11/15/96
RO 18	a
RO 19	c
RO 20	b
RO 21	d
RO 22	d
RO 23	d
RO 24	c
RO 25	d
RO 26	~~b~~ d RRB 10/24/96 TDW 11/15/96
RO 27	a
RO 28	b
~~RO 29~~	~~a~~ TDW 11/15/96
RO 30	a
RO 31	c
RO 32	c
RO 33	d
RO 34	b
RO 35	a
RO 36	c
RO 37	c
RO 38	d
RO 39	a
RO 40	~~c~~ b TDW 11/15/96
RO 41	a
RO 42	d
~~RO 43~~	~~c~~ TDW 11/15/96
RO 44	b
RO 45	a
RO 46	c
RO 47	c
RO 48	d
RO 49	d
RO 50	b

Master key

RO 51	d
RO 52	d
RO 53	d
RO 54	b
RO 55	b
~~RO 56~~	~~c~~ TOW 11/15/96
RO 57	d
RO 58	d
~~RO 59~~	~~c~~ TOW 11/15/96
~~RO 60~~	~~a~~ TOW 11/15/96
RO 61	b
RO 62	b
RO 63	a
RO 64	~~c~~ b 10/24/96 RRD TOW 11/15/96
RO 65	c + d TOW 11/15/96
RO 66	a
RO 67	d
RO 68	a
RO 69	d
RO 70	a
RO 71	b
RO 72	b
RO 73	b
RO 74	a
RO 75	d
RO 76	d
RO 77	c
RO 78	a
RO 79	a
RO 80	b
RO 81	d
RO 82	d
RO 83	c
RO 84	b
~~RO 85~~	~~a~~ TOW 11/15/96
RO 86	a
RO 87	c
~~RO 88~~	~~d~~ TOW 11/15/96
RO 89	c
RO 90	c
RO 91	c
RO 92	c
RO 93	d
RO 94	c / b RRD 10/24/96 TOW 11/15/96
RO 95	c
RO 96	c ~~/ d RRD 10/24/96~~ TOW 11/15/96
RO 97	c
~~RO 98~~	~~c~~ b ~~RRD 10/24/96~~ b or d STET (not deleted) TOW 11/15/96 TOW 11/22/96
RO 99	d
RO 100	a

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-1

Topic

Determining a working copy of a procedure is in fact the most recent revision

Problem

There are two correct choices, "A" and "D."

Comments

1. This question requires the candidates to identify where they are required to check that a working copy of a surveillance procedure is current.
2. "A" is correct. NDAP-QA-0300 states the operator shall check changes to the procedure are current and correct.
3. NDAP-QA-0003 states that personnel writing procedure changes must place those changes in the controlled manuals in the control room. So checking pages against the control room copy ensures the most current revision is being used.
4. "D" is correct. NDAP-QA-0300 states the operator can confirm procedure revision using the current controlled index.

References

NDAP-QA-0003, revision 6, page 14
NDAP-QA-0300, revision 5, page 36

Recommended Resolution

Accept either "A" or "D" as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert Powell 10/30/96

Approved by: _____ 10/30/96

Exam Level: S **RO Question Number:** **SRO Question Number: 1**

Question:

A surveillance is to be performed by a Nuclear Plant Operator(NPO) in the field.

Select the required method for assuring that the working copy is current.

a. Page checking the procedure against a control room copy.

b. Verifying the Procedure Change Control Forms (PCAFs) are the same as the control room copy.

c. Verifying the PCAFs are the same as a list of PCAFs provided by the Document Control Center.

d. Verifying the current revision of working copy against the current controlled index.

Answer: d

KA Number: 294001A101 **RO Value:** 2.9 **SRO Value:** 3.4

KA Statement:

Ability to obtain and verify control procedure copy

System/Evolution:

Section: Plant Wide Generics

RO Group: **SRO Group:**

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-14

Topic

Circumstances which require documentation in accordance with the plant bypass program.

Problem

There are two correct choices, "A" and "B."

Comments

1. This question requires the candidate to identify circumstances that require bypass documentation.
2. "A", the original key choice, correctly identifies that installation of a valve controller on a temporary basis until parts become available, requires a bypass.
3. "B" is also correct. A procedure change implemented on February 7, 1996 made a change to the program modifying the exemption of maintenance activities controlled by a work authorization from the bypass program. The procedure change requires a bypass for such activities.

References

NDAP-QA-0484, revision 2, page 4
PCAF 1-96-6166

Recommended Resolution

Accept either "A" or "B " as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert Reed 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 14

Question:

Which of the following items will require a bypass to be documented in accordance with NDAP-QA-0484?

a. Maintenance is to be performed on a temperature control valve controller. A temporary controller is installed. Maintenance is expected to take 21 days due to parts NOT being available.

b. A temporary hose is installed per a work authorization for 4 days to flush newly installed fire water piping.

c. Test instrumentation is installed to monitor the performance of a heat exchanger for 6 days. Existing system isolation valves are used to place the test instrumentation in service.

d. An instrumentation technician installs a chart recorder for CRD timing in accordance with a Surveillance Operations procedure.

Answer: a

KA Number: 294001K102 **RO Value:** 3.9 **SRO Value:** 4.5

KA Statement:

Knowledge of tagging and clearance procedures

System/Evolution:

Section: Plant Wide Generics

RO Group: **SRO Group:**

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-20

Topic

Technical Specifications actions required when an accumulator for a withdrawn control rod develops an Nitrogen leak with another withdrawn control rod inoperable.

Problem

There was insufficient reference material provided to properly evaluate the question.

Comments

1. The stem describes a situation where one control rod (30-47) is stuck and inoperable and all Technical Specifications actions for the inoperable rod are complete.
2. A second rod (26-39), develops an accumulator Nitrogen leak.
3. The candidates are asked, "what is the ***maximum*** time the control rod with the accumulator fault can remain withdrawn from the core?"
4. "A" is incorrect because Technical Specifications 3.1.3.5 allows 8 hours to repair the problem before the rod must be declared inoperable.
5. "B" is incorrect because once the rod is declared inoperable (after 8 hours), Technical Specifications 3.1.3.1 allows one hour to confirm separation from all other withdrawn control rods by at least two rods or the rod must be inserted and disarmed.
6. The rods are within two rods of each other, so the rod must be inserted within an hour.
7. It ***was not the intent*** of the exam author to select rods within two rods of one another.
8. "C" identifies the correct 9 hour limit.
9. A problem exists because the candidate would normally make the separation evaluation using a core map such as the full-core display on the 651 panel or an OD-7 option 2 plant computer printout. ***A core map was not provided.***
10. PP&L ***does not expect*** the candidates to memorize the core map, nor does PP&L expect the candidate to make a Technical Specifications decision without using a core map.
11. "D" is incorrect for the conditions of the question. ***However***, without providing a core map, it is reasonable a candidate would assume the rods are separated.
12. Because of the lack of supporting material needed to evaluate the question, the question should be deleted.

References

Technical Specifications, amendment 36, 3.1.3.1 and 3.1.3.5
SY017 K-3, revision 1, objective 7

Recommended Resolution

Delete the question.

Prepared by: _____ 10/29/96

Reviewed by: _____ 10/29/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 20

Question:

Given the following conditions:

- Reactor power is 48%.
- Current date is 10/21/96.
- Current time is 0930.
- Rod 30-47 is at position 48.
- Rod 30-47 was determined to be stuck at 1130 on 10/20/96.
- All required Technical Specifications were completed for rod 30-47.
- An accumulator alarm is received for rod 26-39 due to a nitrogen leak.
- Repair time for the nitrogen leak is 12 hours.

What is the maximum time that rod 26-39 can remain withdrawn from the core?

a. 1 hour

b. 8 hours

c. 9 hours

d. There is no time restriction for rod insertion.

Answer: b

KA Number: 201004G005 RO Value: 3.4 SRO Value: 4.1

KA Statement:

Knowledge of limiting conditions for operations and safety limits

System/Evolution: Rod Sequence Control

Section: Plant Systems

RO Group: 2 SRO Group: 2

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-64

Topic

Controlled sequencing of electrical busses during restoration from a station blackout.

Problem

There are two correct choices, "C" and "D."

Comments

1. Procedure EO-000-031 is performed to recover from a station blackout.
2. The prerequisite for this procedure is to ensure breaker alignments have been performed during the blackout per EO-100-030 and EO-200-030.
3. These three procedures work together to ensure that operator action is required to sequence the starting of station equipment, one bus at a time.
4. This allows the operating staff to anticipate and monitor the automatic equipment starts in a controlled manner, and also to monitor the offsite power supply for any resulting undervoltages.
5. Choices "C" and "D" are both correct

References

EO-000-031, revision 10, pages 3, 5, and 17

Recommended Resolution

Accept either "C" or "D" as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert O'Brien 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 64

Question:

Station Power Restoration, EO-000-031, provides a specific sequence for reenergizing busses from an off-site source to AVOID:

a. diesel generators tripping on overspeed when loads are transferred to off-site power.

b. underfrequency condition on off-site sources due to manually reenergizing non-emergency busses.

c. undervoltage condition caused when a ECCS initiation signal is present.

d. starting equipment automatically without operator action.

Answer: c

KA Number: 295003A204 RO Value: 3.5 SRO Value: 3.7

KA Statement:

System lineups

System/Evolution: Part/Complete Loss of AC Power

Section: Emergency and Abnormal Plant Evolutions

RO Group: 2 SRO Group: 1

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-95

Topic

EOP actions with two secondary containment temperatures greater than maximum safe values and a discharging primary system being isolated.

Problem

There are two correct choices, "B" and "C."

Comments

1. This question requires the candidate to identify required actions while performing EO-100-104, Secondary Containment Control.
2. The stem poses a situation in which two plant areas have temperatures greater than the maximum safe area temperatures specified in the EO-100-104 and a primary system leak has been identified.
3. The question asks, "In addition to isolating core spray, what course of action is required?" It does not make clear, however if the system did isolate.
4. "B" is correct if the candidate assumes isolation has been successful, i.e. "In addition to the fact that you've isolated Core Spray", then performing step SC/T-6 is appropriate.
5. "C" is correct if the candidate assumes that Core Spray isolation is attempting to be performed, but at this moment is still discharging or was unsuccessful, then performance of EOP step SC/T-9 is appropriate and answer "C" is correct.
6. As the question is written, the candidates must make assumptions concerning the leak isolation which dramatically changes the correct course of action.

References

EOP-100-104, revision 7

Recommended Resolution

Accept either "B" or "C " as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert Reed 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 95

Question:

Given the following conditions:

- Reactor power is 98%.
- CORE SPRAY LOOP A IN LEAKAGE-HIGH PRESSURE has alarmed.
- CORE SPRAY LOOP A PUMP ROOM FLOODED has alarmed.
- Core Spray Pump Room temperature is 140 F.
- RB Sump Room temperature is 140 F.
- A high alarm is present for RB Sump Room ARM.
- The RB Sump Room ARM is reading upscale.

In addition to isolating Core Spray, what course of action is required?

a. Operate all available RB ventilation and CS room coolers.

b. Commence a normal reactor shutdown.

c. Scram and rapidly depressurize.

d. Scram and cooldown at normal cooldown rates.

Answer: c

KA Number: 295032A201 RO Value: 3.8 SRO Value: 3.8

KA Statement:

Area temperature

System/Evolution: High Secondary Containment Area Temperature

Section: Emergency and Abnormal Plant Evolutions

RO Group: 3 SRO Group: 2

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

RO-43

Topic

Predicting IRM scram and rod block setpoint attainment.

Problem

There is no correct choice provided.

Comments

1. The stem establishes a situation with IRMs on range 9, the mode switch in startup, and reactor power increasing from 5% to 11% on the APRMs and then asks the candidates what is the expected IRM and APRM response to this situation.
2. The stem did not state what the IRM readings were at 5% power.
3. The IRMs are ***not*** calibrated for reactor power (they measure relative reactor power).
4. The candidate cannot calculate what the IRMs will indicate when power is increased by a factor of 11/5 or 2.2 without knowing what they were indicating at 5% power.
5. There is a rule of thumb that with IRMs at 100 on range 10, reactor power is 32%.
6. Using the rule of thumb, 11% reactor power is 34.37 on IRM range 9. The first alarm setpoint, the rod block, on range 9 is received at 34.56.
7. Therefore, even if the candidate would use the rule of thumb to correlate reactor power to IRM indication, there is no correct answer provided among the distracters.

References

SY017 I-2, revision 0, IRM System Lesson Plan and Fact Sheet

Recommended Resolution

Delete the question.

Prepared by: _____ 10/29/96

Reviewed by: _____ 10/30/96

Approved by: _____ 10/30/96

Exam Level: R RO Question Number: 43 SRO Question Number:

Question:

Given the following conditions:

- Unit 1 is at 5%.
- The mode switch is in STARTUP.
- All IRMs are on Range 9.
- APRM power is raised to 11% using control rods..

Which of the following lists ALL alarms and protective signals received for this condition.

a. APRM UPSCALE alarm and ROD BLOCK.

b. APRM UPSCALE alarm, ROD BLOCK and SCRAM.

c. IRM UPSCALE alarm and ROD BLOCK.

d. IRM UPSCALE alarm, ROD BLOCK and SCRAM.

Answer: c

KA Number: 215003K401 RO Value: 3.7 SRO Value: 3.7

KA Statement:

Rod withdrawal blocks

System/Evolution: Intermediate Range Monitor

Section: Plant Systems

RO Group: 1 SRO Group: 2

Additional Comment
No Action Recommended

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-48
RO-56

Topic

Standby gas treatment damper response to low reactor building differential pressure following automatic initiation.

Problem

There is no correct choice provided.

Comments

1. The stem describes a situation that automatically starts SGTS.
2. In the bulleted list, a Unit 1 vice Unit 2 high drywell pressure signal is stated.
3. The stem asks for SGTS response to a zone 2 low differential pressure.
4. A unit 1 initiation won't be affected by a zone 2 problem because the zone 2 isolation signal is not present to allow the zone 2 dp signal to pass to the dp controller. None of the distracters are correct, since "no effect" is not among them.
5. However, all of the candidates misread the question as being a unit 2-zone 2 situation and answered the question as intended.
6. One candidate misunderstood the concept involved and chose the wrong response.
7. PP&L feels that this is an inconsequential problem and does not feel anything other than correcting the question for future use is warranted.

References

SY017 L3, revision 1, Figure 15

Recommended Resolution

Retain the question as is.

Prepared by: _____ 10/29/96

Reviewed by: Robert Bond 10/30/96

Approved by: _____ 10/30/96

Exam Level: B RO Question Number: 56 SRO Question Number: 48

Question:

Given the following conditions:

- Standby gas treatment is a normal lineup.
- A Unit 1 high drywell signal is recieved.
- Standby gas treatment responds as required.
- All zone differential pressures are -.27".

Select the response if Zone II differential pressure decreases to -.23".

a. Outside air dampers will modulate closed.

b. Outside air dampers will modulate open.

c. Recirculation plenum suction dampers will modulate open.

d. Standby gas treatment fan inlet vanes will modulate open.

Answer: c

KA Number: 261000A104 RO Value: 3.0 SRO Value: 3.3

KA Statement:

Predict and/or monitor changes in parameters

System/Evolution: Secondary containment differential pressure change

Section: Plant Systems

RO Group: 1 SRO Group: 1

ATTACHMENT 4
NRC RESOLUTION OF FACILITY COMMENTS

SRO 1:	Comment accepted. Answer 'a' was accepted as an additional correct answer.
SRO 14:	Comment accepted. Answer 'b' was accepted as an additional correct answer.
RO 16:	Comment accepted. The correct answer was changed to answer 'd'.
SRO 19: RO 17:	Comment accepted. Without procedural guidance for the condition specified in the question, none of the answers would be incorrect. The question was deleted because it had four correct answers.
SRO 20:	Comment accepted. The question was deleted.
SRO 25: RO 26:	Comment accepted. The correct answer was changed to answer 'd'.
SRO 27: RO 29:	Comment accepted. The question was deleted.
SRO 35: RO 40:	Comment accepted. The correct answer was changed to answer 'b'.
RO 43:	Comment accepted. The question was deleted.
SRO 48: RO 56:	Comment noted. As stated in the facility comment, there was no correct answer for the question as written. Therefore, the question was deleted.
SRO 53: RO 59:	Comment accepted. The question was deleted.
SRO 54: RO 60:	Comment accepted. The question was deleted.
SRO 58: RO 64:	Comment accepted. The correct answer was changed to answer 'b'.
SRO 59: RO 65:	Comment accepted. Answer 'd' was accepted as an additional correct answer.

NRC RESOLUTION OF FACILITY COMMENTS

SRO 64: Comment not accepted. The breaker alignments per EO-100-030 and EO-200-030 and the sequencing specified in EO-000-031 allow the staff to anticipate and monitor automatic equipment starts in a controlled manner. However, the specific sequence in the restoration procedure (EO-000-031) does not prevent the automatic start of equipment without operator action as specified in answer 'd', the additional correct response proposed by the facility. Automatic starts of equipment will occur if initiation signals are present, but energizing the busses in the specified sequence and waiting between each bus ensures that an undervoltage condition doesn't occur when the equipment starts. No change was made to the answer key.

SRO 66:
RO 70: Comment not accepted. The question asks for the status of the SRVs and SRV instrumentation based on the information provided. During a station blackout, tailpipe temperature indication would be available and the acoustic monitors would be unavailable due to loss of power. Based on the information provided, the current status of the SRVs (leaking, closed or open) cannot be confirmed. Answer 'b' is not incorrect with respect to the status of SRVs, but it is incorrect with respect to the status of instrumentation because the tailpipe temperature indications do not fail high during a station blackout. Answer 'c' is not incorrect with respect to SRV status, but is incorrect with respect to the status of SRV instrumentation because the SRV leaking annunciator is not due to loss of power. Answer 'd' is not incorrect with respect to the status of SRVs, but is incorrect with respect to the status of SRV instrumentation because the acoustic monitors are deenergized not cleared. Answer 'a' is not incorrect with respect to the status of SRVs and is correct with respect to the status of the SRV instrumentation. Even though SRV status cannot be confirmed and none of the answers are incorrect with respect to SRV status, the question is still valid with respect to the status of SRV instrumentation. The applicants would be able to determine that answers 'b', 'c', and 'd' are incorrect based on the status of SRV instrumentation. Answer 'a' would be the only correct answer. No change was made to the answer key.

SRO 78:
RO 85: Comment accepted. The question was deleted.

SRO 81:
RO 88: Comment accepted. The question was deleted.

SRO 89:
RO 94: Comment accepted. Answer 'b' was accepted as an additional correct answer.

NRC RESOLUTION OF FACILITY COMMENTS

SRO 91:
RO 96:

Comment not accepted. Answer 'a' states "raise RHR pump "A" flow to maximum." Maximum RHR pump flow is 12,200 gpm. Increasing RHR pump "A" flow to 12,200 gpm would violate the RHR vortex limit. Therefore answer 'a' is incorrect. The facility comment incorrectly interpreted answer 'a' to mean the maximum flow allowed by the vortex limit. No change was made to the answer key. (None of the applicants selected answer 'a'; therefore, not accepting the facility comment had no effect on the grading of the examinations.)

SRO 95:

Comment accepted. Answer 'b' was accepted as an additional correct answer.

SRO 96:
RO 98:

Comment accepted. It cannot be determined whether level is above or below the bottom tap of the instrument from the information given in the stem of the question. Therefore, answers 'b' and 'd' are not incorrect with respect to actual water level. Both answers 'b' and 'd' are correct with respect to level instrument use for trending. Answer 'b' was accepted as an additional correct answer.

ATTACHMENT 5

SIMULATION FACILITY REPORT

Facility Licensee: Susquehanna, Unit 1

Facility Docket Nos: 50-387 & 388

Operating Tests Administered from: October 22 - 24, 1996

This form is used only to report simulator 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.

None

ATTACHMENT 3

FACILITY COMMENTS

PP&L

cc: K. V. Chambliss w/o Enc
A. S. Fitch w/o Enc
W. H. Lowthert w/o Enc
NTG File w/o Enc
Nuc Records-Site w/o Enc

October 31, 1996

Mr. Glenn Meyers
U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Susquehanna Training Center
SRO/RO Written Examination
PLA 4525 File A14-12F

Enclosed are the comments concerning the Senior Reactor Operator and Reactor Operator written examination which was administered on Monday, October 21, 1996 at the Susquehanna SES.

The Operations Training Staff reviewed the examination and provided the enclosed comments.

G. J. Kuczynski
Plant Manager

Response: No

Enclosures

gjk11096

GJK/ASF/vah

Target Zero ACCIDENTS

Previously Submitted Comments And Recommendations

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

RO-26
SRO-25

Topic

RHR pump cooling with failure of an ESW pump to start when RHR is manually initiated.

Problem

Key error. Choice "D" is correct, not choice "B."

Comments

1. The candidate is asked to determine which RHR pumps are operating ***without*** cooling in a postulated event.
2. RHR is manually initiated with the initiation pushbuttons which would automatically start ESW pumps "C" and "D" (one pump in each ESW loop).
3. "C" ESW pump then fails to start, leaving only ESW loop "B" with a pump operating in it.
4. Choice "B" identifies the pumps ***with*** cooling.
5. Choice "D" identifies the pumps ***without*** cooling
6. This is a ***typographical*** error on the key.

Attached References

OP-149-001, revision 20, Section 3.3 steps 3.3.2 Note, 3.3.4.a (3), and 3.3.4.a (4) (d).

Recommended Resolution

Change answer key to "D."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

Exam Level: B RO Question Number: 26 SRO Question Number: 25

Question:

Given the following conditions:

- The Unit 1 RHR LOOP A/B MAN INIT switches (HS-E11-1S20A and B) have been armed and depressed.
- The C ESW pump fails to start.

If the operator performs NO other actions, which of the following lists the RHR pumps that will be operating without cooling?

a. RHR pumps 1A and 1C.

b. RHR pumps 1B and 1C.

c. RHR pumps 1C and 1D.

d. RHR pumps 1A and 1D.

Answer: b

KA Number: 203000A214 RO Value: 3.8 SRO Value: 3.9

KA Statement:

Initiating logic failure

System/Evolution: RHR/LPCI: Injection Mode

Section: Plant Systems

RO Group: 1 SRO Group: 1

Affected Exam Questions

RO-64
SRO-58

Topic

Control room outside air supply system (CREOASS) response to a Zone III isolation signal.

Problem

Key error. Choice "B" is correct, not "C."

Comments

1. On a -38 inch Zone III isolation signal, only the CREOASS train in LEAD will initiate.
2. Normal CREOASS lineup is one train in LEAD, one train in STANDBY.
3. The lead system will align to take a suction from outside air.
4. To take a suction from the control room, recirculation mode, requires manual operator action.
5. Choice "B" identifies the response of the CREOASS to this situation.
6. This is a ***typographical*** error on the key.

References

OP-030-002, revision 14, sections 3.4.3, 3.4.4, and 3.10.
ON-159-002, revision 17, Attachment B, step 1.87.
P&ID M-178, revision 27.

Recommended Resolution

Change key to "B."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

Exam Level: B RO Question Number: 64 SRO Question Number: 58

Question:

A zone III isolation signal has been generated.

Which of the following describes the response of the Control Room Emergency Outside Air Supply System (CREOASS) filter unit response?

a. Both CREOASS units start and take a suction on both outside air and the control room.

b. One CREOASS unit starts and takes a suction ONLY on outside air.

c. One CREOASS unit starts and takes a suction on outside air and the control room.

d. Both CREOASS units start but ONLY one takes a suction on outside air.

Answer: c

KA Number: 290003K401 RO Value: 3.1 SRO Value: 3.2

KA Statement:

System initiations/reconfiguration: Plant-Specific

System/Evolution: Control Room HVAC

Section: Plant Systems

RO Group: 2 SRO Group: 2

Affected Exam Questions

RO-94
SRO-89

Topic

RPV pressure control following an MSIV isolation and reactor scram when SRVs are cycling on pressure setpoint.

Problem

Key error. Two choices are correct. The original choice, "C," and choice "B."

Comments

1. The EOPs would be entered in this event.
2. EO-100-102, step RC/P-5 directs pressure control with SRVs until pressure drops to 965 psig.
3. This step specifically notes that a prompt reduction in pressure is desired to terminate SRV cycling and therefore, NO opening sequence is warranted.
4. Step RC/P-8 directs pressure control below 1087 using SRVs following an alphabetical opening sequence. Following the alphabetical sequence equalizes the heat loading on the suppression pool.
5. Choice "B," meets this criteria, since already open SRVs, regardless of which ones they may be, meets this intent.
6. Choice "C," also meets this criteria, since opening the SRVs in alphabetical order will also meet this criteria.
7. In essence, both choices "B" and "C" are subsumed within the requirements of RC/P-5.
8. Plant practice is to place an already open SRV handswitch to OPEN to eliminate the need to open another SRV when one has already opened to meet this steps intent. If no SRV is open, the operator will routinely begin opening the SRVs using the alphabetical sequence to equalize the heating of the pool.

References

EO-100-102, revision 7, steps RC/P-5 and RC/P-8

Recommended Resolution

Change key to accept either "B" or "C."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

* Candidates asked question concerning time in event.

Exam Level: B RO Question Number: 94 SRO Question Number: 89

Question:

Given the following conditions:

- Unit 1 was operating at 98% power.
- A spurious Main Steam Line isolation occurred.
- SRVs are cycling on high RPV pressure.

Which of the following describes how RPV pressure is to be controlled?

a. Allowing SRVs to operate automatically to control pressure.

b. Manually opening the SRVs that are cycling to reduce pressure.

c. Manually opening the SRVs in alphabetical order to reduce pressure.

d. Manually opening SRVs that discharge to the lowest temperature area of the suppression pool.

Answer: c

KA Number: 295025A103 RO Value: 4.4 SRO Value: 4.4

KA Statement:

Safety/relief valves: Plant-Specific

System/Evolution: High Reactor Pressure

Section: Emergency and Abnormal Plant Evolutions

RO Group: 1 SRO Group: 1

Affected Exam Questions

RO-96
SRO-91

Topic

Evaluating vortex limit for core spray and RHR pumps.

Problem

Key error. The original choice, "C," and choice "A" are correct.

Comments

1. The initial conditions have core spray loop flow in the cross-hatched region, indicating a need to exit provided core cooling is assured.
2. To exit the region, core spray flow needs to be decreased to at least 5500 gpm.
3. Since level is slightly above the TAF and is stable to start with, another 500 gpm of injection from another source must be provided.
4. RHR is operating at 11,500 gpm and can be increased by 500 gpm to 12,000 gpm (the maximum allowed by the vortex limit) and be operating at the vortex limit for a single RHR pump.
5. The core spray pump could be shutdown and the idle RHR pump "C" started to raise RHR loop "A" flow to 17,000 gpm and still operate in the allowed area of the vortex limit curve for an RHR loop, compensating for the 5,500 gpm lost when core spray is shutdown.
6. Choice "C" meets the description of item "5."
7. Choice "A" meets the description of item "3" and "4."
8. Either choice is correct.

References

EO-100-102, revision 7, Figure 7.

Recommended Resolution

Change key to accept either "A" or "C."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

Exam Level: B RO Question Number: 96 SRO Question Number: 91

Question:

Given the following conditions:

- A LOCA has occurred.
- Suppression pool level is 18 ft.
- Core Spray flow is 6000 gpm.
- RHR "A" loop flow is 11,500 gpm with RHR "A" pump in operation.
- RHR "B" loop is NOT available.
- RPV level is STABLE at -155 inches.

While maintaining RPV level stable, which of the following is an acceptable change in flow?

a. Decrease core spray flow to 5500 gpm. Raise RHR pump "A" flow to maximum.

b. Trip the RHR pump and increase core spray flow to maximum.

c. Trip the core spray pumps and start RHR "C". Increase RHR flow to maintain level constant.

d. Decrease core spray flow to 5500 gpm and maintain RHR pump "A" flow at its present value.

Answer: c

KA Number: 295030G012 RO Value: 3.7 SRO Value: 4.4

KA Statement:

Ability to utilize symptom based procedures

System/Evolution: Low Suppression Pool Water Level

Section: Emergency and Abnormal Plant Evolutions

RO Group: 2 SRO Group: 1

Affected Exam Questions

RO-98
SRO-96

Topic

Use of level instruments during low level and degraded reactor building environmental conditions.

Problem

Key error. Choice "B" is correct, not choice "D."

Comments

1. The wide range level instrumentation is not usable below -125 inches when reactor building temperature on the 749' elevation are elevated.
2. The stem indicates level is -150 inches and increasing.
3. Below the minimum usable level, the lower tap may not be submerged so the level instrument cannot be used to verify a water level trend.
4. Choice "B" is the most correct as level MAY be below its bottom tap and level CANNOT be verified increasing.
5. Choice "C" is wrong. Level CANNOT be confirmed to be above the bottom tap.
6. This is a ***typographical*** error on the key.

References

EO-100-100, revision 6, Caution 1.

Recommended Resolution

Change key to "B."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

Exam Level: B RO Question Number: 98 SRO Question Number: 96

Question:

Given the following conditions:

- A LOCA has occurred into the Reactor Building.
- Reactor building temperatures on elevation 749' are above max safe temperature (212 F).
- The operator observes that Wide Range indicator decreases to < -155 inches.
- Subsequently the operator observes that the Wide Range indicator is -150 inches and increasing.

Based on these indications the actual water level:

a. is BELOW the bottom tap of the instrument but actual RPV level CAN be verified increasing.

b. is BELOW the bottom tap of the instrument and actual water level CANNOT be verified increasing.

c. is ABOVE the bottom tap of the instrument and actual RPV level CAN be verified increasing.

d. is ABOVE the bottom tap of the instrument but actual water level CANNOT be verified increasing.

Answer: d

KA Number: 295032A202 RO Value: 3.3 SRO Value: 3.5

KA Statement:

Equipment operability

System/Evolution: High Secondary Containment Area Temperature

Section: Emergency and Abnormal Plant Evolutions

RO Group: 3 SRO Group: 2

Affected Exam Questions

RO-16

Topic

Scram capability of a rod when the scram inlet valve fails to open and reactor pressure is 550 psig.

Problem

Key error. The correct choice is "D" not "C."

Comments

1. The question asks if a rod will insert if a scram occurs with reactor pressure at 550 psig and its scram inlet valves fails to open.
2. The FSAR states that when reactor pressure is at or near operating pressure, reactor pressure alone will insert a control rod in the required time.
3. Technical Specifications 4.1.3.2 requires testing scram times at greater than 950 psig, indicating this is the pressure where this occurs.
4. The rod will insert on reactor pressure alone as long as pressure is greater than 400 psig.
5. At 550 psig, there is no assurance the rod will insert within an "acceptable" time.
6. The only identified acceptable time is the Technical Specifications requirement of 7 seconds.
7. Choice "D" indicates the rod inserts, but MAY not insert within an acceptable time.
8. Choice "C" indicates the rod inserts and does so within an acceptable time. Because of this, "C" is NOT correct.
9. This is a ***typographical*** error on the key.

References

Susquehanna FSAR, revision 46, page 4.6-18, section 4.6.1.1.2.5
Technical Specifications, amendment 78, 4.1.3.2

Recommended Resolution

Change key to "D."

Prepared by: _____ 10/24/96

Reviewed by: _____ 10/24/96

Approved by: _____ 10/24/96

Exam Level: R RO Question Number: 16 SRO Question Number:

Question:

Given the following:

- Reactor startup is in progress.
- Reactor pressure is 550 psig.
- A reactor scram occurs.
- A scram inlet valve fails to open.

Which of the follow describes the response of the control rod with the closed scram inlet valve?

a. The rod will NOT insert.

b. The rod will partially insert.

c. The rod will fully insert within an acceptable time.

d. The rod will fully insert but may NOT be within an acceptable time.

Answer: c

KA Number: 201001K303 RO Value: 3.1 SRO Value: 3.2

KA Statement:

Control rod drive mechanisms

System/Evolution: Control Rod Drive Hydraulic

Section: Plant Systems

RO Group: 1 SRO Group: 2

Affected Exam Questions

SRO-20

Topic

Technical Specifications actions required when an accumulator for a withdrawn control rod develops an Nitrogen leak with another withdrawn control rod inoperable.

Problem

Key error. The correct choice is "C" not "B."

Comments

1. One rod is already stuck and declared inoperable and all Technical Specifications actions are complete for the rod.
2. A second rod, within the same 5 x 5 rod array as the first rod (not separated from the inoperable, withdrawn control rod), develops an accumulator Nitrogen leak.
3. With the accumulator problem Technical Specifications 3.1.3.5 allows 8 hours to repair the problem.
4. If not repaired within the 8 hours, the rod must be declared inoperable and the requirements of Technical Specifications 3.1.3.1 apply.
5. Technical Specifications 3.1.3.1 for an inoperable, withdrawn control rod allows one hour to confirm separation from all other withdrawn control rods by at least two rods or the rod must be inserted and disarmed.
6. The combination of times from Technical Specifications 3.1.3.5 and 3.1.3.1 is 9 hours.
7. Choice "C" identifies the 9 hour limit.
8. Choice "B" only addresses the requirement of Technical Specifications 3.1.3.5.
9. This is a ***typographical*** error on the key.

References

Technical Specifications, amendment 36, 3.1.3.1 and 3.1.3.5

Recommended Resolution

Change key to "C."

Superseded 10/30/96

Prepared by: _____ 10/24/96

Reviewed by: _____ 10.24.96

Approved by: _____ / /

Exam Level: S RO Question Number: SRO Question Number: 20

Question:

Given the following conditions:

- Reactor power is 48%.
- Current date is 10/21/96.
- Current time is 0930.
- Rod 30-47 is at position 48.
- Rod 30-47 was determined to be stuck at 1130 on 10/20/96.
- All required Technical Specifications were completed for rod 30-47.
- An accumulator alarm is received for rod 26-39 due to a nitrogen leak.
- Repair time for the nitrogen leak is 12 hours.

What is the maximum time that rod 26-39 can remain withdrawn from the core?

a. 1 hour

b. 8 hours

c. 9 hours

d. There is no time restriction for rod insertion.

Answer: b

KA Number: 201004G005 RO Value: 3.4 SRO Value: 4.1

KA Statement:

Knowledge of limiting conditions for operations and safety limits

System/Evolution: Rod Sequence Control

Section: Plant Systems

RO Group: 2 SRO Group: 2

Additional Comments And Recommendations

Exam Level: S RO Question Number: SRO Question Number: 1

Question:

A surveillance is to be performed by a Nuclear Plant Operator(NPO) in the field.

Select the required method for assuring that the working copy is current.

a. Page checking the procedure against a control room copy.

b. Verifying the Procedure Change Control Forms (PCAFs) are the same as the control room copy.

c. Verifying the PCAFs are the same as a list of PCAFs provided by the Document Control Center.

d. Verifying the current revision of working copy against the current controlled index.

Answer: d

KA Number: 294001A101 RO Value: 2.9 SRO Value: 3.4

KA Statement:

Ability to obtain and verify control procedure copy

System/Evolution:

Section: Plant Wide Generics

RO Group: SRO Group:

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-14

Topic

Circumstances which require documentation in accordance with the plant bypass program.

Problem

There are two correct choices, "A" and "B."

Comments

1. This question requires the candidate to identify circumstances that require bypass documentation.
2. "A", the original key choice, correctly identifies that installation of a valve controller on a temporary basis until parts become available, requires a bypass.
3. "B" is also correct. A procedure change implemented on February 7, 1996 made a change to the program modifying the exemption of maintenance activities controlled by a work authorization from the bypass program. The procedure change requires a bypass for such activities.

References

NDAP-QA-0484, revision 2, page 4
PCAF 1-96-6166

Recommended Resolution

Accept either "A" or "B " as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: _____ 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: **SRO Question Number: 14**

Question:

Which of the following items will require a bypass to be documented in accordance with NDAP-QA-0484?

a. Maintenance is to be performed on a temperature control valve controller. A temporary controller is installed. Maintenance is expected to take 21 days due to parts NOT being available.

b. A temporary hose is installed per a work authorization for 4 days to flush newly installed fire water piping.

c. Test instrumentation is installed to monitor the performance of a heat exchanger for 6 days. Existing system isolation valves are used to place the test instrumentation in service.

d. An instrumentation technician installs a chart recorder for CRD timing in accordance with a Surveillance Operations procedure.

Answer: a

KA Number: 294001K102 **RO Value:** 3.9 **SRO Value:** 4.5

KA Statement:

Knowledge of tagging and clearance procedures

System/Evolution:

Section: Plant Wide Generics

RO Group: **SRO Group:**

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-20

Topic

Technical Specifications actions required when an accumulator for a withdrawn control rod develops an Nitrogen leak with another withdrawn control rod inoperable.

Problem

There was insufficient reference material provided to properly evaluate the question.

Comments

1. The stem describes a situation where one control rod (30-47) is stuck and inoperable and all Technical Specifications actions for the inoperable rod are complete.
2. A second rod (26-39), develops an accumulator Nitrogen leak.
3. The candidates are asked, "what is the ***maximum*** time the control rod with the accumulator fault can remain withdrawn from the core?"
4. "A" is incorrect because Technical Specifications 3.1.3.5 allows 8 hours to repair the problem before the rod must be declared inoperable.
5. "B" is incorrect because once the rod is declared inoperable (after 8 hours), Technical Specifications 3.1.3.1 allows one hour to confirm separation from all other withdrawn control rods by at least two rods or the rod must be inserted and disarmed.
6. The rods are within two rods of each other, so the rod must be inserted within an hour.
7. It ***was not the intent*** of the exam author to select rods within two rods of one another.
8. "C" identifies the correct 9 hour limit.
9. A problem exists because the candidate would normally make the separation evaluation using a core map such as the full-core display on the 651 panel or an OD-7 option 2 plant computer printout. ***A core map was not provided.***
10. PP&L ***does not expect*** the candidates to memorize the core map, nor does PP&L expect the candidate to make a Technical Specifications decision without using a core map.
11. "D" is incorrect for the conditions of the question. ***However***, without providing a core map, it is reasonable a candidate would assume the rods are separated.
12. Because of the lack of supporting material needed to evaluate the question, the question should be deleted.

References

Technical Specifications, amendment 36, 3.1.3.1 and 3.1.3.5
SY017 K-3, revision 1, objective 7

Recommended Resolution

Delete the question.

Prepared by: _____ 10/29/96

Reviewed by: _____ 10/29/96

Approved by: _____ 10/31/96

Exam Level: S RO Question Number: SRO Question Number: 20

Question:

Given the following conditions:

- Reactor power is 48%.
- Current date is 10/21/96.
- Current time is 0930.
- Rod 30-47 is at position 48.
- Rod 30-47 was determined to be stuck at 1130 on 10/20/96.
- All required Technical Specifications were completed for rod 30-47.
- An accumulator alarm is received for rod 26-39 due to a nitrogen leak.
- Repair time for the nitrogen leak is 12 hours.

What is the maximum time that rod 26-39 can remain withdrawn from the core?

a. 1 hour

b. 8 hours

c. 9 hours

d. There is no time restriction for rod insertion.

Answer: b

KA Number: 201004G005 **RO Value:** 3.4 **SRO Value:** 4.1

KA Statement:

Knowledge of limiting conditions for operations and safety limits

System/Evolution: Rod Sequence Control

Section: Plant Systems

RO Group: 2 **SRO Group:** 2

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-64

Topic

Controlled sequencing of electrical busses during restoration from a station blackout.

Problem

There are two correct choices, "C" and "D."

Comments

1. Procedure EO-000-031 is performed to recover from a station blackout.
2. The prerequisite for this procedure is to ensure breaker alignments have been performed during the blackout per EO-100-030 and EO-200-030.
3. These three procedures work together to ensure that operator action is required to sequence the starting of station equipment, one bus at a time.
4. This allows the operating staff to anticipate and monitor the automatic equipment starts in a controlled manner, and also to monitor the offsite power supply for any resulting undervoltages.
5. Choices "C" and "D" are both correct

References

EO-000-031, revision 10, pages 3, 5, and 17

Recommended Resolution

Accept either "C" or "D" as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert Reed 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 64

Question:

Station Power Restoration, EO-000-031, provides a specific sequence for reenergizing busses from an off-site source to AVOID:

a. diesel generators tripping on overspeed when loads are transferred to off-site power.

b. underfrequency condition on off-site sources due to manually reenergizing non-emergency busses.

c. undervoltage condition caused when a ECCS initiation signal is present.

d. starting equipment automatically without operator action.

Answer: c

KA Number: 295003A204 RO Value: 3.5 SRO Value: 3.7

KA Statement:

System lineups

System/Evolution: Part/Complete Loss of AC Power

Section: Emergency and Abnormal Plant Evolutions

RO Group: 2 SRO Group: 1

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-95

Topic

EOP actions with two secondary containment temperatures greater than maximum safe values and a discharging primary system being isolated.

Problem

There are two correct choices, "B" and "C."

Comments

1. This question requires the candidate to identify required actions while performing EO-100-104, Secondary Containment Control.
2. The stem poses a situation in which two plant areas have temperatures greater than the maximum safe area temperatures specified in the EO-100-104 and a primary system leak has been identified.
3. The question asks, "In addition to isolating core spray, what course of action is required?" It does not make clear, however if the system did isolate.
4. "B" is correct if the candidate assumes isolation has been successful, i.e. "In addition to the fact that you've isolated Core Spray", then performing step SC/T-6 is appropriate.
5. "C" is correct if the candidate assumes that Core Spray isolation is attempting to be performed, but at this moment is still discharging or was unsuccessful, then performance of EOP step SC/T-9 is appropriate and answer "C" is correct.
6. As the question is written, the candidates must make assumptions concerning the leak isolation which dramatically changes the correct course of action.

References

EOP-100-104, revision 7

Recommended Resolution

Accept either "B" or "C " as correct answers.

Prepared by: _____ 10/29/96

Reviewed by: Robert Pascal 10/30/96

Approved by: _____ 10/30/96

Exam Level: S RO Question Number: SRO Question Number: 95

Question:

Given the following conditions:

- Reactor power is 98%.
- CORE SPRAY LOOP A IN LEAKAGE-HIGH PRESSURE has alarmed.
- CORE SPRAY LOOP A PUMP ROOM FLOODED has alarmed.
- Core Spray Pump Room temperature is 140 F.
- RB Sump Room temperature is 140 F.
- A high alarm is present for RB Sump Room ARM.
- The RB Sump Room ARM is reading upscale.

In addition to isolating Core Spray, what course of action is required?

a. Operate all available RB ventilation and CS room coolers.

b. Commence a normal reactor shutdown.

c. Scram and rapidly depressurize.

d. Scram and cooldown at normal cooldown rates.

Answer: c

KA Number: 295032A201 RO Value: 3.8 SRO Value: 3.8

KA Statement:

Area temperature

System/Evolution: High Secondary Containment Area Temperature

Section: Emergency and Abnormal Plant Evolutions

RO Group: 3 SRO Group: 2

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

RO-43

Topic

Predicting IRM scram and rod block setpoint attainment.

Problem

There is no correct choice provided.

Comments

1. The stem establishes a situation with IRMs on range 9, the mode switch in startup, and reactor power increasing from 5% to 11% on the APRMs and then asks the candidates what is the expected IRM and APRM response to this situation.
2. The stem did not state what the IRM readings were at 5% power.
3. The IRMs are *not* calibrated for reactor power (they measure relative reactor power).
4. The candidate cannot calculate what the IRMs will indicate when power is increased by a factor of 11/5 or 2.2 without knowing what they were indicating at 5% power.
5. There is a rule of thumb that with IRMs at 100 on range 10, reactor power is 32%.
6. Using the rule of thumb, 11% reactor power is 34.37 on IRM range 9. The first alarm setpoint, the rod block, on range 9 is received at 34.56.
7. Therefore, even if the candidate would use the rule of thumb to correlate reactor power to IRM indication, there is no correct answer provided among the distracters.

References

SY017 I-2, revision 0, IRM System Lesson Plan and Fact Sheet

Recommended Resolution

Delete the question.

Prepared by: _____ 10/29/96

Reviewed by: _____ 10/30/96

Approved by: _____ 10/30/96

Exam Level: R RO Question Number: 43 SRO Question Number:

Question:

Given the following conditions:

- Unit 1 is at 5%.
- The mode switch is in STARTUP.
- All IRMs are on Range 9.
- APRM power is raised to 11% using control rods..

Which of the following lists ALL alarms and protective signals received for this condition.

a. APRM UPSCALE alarm and ROD BLOCK.

b. APRM UPSCALE alarm, ROD BLOCK and SCRAM.

c. IRM UPSCALE alarm and ROD BLOCK.

d. IRM UPSCALE alarm, ROD BLOCK and SCRAM.

Answer: c

KA Number: 215003K401 RO Value: 3.7 SRO Value: 3.7

KA Statement:

Rod withdrawal blocks

System/Evolution: Intermediate Range Monitor

Section: Plant Systems

RO Group: 1 SRO Group: 2

Additional Comment
No Action Recommended

Susquehanna Licensed Operator Written Exam Comments
Administered October 21, 1996

Affected Exam Questions

SRO-48
RO-56

Topic

Standby gas treatment damper response to low reactor building differential pressure following automatic initiation.

Problem

There is no correct choice provided.

Comments

1. The stem describes a situation that automatically starts SGTS.
2. In the bulleted list, a Unit 1 vice Unit 2 high drywell pressure signal is stated.
3. The stem asks for SGTS response to a zone 2 low differential pressure.
4. A unit 1 initiation won't be affected by a zone 2 problem because the zone 2 isolation signal is not present to allow the zone 2 dp signal to pass to the dp controller. None of the distracters are correct, since "no effect" is not among them.
5. However, all of the candidates misread the question as being a unit 2-zone 2 situation and answered the question as intended.
6. One candidate misunderstood the concept involved and chose the wrong response.
7. PP&L feels that this is an inconsequential problem and does not feel anything other than correcting the question for future use is warranted.

References

SY017 L3, revision 1, Figure 15

Recommended Resolution

Retain the question as is.

Prepared by: _____ 10/29/96

Reviewed by: Robert Powell 10/30/96

Approved by: _____ 10/30/96

Exam Level: B RO Question Number: 56 SRO Question Number: 48

Question:

Given the following conditions:

- Standby gas treatment is a normal lineup.
- A Unit 1 high drywell signal is recieved.
- Standby gas treatment responds as required.
- All zone differential pressures are -.27".

Select the response if Zone II differential pressure decreases to -.23".

a. Outside air dampers will modulate closed.

b. Outside air dampers will modulate open.

c. Recirculation plenum suction dampers will modulate open.

d. Standby gas treatment fan inlet vanes will modulate open.

Answer: c

KA Number: 261000A104 RO Value: 3.0 SRO Value: 3.3

KA Statement:

Predict and/or monitor changes in parameters

System/Evolution: Secondary containment differential pressure change

Section: Plant Systems

RO Group: 1 SRO Group: 1

ATTACHMENT 4
NRC RESOLUTION OF FACILITY COMMENTS

SRO 1: Comment accepted. Answer 'a' was accepted as an additional correct answer.

SRO 14: Comment accepted. Answer 'b' was accepted as an additional correct answer.

RO 16: Comment accepted. The correct answer was changed to answer 'd'.

SRO 19:
RO 17: Comment accepted. Without procedural guidance for the condition specified in the question, none of the answers would be incorrect. The question was deleted because it had four correct answers.

SRO 20: Comment accepted. The question was deleted.

SRO 25:
RO 26: Comment accepted. The correct answer was changed to answer 'd'.

SRO 27:
RO 29: Comment accepted. The question was deleted.

SRO 35:
RO 40: Comment accepted. The correct answer was changed to answer 'b'.

RO 43: Comment accepted. The question was deleted.

SRO 48:
RO 56: Comment noted. As stated in the facility comment, there was no correct answer for the question as written. Therefore, the question was deleted.

SRO 53:
RO 59: Comment accepted. The question was deleted.

SRO 54:
RO 60: Comment accepted. The question was deleted.

SRO 58:
RO 64: Comment accepted. The correct answer was changed to answer 'b'.

SRO 59:
RO 65: Comment accepted. Answer 'd' was accepted as an additional correct answer.

SRO 64: Comment not accepted. The breaker alignments per EO-100-030 and EO-200-030 and the sequencing specified in EO-000-031 allow the staff to anticipate and monitor automatic equipment starts in a controlled manner. However, the specific sequence in the restoration procedure (EO-000-031) does not prevent the automatic start of equipment without operator action as specified in answer 'd', the additional correct response proposed by the facility. Automatic starts of equipment will occur if initiation signals are present, but energizing the busses in the specified sequence and waiting between each bus ensures that an undervoltage condition doesn't occur when the equipment starts. No change was made to the answer key.

SRO 66:
RO 70: Comment not accepted. The question asks for the status of the SRVs and SRV instrumentation based on the information provided. During a station blackout, tailpipe temperature indication would be available and the acoustic monitors would be unavailable due to loss of power. Based on the information provided, the current status of the SRVs (leaking, closed or open) cannot be confirmed. Answer 'b' is not incorrect with respect to the status of SRVs, but it is incorrect with respect to the status of instrumentation because the tailpipe temperature indications do not fail high during a station blackout. Answer 'c' is not incorrect with respect to SRV status, but is incorrect with respect to the status of SRV instrumentation because the SRV leaking annunciator is not due to loss of power. Answer 'd' is not incorrect with respect to the status of SRVs, but is incorrect with respect to the status of SRV instrumentation because the acoustic monitors are deenergized not cleared. Answer 'a' is not incorrect with respect to the status of SRVs and is correct with respect to the status of the SRV instrumentation. Even though SRV status cannot be confirmed and none of the answers are incorrect with respect to SRV status, the question is still valid with respect to the status of SRV instrumentation. The applicants would be able to determine that answers 'b', 'c', and 'd' are incorrect based on the status of SRV instrumentation. Answer 'a' would be the only correct answer. No change was made to the answer key.

SRO 78:
RO 85: Comment accepted. The question was deleted.

SRO 81:
RO 88: Comment accepted. The question was deleted.

SRO 89:
RO 94: Comment accepted. Answer 'b' was accepted as an additional correct answer.

NRC RESOLUTION OF FACILITY COMMENTS

SRO 91:
RO 96: Comment not accepted. Answer 'a' states "raise RHR pump "A" flow to maximum." Maximum RHR pump flow is 12,200 gpm. Increasing RHR pump "A" flow to 12,200 gpm would violate the RHR vortex limit. Therefore answer 'a' is incorrect. The facility comment incorrectly interpreted answer 'a' to mean the maximum flow allowed by the vortex limit. No change was made to the answer key. (None of the applicants selected answer 'a'; therefore, not accepting the facility comment had no effect on the grading of the examinations.)

SRO 95: Comment accepted. Answer 'b' was accepted as an additional correct answer.

SRO 96:
RO 98: Comment accepted. It cannot be determined whether level is above or below the bottom tap of the instrument from the information given in the stem of the question. Therefore, answers 'b' and 'd' are not incorrect with respect to actual water level. Both answers 'b' and 'd' are correct with respect to level instrument use for trending. Answer 'b' was accepted as an additional correct answer.

ATTACHMENT 5

SIMULATION FACILITY REPORT

Facility Licensee: Susquehanna, Unit 1

Facility Docket Nos: 50-387 & 388

Operating Tests Administered from: October 22 - 24, 1996

This form is used only to report simulator 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.

None