U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NOS:	50-336/96-02
LICENSEE:	Northeast Nuclear Energy Company Hartford, Connecticut
FACILITY:	Millstone Nuclear Power Station, Unit 2
LOCATED AT:	Waterford, Connecticut
EXAMINATION DATES:	February 20-22, 1996

EXAMINER: J. H. Williams, Sr Operations Engineer — Date 4/9/96
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

APPROVED BY: Glenn W. Meyer, Chief — Date 4/10/96
Operator Licensing and
Human Performance Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

EXAMINATION REPORT NO. 50-336/96-02

Operations

Initial examinations were administered to four senior reactor operator (SRO) candidates at Millstone Unit 2. The four SRO candidates were upgrades. All candidates passed the written and operating examination and were issued licenses.

Based upon observation of the simulator examinations, it was noted by the examiners that crew communications and teamwork were strong and effective. The candidates demonstrated a good knowledge of plant procedures and of plant equipment behavior during the operating portion of the examination. No safety-significant deficiencies were identified during this examination.

DETAILS

1.0 TYPE OF EXAMINATIONS: Initial

Examination Results:

	RO Pass/Fail	SRO Pass/Fail
Written	0/0	4/0
Simulator	0/0	4/0
Walk-through	0/0	4/0
Overall	0/0	4/0

2.0 PREEXAMINATION REVIEW

The written examination, job performance measures (JPMs) and simulator scenarios were developed by Millstone Unit 2 (MP2) representatives in accordance with generic letter, GL 95-06, "Changes in the Operator Licensing Program," guidelines. The exam development team was comprised of MP2 operations and training representatives. All facility individuals with knowledge of the examination signed onto a security agreement. The NRC reviewed the proposed examination and provided comments to the MP2 facility representatives. The NRC's comments were incorporated into the examination and the revised examination was reviewed and approved by NRC. Validation of the simulator scenarios and JPMs was performed by the NRC at the site.

3.0 EXAMINATION OVERVIEW

3.1 Written Examination

The written examinations were administered by the facility at the Millstone Nuclear Training Center on February 20, 1996, in accordance with the guidelines provided with GL 95-06. The examination was developed in accordance with the guidelines of 10 CFR 55.41, 55.43, and NUREG-1022, "Examiners Handbook for Developing Operator Licensing Written Examinations." The written examination consisted of 100 questions in multiple choice format. The written examination and answer key is enclosed as Attachment 1 to this report.

Following the administration of the written examination, a review was performed by MP2 representatives to revalidate questions incorrectly answered by the candidates. From this review, it was determined that two questions were in error. One question had no correct answer listed in the possible choices, and the other question was determined to have two correct answers. MP2 representatives provided to the NRC written comments with recommended changes to these two questions. The NRC agreed with the facility's comments and recommended changes, which are provided in Attachment 2.

The facility analyzed the candidates written examinations to identify any generic weaknesses. Two questions (#31 and #76) were missed by three candidates, which indicated a generic weakness. The examiners noted that

Question #16 was omitted from the written examination because there was no correct answer. Based upon the information in the question stem, the candidates could have recognized that a CEA withdrawal inhibit was involved. However, three of the four candidates chose an answer that indicated a normal CEA withdrawal was allowed until a certain point. This weakness was discussed with the facility representatives, and they agreed with the examiner's conclusion. The facility committed to follow up on these three questions to determine the cause of the weakness and make the corrections required.

3.2 Operating Test

The operating tests were administered by the NRC on February 21 and 22, 1996. The operating tests consisted of four dynamic simulator scenarios and five JPMs for each of the candidates. At least two oral questions were asked at the completion of each JPM. All candidates were also examined concerning administrative requirements at Millstone 2.

3.2.1 Dynamic Simulator Examination

The candidates functioned as a crew for the dynamic simulator examination. The crew was made up of two RO positions, one SRO position, and one STA position. All candidates participated in each scenario. Each SRO upgrade stood the position of the supervisory control operator (SCO) in one scenario. The candidates were successful in completing all the scenarios.

Communications were effective throughout the conduct of the scenarios for all candidates. Command and control was strong. The candidates demonstrated a questioning attitude during the scenarios. They also demonstrated good knowledge of plant procedures and plant behavior during the examination.

3.2.2 Job Performance Measures (JPMs)

The examiners noted that the candidates also exhibited good plant familiarity while locating various valves, switches, and equipment during the performance of the five JPMs. All candidates demonstrated a through working knowledge of personnel and radiological safety practices.

4.0 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 discussed in this report, the examiners reviewed the applicable

portions of the UFSAR that related to the areas inspected. The examiners verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

5.0 SUMMARY OF NRC COMMENTS MADE AT THE EXIT MEETING

The NRC examiners expressed appreciation to the training and operations personnel for providing support during the examination process. The NRC examiners also noted that the candidates' communications and command and control abilities were well developed. Personnel at the exit meeting included the following:

Northeast Nuclear Energy Company:

H. Haynes, Director, Training Services
R. Heidecker, Manager, Operator Training (MP1/MP2)
D. Pantalone, Senior Operations Instructor
J. Rein, Supervisor, Operator Training MP2
R. Spurr, Senior Operations Instructor
R. Stotts, Assistant Supervisor, Operator Training MP2
M. Weise, Operations Instructor

NRC Examiners:

H. Williams, Senior Operations Engineer/Examiner
J. Prell, Senior Operations Engineer/Examiner

Attachments:
1. Written SRO Examination and Answer Key
2. MP2 Written Examination Comment Summary and NRC Resolution
3. Simulation Facility Report

ATTACHMENT 1

WRITTEN SRO EXAMINATION AND ANSWER KEY

Master (3) ans. key

WRITTEN EXAMINATION COVER SHEET

Millstone Unit 2
Department/Unit
SRO Upgrade 1996
Training Program Title
NRC Final
Examination Name

Examination Category: 1

Examinee: _____ Final Grade: _____

Examination Number: LOUTNRC Developed: _____

Date Administered: 2-20-96 Approved: _____
Nuclear Training Supervisor

Instruction to the Examinee:

1. Talking during the examination is strictly forbidden.

2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.

3. All required reference materials will be provided by the proctor/examiner.

4. Cheating in any form is forbidden and can result in a recommendation for disciplinary action.

5. Unless preprinted consecutively-numbered sheets are provided, each examination response sheet shall be numbered by you and shall have your name or initials on each examination response sheet.

6. The passing grade requires a final grade of at least 80% .

7. The total duration of this examination shall be 4 hours.

8. Close all reference materials when you are through using them.

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

_____
Examinee's Signature

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is one. ~~indicated in parentheses after the question number.~~

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Print your name in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

9. If the intent of a question is unclear, ask questions of the examiner only.

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in your examination, leave the examination area as defined by the examiner.

Question Number : 1

Which one of the following components loses cooling on a loss of off-site power?

A. Primary Sample Cooler

B. Blowdown Quench Tank Heat exchanger

C. Secondary Sample Cooler

D. Letdown Heat Exchanger

Question Number : 2

The plant is in normal operation at 100% power, when a second charging pump is started.

The PPO does not adjust the bias thumbwheel on HIC-110 (letdown flow controller) after starting the second charging pump.

What is the expected condition approximately 15 minutes later?

A. Charging and letdown balanced with Pzr Level lower and stable.

B. Charging flow greater than letdown with Pzr Level rising at a steady rate.

C. Charging flow less than letdown with Pzr Level lowering at a steady rate.

D. Charging and letdown balanced with Pzr Level higher and stable.

Question Number : 3

Although located at the top of the core, the CET's normally read only 555 to 570 degrees at 100% power. Why?

A. The CET's are located in a stagnant flow area receiving only conductive heating.

B. The CET's read the bypass flow through their unused CEA guide tube.

C. The CET's read bypass flow through the core shroud region.

D. The CET's are designed for shutdown, natural circulation conditions; high neutron flux causes decalibration.

Question Number : 4

A natural circulation cooldown is in progress. The PPO is directed to cool the pressurizer while maintaining adequate subcooling in the RCS. The following conditions exist:

- o RCS average temperature (Tave) is 435.5oF
- o Core Exit Thermocouple temperature (CET) is 450.0oF
- o RCS cold leg temperature (Tc) is 421.0oF

Which of the following is the minimum pressure that the PPO may maintain, per AOP-2553. (Natural Circ Cooldown)

A. 364 psia

B. 423 psia

C. 510 psia

D. 566 psia

Question Number : 5

Which of the following operating conditions is most likely to result in an overload condition and/or possible damage to the Moisture Separator Reheaters (MSR's)?

A. First stage and second stage secured.

B. First stage operating, second stage secured.

C. First stage secured, second stage operating.

D. First stage and second stage operating.

Question Number : 6

Which one of the following conditions will initiate an Auxiliary Feedwater Actuation Signal (AFAS)?

A. Channels "A" and "C" of ESAS sense PZR pressure at 2410 psia for 15 seconds.

B. Channel "C" and "D" level detectors on #1 S/G sense water level at 10% for 3 minutes and 30 seconds.

C. Channel "B" and "D" of RPS sense PZR pressure at 2410 psia AND delta T power at 18% for 12 seconds.

D. NI Control Channels "9" and "10" sense power at 25% for 3 minutes and 30 seconds.

Question Number : 7

The following conditions exist:

- o Plant is operating, steady state, at 100% power.
- o #1 Main Feedwater Regulating valve (FRV) controller is in Manual.
- o #1 Steam Generator (S/G) level is slowly increasing.

Assuming NO operator action, if the increase in S/G level continues, what is the expected response of the S/G Water Level Control System?

A. No action will occur until level reaches 90%, where the turbine trips and the FRV ramps shut.

B. In manual, the Level Control System would be unable to stop the level increase.

C. At 85% level, the FRV will ramp closed and lockup.

D. At 5% level deviation from setpoint, the Level Control System will ramp close the FRV.

Question Number : 8

A sustained loss of DC control power has occurred to the "A" EDG.

How can an operator manually stop the "A" EDG in this condition?

A. Push the two emergency stop buttons on C08 simultaneously.

B. Push the two emergency stop buttons on C38 simultaneously.

C. Push the emergency stop button on the "A" EDG skid control panel.

D. Push the fuel rack trip button on the engine side of the "A" EDG.

Question Number : 9

When preparing to insert Group 7 CEA's, the Primary Plant Operator (PPO) inadvertently selects MANUAL INDIVIDUAL (instead of Manual Group).

He then attempts to insert Group 7 CEA's from 180 steps to 170 steps.

What Control Element Drive System function will prevent the CEA from being inserted the full ten steps?

A. CEA Reg. Group 7 PDIL

B. CEA Group Deviation Backup.

C. CEA Out of Sequence.

D. CEA Withdrawal Prohibit (CWP).

Question Number : 10

The plant is in normal operation at 100% power.

The I&C Department is performing surveillance testing on the ESAS equipment, due to a suspected short in one of the cabinets.

You suddenly receive various annunciators on C01, including the following:

- "PRESSURIZER PRESS LO BLOCK B"
- "PRESSURIZER PRESS LO LO B"
- "SIAS ACTUATION SIG CH 1 TRIP"
- "SIAS ACTUATION SIG CH 2 TRIP"

Containment and Pressurizer pressure are verified to be NORMAL.

Which of the following is the correct action to take IMMEDIATELY?

A. Secure Boric Acid injection via the Charging System

B. Trip the plant and carry out EOP-2525

C. Block both channels of SIAS via C01 pushbuttons

D. Reset SIAS via ESAS Actuation cabinet pushbuttons

Question Number : 11

The plant is in normal operation at 100% power.

A perturbation in the Main Steam system causes a Pressurizer in-surge that raises level to 70%, energizes all heaters, and causes a corresponding increase in Pressurizer pressure.

What action will the Pressurizer pressure control system take to automatically stop the pressure increase?

(Assume the pressurizer pressure controller setpoint is set at 2265 psia)

A. Spray valves will start to open and all heater breakers will open at 2365 psia.

B. Spray valves will start to open and all heaters will turn off at 2350 psia.

C. Proportional heaters will minimize at 2315 psia, and the spray valves will start to open at 2365 psia.

D. The spray valves will start to open at 2315 psia. and the Backup Heaters will deenergize at 2350 psia.

Question Number : 12

TEDE radiation dose limits apply to the:

A. Trunk of the body, legs and feet, lungs and digestive tract

B. Gonads, trunk of the body, and blood-forming organs

C. Hands and arms, head, trunk of the body, and gonads

D. Skin, all internal organs, and special exposures.

Question Number : 13

The plant is operating at 100% power with VA-40 on its emergency source.

The plant trips and Bus 24D does not reenergize after the trip.

Select the correct statement.

A. VA-10, INV-6 and VR-11 are all ENERGIZED.

B. VA-40, INV-6 and VR-21 are all ENERGIZED.

C. VA-20, VR-11 and the "B" Battery Charger are all ENERGIZED.

D. VA-30, INV-5 and VR21 are all ENERGIZED.

Question Number : 14

The plant is at 0% power and 532 oF Tavg.

A 2 gpm leak develops in the reference leg of the SELECTED channel of Pressurizer Level Control.

As level in the reference leg begins to decrease, what is the expected system response?

A. Actual Pressurizer level will INCREASE.

B. Letdown flow will INCREASE.

C. When the reference leg decreased to 20%, all heaters would deenergize.

D. Non-selected channel Pressurizer level would remain constant.

Question Number : 15

The plant is in normal operation at 100% power.

The CEAPDS Computer/Monitor has been taken out of service and deenergized by I&C for repair.

The Backup Scanner is operational.

A malfunction causes a Regulating Group 7 CEA to drop to the bottom of the core.

Which of the following conditions would activate an interlock, preventing the PPO from withdrawing the dropped CEA?

A. TM/LP pre-trips on 3 channels of the Reactor Protection System (RPS).

B. Shutdown CEAs being above the Lower Electrical Limit.

C. Dropped CEA being > 8 steps below the highest CEA in Group 7.

D. Local Power Density (LPD) pretrips on 3 channels of the RPS.

Question Number : 16

A reactor startup is in progress.

In withdrawing Shutdown rods to the upper electrical limit, the PPO inadvertently leaves 1 Shutdown rod at 179 steps. The PPO then attempts to withdraw the Regulating CEA's in Manual Sequential Mode.

Which of the following statements correctly describes the expected system response?

A. CEA's will NOT withdraw, due to a CEA Reg. Group Withdrawal Prohibit. (IRG)

B. CEA's will NOT withdraw, due to a CEA Motion Inhibit.

C. CEA's will withdraw normally until they reach approximately 13 steps, and then be stopped by a CEA Motion Inhibit.

D. CEA's will withdraw normally until they reach approximately 177 steps, and then be stopped by the Upper Core Stop.

deleted

Question Number : 17

Which answer lists ALL locations from which the "B" Auxiliary Feedwater Pump can be controlled?

A. C05 and Fire Shutdown Panel (C10)

B. C05 and Hot Shutdown Panel (C21)

C. Fire Shutdown Panel (C10) and Hot Shutdown Panel (C21)

D. C05, Fire Shutdown Panel (C10), and Hot Shutdown Panel (C21)

Question Number : 18

As the PPO you observe the following:

- o RCP A BLEEDOFF FLOW HI alarm comes in and then clears
- o RCP A BLEEDOFF FLOW LO alarm comes in and stays in
- o RCP Bleedoff Pressure indicates 80 psig

Which of the following actions is required?

A. Adjust bleedoff backpressure controller until the alarm clears.

B. Shift RCP bleedoff from the Volume Control Tank (VCT) to the Equipment Drain Sump Tank (EDST).

C. Commence a plant shutdown and trip the "A" RCP when the reactor is subcritical.

D. Trip the reactor, trip the turbine, trip the "A" RCP, and carry out EOP 2525.

Question Number : 19

The plant was at 100% power when DV-10 is lost, resulting in the following:

- o Loss of breaker indication on C08 for Bus 24C
- o Plant trip on closure of both MSIVs.

Which of the following statements correctly describes other plant system/component response to this loss of DC power?

A. Both "B" and "D" RCPs are running WITHOUT cooling water.

B. "A" EDG is running with ONLY overspeed trip protection.

C. Both SGFP's have tripped due to loss of ALL Circulating Water pumps.

D. ALL 3 Condensate pumps are deenergized.

Question Number : 20

In the Bottle Up Panels, the TWO hand transfer switches for the Atmospheric Dump Valves (ADVs) are placed in the "ISOL" position.

What is the result of this action?

A. Transfers control to C-10 and fails the ADVs open until the operator places the controller to close.

B. Isolates #1 ADV and overrides the Quick Open Signal to #2 ADV.

C. Isolates #2 ADV and overrides the Quick Open Signal to #1 ADV.

D. Isolates all control signals to the ADVs, allowing for local manual operation of the valves.

Question Number : 21

Which one of the following describes when action may be taken which deviates from the written sequence of the steps within an event specific EOP?

A. Any step may be performed out of sequence if it IS NOT marked with a + sign.

B. Any step may be performed out of sequence if it IS marked with a + sign.

C. When directed by the SS/SCO to prevent or correct a loss of one or more safety functions.

D. Only when the specific criteria of 10CFR50.54X applies.

Question Number : 22

The plant is in Mode 3 with a heatup in progress. The following conditions exist:

- Tavg = 420 degrees
- Pressurizer pressure = 1500 psia
- 'B' and 'D' RCPs running
- Bus 24E is aligned to Bus 24C

Approximately one minute ago, the 'A' RBCCW Pump tripped and would NOT restart.

Which one of the following actions is required?

A. Trip the 'B' and 'D' RCPs.

B. Secure Charging due to loss of Letdown.

C. Ensure 'B' and 'D' CAR Coolers RBCCW emergency outlets are open.

D. Start the 'B' RBCCW Pump on the 'A' RBCCW header.

Question Number : 23

Which of the following fuel assemblies may be stored in Region C of the Spent Fuel Pool?

	% Initial Enrichment	Avg. Burnup MWD/MTU	Poison Pins Instaled
A.	3.5	39,500	NO
B.	3.8	37,200	YES
C.	3.7	43,600	NO
D.	4.3	40,100	YES

Question Number : 24

An Excess Steam Demand has occurred inside Containment, and the SCO has entered EOP 2536.

Containment pressure is 7 psig and INCREASING slowly.

Assuming all equipment responds as expected, which of the following groups of components SHOULD be operating?

A. 3 CAR fans operating in FAST speed and 1 CAR fan operating in SLOW speed.

B. 4 CAR fans operating in SLOW speed with BOTH Containment Spray pumps supplying GREATER than 1350 gpm each.

C. 4 CAR fans operating in SLOW speed.

D. 2 CAR fans operating in SLOW speed and 1 Containment Spray pump supplying GREATER than 1350 gpm.

Question Number : 25

According to the "Independent Verification" procedure, which ONE of the following statements is CORRECT concerning the proper verification method, to determine the position of a throttled valve which is NOT located in a high radiation area?

A. The valve will be manipulated open from the closed position to the throttled position while counting the number of turns required and repeated by the independent verifier.

B. The valve will be manipulated closed from the throttled position while counting the number of turns required and then reopened the correct number of turns and repeated by the independent verifier.

C. The valve will be manipulated open from the closed position to the throttled position while counting the number of turns required and the independent verifier will verify proper position by observing a process parameter such as flow or pressure.

D. The valve will be manipulated closed form the throttled position while counting the number of turns required to fully close the valve and then reopening it to the required throttled position while the independent verifier observes the operation.

Question Number : 26

While in the Aux Bldg, a new Unit 1 PEO requests your assistance in determining whether or not he is authorized access to the Unit 2 Cable Vault where he needs to hang a red tag. You should instruct him to:

A Try his keycard in the reader. The reader lights will determine whether or not he's authorized.

B Check the alpha-numeric designation posted for the area against those listed on his picture badge.

C Wait while you arrange for an escort since Unit 1 PEO's are not authorized access to Unit 2 vital areas.

D Contact his SCO since there is no way you can determine his access authorization.

Question Number : 27

For a 4160V or 6900V breaker, which of the following is the proper location for placing clearance tags associated with PULLED fuses per WC-2, "Tagging"?

A. On the elevator mechanism..

B. On the breaker cubical door.

C. On the fuse holder.

D. On the control switch.

Question Number : 28

Each of the following individuals has requested permission to gain experience by operating the reactor controls under the instruction of a licensed operator. Under the provisions of 10-CFR-55, which one would you be required to deny permission?

A. A PEO enrolled in a current license training course to obtain an operator license.

B. A licensed reactor operator whose license has become inactive per the requirements of 10CFR55.

C. A licensed reactor operator who recently failed an NRC administered Senior Reactor Operator upgrade examination.

D. An individual enrolled in a current license training course to obtain an instructor certification.

Question Number : 29

Procedurally the Main Generator must be shutdown if the hydrogen purity cannot be maintained above 75%. What is the reason for this requirement?

A Overheating of the Main Generator rotating components, due to windage, will occur at purities <75%.

B The upper explosibility limit for hydrogen in air is 75%.

C The density of the resultant gas mixture exceeds the DP requirement for the shaft mounted fan when <75%.

D Insufficient heat removal capability prevents the generator from carrying any MVARS due to armature heating when <75%.

Question Number : 30

Refer to the following list of protective equipment and clothing:

1. Hard hat with face shield.
2. Switching Jacket.
3. Electrical safety gloves.
4. Rubber mat to stand on.
5. Safety glasses.
6. Fuse pullers.

Using the list above, which of the following describes the MINIMUM requirements when racking up a 4160/6900 volt breaker?

A. 2, 3, 4, and 5

B. 1, 4, and 6

C. 1, 2, 3, and 5

D. 3, 4, 5 and 6

Question Number : 31

Which of the following is the MINIMUM condition that would require double valve isolation (if possible) when preparing a clearance?

	Temperature (Deg. F)	Pressure (psig)
A.	100	75
B.	195	105
C.	225	105
D.	250	125

Question Number : 32

Per Common Operating Procedure (COP) 200.1, which ot the following personnel must be authorized access to the Control Room during emergency conditions?

A. Security Shift Supervisor

B. Resident NRC Inspector

C. Emergency Plan Coordinator

D. Maintenance Manager

Question Number : 33

Which of the following sets of Ground Detector Voltmeter readings indicates a GROUND present on a 125 VDC Bus?

A. Positive voltmeter reads 65 volts and negative voltmeter reads 65 volts.

B. Positive voltmeter reads 0 volts and negative voltmeter reads 0 volts.

C. Positive voltmeter reads 132 volts and negative voltmeter reads 132 volts.

D. Positive voltmeter reads 132 volts and negative voltmeter reads 0 volts.

Question Number : 34

Which of the following sets of indications would result from a leak in the variable leg of Pressurizer Level Transmitter LT-110Y ?

(Assume NO system automatic response).

	LI-110Y	LI-103
A.	High	High
B.	Low	Low
C.	High	No Change
D.	Low	No Change

Question Number : 35

What are the two MAJOR sources of Hydrogen in the Containment atmosphere following a Loss of Coolant Accident?

A. Oxidation of materials of construction and decomposition of organic materials.

B. Decomposition of organic materials and radiolytic decomposition of water.

C. Radiolytic decomposition of water and metal-water reaction at elevated temperatures.

D. Metal-water reaction at elevated temperatures and oxidation of materials of construction.

Question Number : 36

Following transfer of a fuel assembly in the Spent Fuel Pool from one location to another, the long fuel handling tool is unlocked and detached from the fuel assembly.

The Hoist is then raised two feet and stopped to check that indicated load on the "Dillon" readout is approximately 270 lbs +/- 20 lbs.

A load 50-75 in EXCESS of this value indicates which of the following has occurred?

A. Fuel bundle has inadvertently been placed on top of the storage rack loading funnel lead-in edge.

B. Fuel bundle did not detach from the long fuel handling tool.

C. Long fuel handling tool has snagged the storage rack loading funnel lead-in edge.

D. Long fuel handling tool is inadvertently withdrawing a CEA.

Question Number : 37

The following plant conditions exist:

- o Plant has tripped from 100% power.
- o RCS pressure is 2230 psia.
- o RWST level is 70%.
- o Plant conditions require Emergency Boration.
- o The Boric Acid Strainer has just been discovered to be plugged.
- o VCT outlet valve will not close.

Which of the following methods is available for emergency boration?

A. HPSI pumps "A" or "B" through High Pressure Injection valves.

B. Gravity feed through the Boric Acid pumps through 2-CH-514 to the Charging pumps.

C. Normal Emergency Boration flowpath through 2-CH-514 to the Charging pumps.

D. Gravity feed through 2-CH-508 and -509 through 2-CH-210 to the Charging pumps.

Question Number : 38

The Steady State Band for Axial Shape Index (ASI) is wider than the Transient Band.

Which of the following is the basis for providing this wider band?

A. Minimize reactor power reductions for Xenon oscillations which cannot be maintained via CEA movement.

B. Allow more time for analyzing corrective actions for divergent Xenon oscillations.

C. Minimize waste accumulation from borations and dilutions required for ASI control.

D. Allow minor variations in ASI, thus requiring less frequent CEA movements.

Question Number : 39

The plant has tripped, EOP 2525 is complete, and the following conditions exist:

- Presurizer pressure = 1990 psia and decreasing
- Pressurizer level = 28% and decreasing
- Containment pressure = 0.1 psig
- #1 Steam Generator Pressure = 790 psia and decreasing
- #2 Steam Generator Pressure = 790 psia and decreasing
- #1 Steam Generator level (Narrow range) = 0%
- #2 Steam Generator level (Narrow range) = 0%
- Containment temperature = 112 oF
- Containment sump level = 10%
- Radiation monitors are not in alarm and not going up

Which of the following Emergency Operating Procedures should be entered?

A. EOP 2532, Loss of Primary Coolant

B. EOP 2534, Steam Generator Tube Rupture

C. EOP 2536, Excess Steam Demand

D. EOP 2537, Loss of All Feedwater

Question Number : 40

SPDS contains Quality Tags associated with CALCULATED VALUES based on various inputs.

Which of the following Quality Tags indicates that SPDS could NOT calculate a value, due to the lack of good inputs, i.e. the calculated value is BAD?

A. "U"

B. "N"

C. "X"

D. "R"

Question Number : 41

During the response to a SGTR with a LNP you order an assembly and evacuation.

Wind is out of the SSW at 10 mph.

Choose the area of the site in which access should be RESTRICTED during personnel movement to their assembly area.

A. Area between Unit 2 Auxiliary building and the transformer yard.

B. Area west of the Turbine building North of the Unit 2 intake structure.

C. Area South of Unit 1.

D. Area west of the Turbine building South of the Unit 2 intake structure.

Question Number : 42

While in Mode 3, preparing for a Rx Startup, the plant experiences a Large Break LOCA. The following conditions exist. All other systems are normal for this condition.

- RCS Pressure 200 psia
- PZR Level 0 %
- Rx Vessel Level 60%
- Bus 22E deenergized
- CTMT Pressure 6 psig

What action must be taken to position Z1 ECCS components to their **presently called for** accident positon/condition?

A. Manually open the Z1 LPSI Injection Valves, 2-SI-615 and 625.

B. Manually open the Z1 HPSI Injection Valves, 2-SI-617, 627, 637, 647.

C. Manually open the Z1 CTMT Spray Header Stop Valve, 2-CS-4.1A.

D. Shift the "A and C" CAR Fans to slow.

Question Number : 43

On a Rx Trip, which set of the following indications for a specific CEA indicates that it has stuck full out?

	CORE MIMIC	PPC	CEAPDS
A.	No lite lit	183	181
B.	Red	0	0
C.	Green	Inoperable	0
D.	Amber	0	Inoperable

Question Number : 44

A 15 gpm primary system leak develops in CTMT. Based on the following sets of data,where is the leak located? Refer to the attached CVCS diagram.

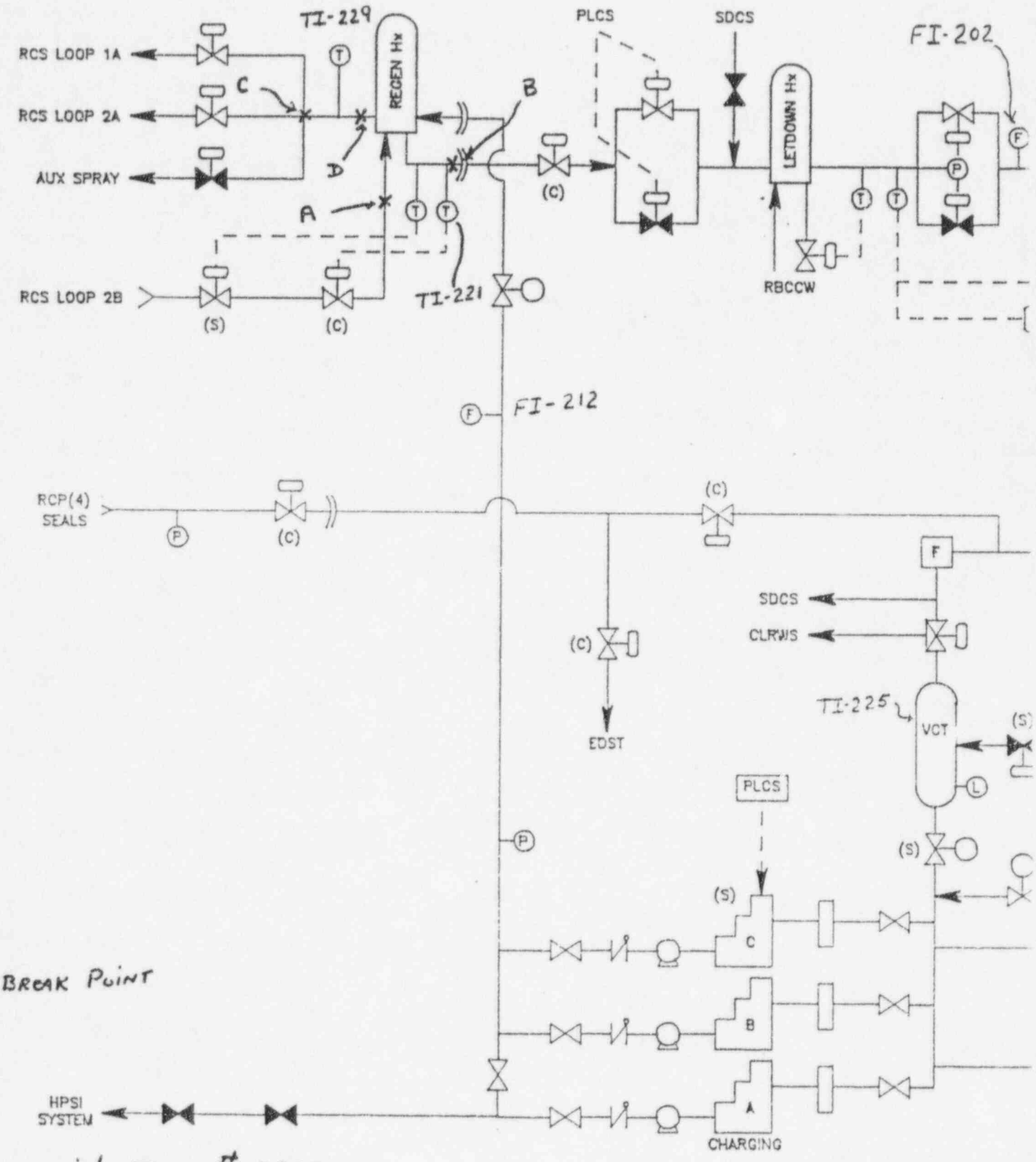
	Before Leak	After Leak
VCT Temp. TI-225	115 deg. f	115 deg. f
Charging after Regen Hx.TI-229	430 deg. f.	450 deg. f.
Loop 2 Tc TI-125	548 deg. f.	548 deg. f.
L/D after Regen Hx. TI-221	225 deg. f.	240 deg. f.
Charging Hdr. Flow FI- 212	45 gpm.	45 gpm.
L/D Flow FI- 202	40 gpm.	38 gpm.

A. L/D line before Regen Hx.

B. L/D line after Regen Hx.

C. Charging line after the Regen Hx. but after TI-229.

D. Charging line after the Regen Hx. but before TI-229



X = BREAK POINT

USE WITH ITEM # 3967

CHEMICAL AND VOLUME CONTROL SYS

Question Number : 45

During a power increase, Group 7 CEA's are stopped by a CMI at 168 steps while being withdrawn from an initial position of 160 steps.

The following alarms and indications are present: "CEA Motion Inhibit" and "CEA Gp Dev. Backup"

The following indications are present:

Gp 7 Rod No.	CEA Pos. (PPC)	CEAPDS
1	168	160
All other Gp 7 rods	168	168

Based on these indications, which of the following problems can be diagnosed?

A. Stuck **reed switch** for CEA #1 at 160 steps

B. Blown fuse for CEA #1 Coil Power Programmer (CPP)

C. Faulty CPP fails to provide pulse to CEA #1 lift coil.

D. CEA #1 didn't withdraw from initial position.

Question Number : 46

CEA #4 in Gp. 5 is determined to be untrippable. Select the proper action to be taken.

A. Commence an orderly shutdown immediately.

B. Commence boration immediately and increase RCS boron concentration by 200 ppm. within 1 hr. or log into TS 3.0.3.

C. Commence boration immediately and increase RCS boron concentration by 200 ppm within 1 hr. or trip the reactor.

D. Immediately trip the Rx and emergency borate.

Question Number : 47

Which of the following situations should be ACR'd due to unintentionally exceeding an LCO?

A. RCS at 180 deg.& 200 psia. Chemical addition via 2-FW-15A&B with **no operator in attendance** .

B. RCS at 375 deg. & 800 psia. Draining #3 SIT via 2-SI-463 with an **operator in attendance.**

C. Rx vessel Upper Guide Structure (UGS) removal in progress. S/G #2 can deck inspection in progress. 2-MS-202 (TDAFP steam isolation valve) removed for body-to-bonnet leak repair.

D. While in Mode 5, 2-AC-5 (CTMT purge valve) is removed for maintenance. Containment purge is in progress with other purge valves operable (2-AC-4, 6, 7)

Question Number : 48

Following a plant trip, caused by an ESD inside CTMT, Bus 24C fails to transfer to the RSST.

All other plant components functic⁻ normally for this condition.

Which of the following **is true**, reg ding **ALL COMPONENTS** being verified in their accident condition?

	Z1	Z2
A. SIAS/CIAS/EBFAS	Not Verified	Verified
B. CSAS	Verified	Not Verified
C. MSI	Not Verified	Verified
D. CPVIS	Not Verified	Not Verified

Question Number : 49

For the same size MSLB, which of the following conditions has the greatest potential for a return to criticality following a Rx Trip?

	Power Level	Time in Life	Xenon
A.	100%	BOL	2.4%
B.	1 X e-4	BOL	0%
C.	100%	EOL	1.1%
D.	1 X e-4	EOL	2.75%

Question Number : 50

The plant is in Hot Standby with the following conditions:

- Facility 1 Actuation Cabinet is out for electrical repairs.
- The tie breaker between 24A and 24C is tagged open.

A loss of off-site power occurs.

What steps are required to restore Facility 1 vital electrical loads?

	Bus 24C	D/G	D/G Output Bkr	Loads
A.	Auto Load Shed	Auto Start	Man. Close	Sequence On
B.	Strip Bus	Auto Start	Auto Close	Manually Start
C.	Strip Bus	Man. Start	Man. Close	Manually Start
D.	Auto Load Shed	Man. Start	Auto Close	Sequence On

Question Number : 51

You are in EOP 2537 (Loss of All Feed). The only source of feed flow is the "A" Condensate Pp, which is running and the valve alignment has been established to both S/G's.

The following conditions exist:
- #1S/G level = 123"
- #2S/G level = 98"
- #1 S/G pressure = 865 psig
- #2 S/G pressure = 850 psig
- A controlled cooldown at maximum achievable rate has been initiated.

Regarding Once-Thru-Cooling (OTC), what guidance should you provide to the shift?

A. Initiate OTC immediately

B. Initiate OTC when the first S/G reaches 70", if there is no feed flow at that time.

C. Initiate OTC when both S/G's are less than or equal to 70", if there is no feed flow at that time.

D. Do not initiate OTC, even if both S/G's < 70", condensate will provide feed once pressure is low enough.

Question Number : 52

Due to a SGTR with a LNP, MSLRM's 4299A&B initially spiked to about 40 mr/hr. After the trip, the MSLRM's dropped to off-scale low and have gradually risen to 2 R/hr. over the subsequent 60 min.

What should be diagnosed from these indications?

A. RCS crud burst has occurred.

B. Expected response due to increased RCS inventory in the affected S/G.

C. Fuel Clad failure has occurred.

D. Expected response due to the MSLRM's being deenergized, then reenergized during the LNP.

Question Number : 53

During winter mode operations, the "A & B" RBCCW heat exchangers are aligned to the "A" Service Water Header with the "A" RBCCW heat exchanger providing cooling for the "A" RBCCW header. The "A" RBCCW heat exchanger TCV maximum travel is limited and the "B" RBCCW heat exchanger outlet is throttled to the Minimum position.

Which of the following is **NOT** a valid reason for the settings of these valves?

A. Provide for adequate Min. flow for the "A" Service Water Pump when the "A" RBCCW Hx. is in temperature control mode.

B. Limit header flow to prevent Service Water pump runout in the event of a header rupture upstream of 2-SW-3.2B (SW isolation valve to the turbine building).

C. Provide adequate cooling for the "A" RBCCW header in the event of a LOCA.

D. Limit header flow to prevent Service Water Pump runout in the event of a SIAS.

Question Number : 54

While performing Reactor trip SPTA, the SPO notices the #3 MSSV (turbine main steam stop valve) not closed. What contingency action is called for and why?

A. Ensure the turbine CV's are closed then verify open or trip the 8T & 9T breakers. Ensures main generator is not motorized.

B. Immediately close both MSIV's and verify that the 8T & 9T trip open on Reverse Current. Ensures RCS doesn't experience an excessive cooldown.

C. Trip the turbine manually, verify load at 0 MW electric, then trip open the 8T & 9T. Ensures turbine doesn't overspeed.

D. Ensure the #3 CV is fully closed then verify open or trip open the 8T & 9T breakers. Ensures turbine doesn't overspeed since the series steam admission valve is closed.

Question Number : 55

A plant heat-up is in progress.

- Tave is 293 deg.
- RCS pressure is 580 psia.
- Post SDC Boron Equalization is in progress.

During your board walkdown you **SEE** the following indications.

Which of the following should you submit an ACR for?

Component	Board Indication
A. 2-SI-614, 624, 634, 644 (SIT Outlet Vlvs)	Green Lights
B. 2-SI-306 (SDC Total Flow Vlv)	Red Lights
C. 2-AC-4, 5, 6, 7 (CTMT Purge Vlvs)	Green Lights
D. 2-SI-651 (SDC Suction Vlv.)	Green Lights

Question Number : 56

In responding to a Loss of All Feedwater, OTC was not initiated until after S/G dryout. OTC has now been fully initiated with the "A&C" HPSI Pps, all 3 Charging Pps, and both PORV's.

The following plant conditions exist:
- RCS Pressure = 1205 psia and rising.
- RVLMS = 43%
- HJTC to UHJTC delta T = 200 deg.

Assuming the necessary equipment is available, what must be done to mitigate core damage?

A. Align charging for Aux Spray to lower pressure.

B. Rack up and start the "B" HPSI Pp. to increase injection flow.

C. Establish a feed source and initiate reflux boiling.

D. Override and restore letdown to remove additional heat.

Question Number : 57

Which of the following conditions provides the most subcooled margin?

A. 30 min. post-trip from 100% steady state, in Nat. Circ., Tc = 520 deg., Pzr Press. = 2250 psia.

B. 100% Pwr, NOT/NOP

C. Cooldown in progress. Th = 489 deg., Pzr Press = 1200 psia.

D. 30 min. post-trip from 100% steady state, 4 RCP's operating, Tc= 535 deg., Pzr Press = 2250 psia.

Question Number : 58

A SGTR has occurred in #2 S/G. Initial actions of EOP 2534 have been completed. The #2 S/G was isolated at 0930 and cooldown to SDC on Natural Circ. is in progress.

Data for the cooldown is as follows:

	Loop 1		Loop 2	
	Tc	Th	Tc	Th
0930	490	515	492	515
0945	478	502	496	505
1000	466	490	498	498
1015	452	478	499	489
1030	439	465	498	487

Based on this data you should direct the SPO to:

A. Increase the cooldown rate by ~ 29 deg./hr.

B. Reduce the cooldown and allow S/G's to become re-coupled.

C Maintain the present cooldown rate.

D. Steam #2 S/G until Loop 1 and Loop 2 temperatures are matched.

Question Number : 59

In the event of a total loss of Instrument Air in CTMT, how will the following valves respond?

	Pzr Spray Vlv. 2-RC-100E	SIT Recirc Hdr. Drn. 2-SI-661	RCP Seal to PDT 2-CH-507	PMW to QT 2-PMW-43C
A.	FO	FO	FC	FO
B.	FO	FO	FC	FC
C.	FC	FC	FO	FO
D.	FC	FC	FO	FC

Question Number : 60

A 0.2 gpm. leak occurs in the #2 S/G. Which of the radmonitors listed below would be the first to increase in response to this event? Assume normal RCS activity levels.

A. SJAE RM

B. U1 Stack RM

C. SGBD RM

D. MSLRM's 4299A, B & C

Question Number : 61

A cooldown is in progress on SDC. You want to increase your cooldown rate. Which of the following would cause the cooldown rate to decrease or (at best) remain constant?

A. Lower RBCCW Hx TCV setpoint.

B. Increase SDC total FCV (2-SI-306) setpoint.

C. Increase SDC Hx FCV (2-SI-657) setpoint.

D. Increase RBCCW flow through the SDC Hx's

Question Number : 62

The reactor is at 100% power, BOL, all rods out, with Xenon at 2.4% when the reactor trips. If all rods fully insert, what is the amount of reactivity by which the reactor is shutdown immediately following the trip?

A. 3.6%

B. 8.4%

C. 9.9%

D. 12.3%

Question Number : 63

A WGDT discharge is in progress when an I&C Tech informs you that the WG flow recorder FR 9097 is inoperable. What direction, if any, should you provide to the Aux Bldg. PEO?

A. No action required

B. Commence logging the WGDT pressure at 15 minute intervals for the duration of the discharge

C. Use Unit 1 stack flow recorder data for the discharge permit entry.

D. Secure the discharge.

Question Number : 64

For which of the following would a liquid waste discharge in progress be allowed to continue?

A. "D" Circ. Pp. has been secured due to a broken screen drive when bus 24A de-energizes.

B. The associated radmonitor sample pump burns up.

C. Local radmonitor alarm horn sounds.

D. Effluent radmonitor reading decreases to < 75% of initial reading.

Question Number : 65

The PORV's opened on a loss of load reactor trip. A RO trainee provides data on tail pipe temperatures at the following times/conditions:

	Pzr Pressure	QT Pressure	Tail Temp.
T-0 (pre-trip)	2280 psia.	2 psig.	135 deg.
T-1 (@ trip)	2400 psia.	3 psig.	__T1__
T-2 (trip + 1 min)	2350 psia	90 psig.	__T2__
T-3 (trip + 2 min.)	1700 psia.	1 psig.	__T3__

Assuming that the "A" PORV opens at its setpoint, but fails to close until 5 minutes post-trip, which set of temperature data would indicate this?

	T1	T2	T3
A.	660 deg.	650 deg.	610 deg.
B.	596 deg.	330 deg.	330 deg.
C.	220 deg.	330 deg.	290 deg.
D.	220 deg.	330 deg.	215 deg.

Question Number : 66

A Containment Purge is in progress. The ESAS setpoints for Containment Purge are 7.0E4. The Primary Plant Operator reports that RM-8262B is currently reading 8.1E4. No alarms attributable to any Containment Rad Monitoring are present.

What immediate action should you take in response to the report?

A. Request chemistry sample CTMT atmosphere.

B. Stop purge supply fan, (V-23).

C. Determine the cause of the gaseous activity increase.

D. Close or verify closed the purge isolation valves.

Question Number : 67

The plant is operating at 100% power, with the following line-up:

- Bus 24E is aligned to 24C.
- "A & C" SW pumps are in service.

If the "C" SW pump trips, what is the proper direction to give?

A. Manual plant trip since a dedicated Facility 2 SW pump is not available.

B. Align the "B" RBCCW Header to be supplied from the "B" RBCCW Hx, which is providing minimum flow for the "A" SW Header.

C. Align "B" SW pump to supply "B" SW header and start "B" SW pump, log into TS 3.0.3.

D. Shift 24E to 24D while monitoring "B" RBCCW header temperatures, align "B" SW Pump to "B" SW header and start "B" SW Pump.

Question Number : 68

Per AOP 2559, which of the following is one of the positions that must be promptly notified of the request for offsite assistance during a fire in-plant?

A. Security Shift Supervisor

B. NRC resident inspector

C. Unit Director

D. Station Services Director

Question Number : 69

The "Letdown Line Rad Hi/Failure" alarm comes in. Both recorder pens on the "Letdown Failed Fuel/Gross Activity Recorder"(RR-202), on C-02, increase significantly.

Which of the following would cause this response?

A. Increased N-16 due to higher letdown flow.

B. Failed fuel

C. RCS crud burst

D. Temperature increase in letdown

Question Number : 70

Which one of the following identified RCS leaks, by itself, would require a plant shutdown?

All leaks are at the rate of 0.2 gpm.

A. Leakage past the seal of a pressurizer PORV.

B. Reactor head/vessel leakage past the inner "O" ring.

C. Valve stem leakage on a cold leg drain valve.

D. A crack in a charging line where it is welded to the RCS piping.

Question Number : 71

While operating at 100% power the following data for Reactor Coolant Pump (RCP) "A" was obtained in response to alarms on CO-2/3:

TIME:	0000	0100
VAPOR SEAL	60 psig	60 psig
UPPER SEAL	752 psig	1120 psig
MIDDLE SEAL	1480 psig	1205 psig

Based on this data, which one of the following statements is the correct diagnosis?

A. RCP A lower seal is failed.

B. RCP A middle seal is failed.

C. RCP A upper seal is failed.

D. RCP A vapor seal is failed.

Question Number : 72

During a refueling outage, a core off-load is near completion. A fuel assembly is on the hoist which is being drawn up into the mast when you notice refuel pool level lowering rapidly. You should direct the bridge operator to place the fuel bundle ... :

A. In the upender and send the carriage to the SFP.

B. In any available space in the core.

C. In the North Saddle area with the hoist lowered.

D. In the South Saddle area with the hoist lowered.

Question Number : 73

The plant is in MODE 6 for REFUELING.

Fuel movement is in progress.

Which one of the following conditions would require halting Core Alterations?

A. One personnel airlock door is open.

B. Containment purge is in progress.

C. Equipment hatch is closed using the outage equipment door.

D. An electrical penetration has been removed for repair.

Question Number : 74

The following plant conditions exist:

- o 50% power operation, steady state conditions
- o Charging and Letdown must be secured for ALARA concerns due to maintenance in the area.
- o Tavg is maintained constant.

Which of the following trends will occur?

A. Constant pressurizer level with a constant VCT level.

B. Constant pressurizer level with a decrease in VCT level.

C. Decrease in pressurizer level with an increase in VCT level.

D. Decrease in pressurizer level with an increase in EDST level

Question Number : 75

With the control switch for the "A" Charging pump in "Pull-to-Lock" at the Hot Shutdown Panel (C21).

Which of the following correctly describes the control status of the pump?

A. Can NOT be manually started from panel C02.

B. Can only be started from C-10.

C. Can ONLY be started manually and ONLY from panel C02.

D. Will start ONLY on a SIAS signal.

Question Number : 76

A plant heatup is in progress. The PPO reports annunciator "SI-652 OPEN" and RCS pressure at 285 psia.

You should direct the following:

A. Reduce RCS pressure to < 280 psia.

B. Secure running LPSI Pps. and shut 2-SI-652.

C. Verify 2-SI-652 auto closed.

D. Verify SI minimum flow valves, 2-SI-659 & 660 open.

Question Number : 77

Which of the following is unaffected by a Z1 AAFAS signal?

A. 2-FW-43A, (#1 S/G Aux FRV)

B. 2-FW-43B, (#2S/G Aux FRV)

C. 2-FW-44, (AFW Disch X-Tie)

D. "A" AFW Pump

Question Number : 78

What protective action occurs in the Condenser Hotwell control system to help prevent a Main Feed Pp. trip when its suction pressure decreases to 280 psig?

A. Prevents opening Hotwell Reject valve (2-CN-219).

B. Auto opens Condensate Surge Tank Makeup valve (2-CN-221).

C. Auto opens the Condensate Storage Tank Makeup valve (2-CN-241).

D. Auto opens CFF Bypass Valve (2-CNM-2).

Question Number : 79

How does the loss of DC control power affect 6.9KV breakers?

A. Breakers will remain in their "as is" condition and operation would only be possible by manual means.

B. Automatic breaker trips would remain operational, but remote operation of breakers would not be possible.

C. Breakers can be tripped remotely but cannot be closed.

D. Breakers would trip open and operation would only be possible by manual means.

Question Number : 80

SRO ONLY

Which of the following items fall within the classification of "bypasses, jumpers, and lifted leads?"

1) Plugged floor drain

2) Hose connected from a system drain to a floor drain

3) Temporary scaffolding

4) Gagged safety valve

5) Portable airborne radiation monitor

6) Pulled circuit card

7) Temporary ventilation fan

A. 1, 3, and 7

B. 2, 5, and 6

C. 3, 6, and 7

D. 1, 4, and 6

Question Number : 81

The channel "A" RPS High Pressurizer Pressure bistable is bypassed using the trip inhibit key.

Which set of signals are bypassed for the "A" channel RPS?

A. Diverse Scram System input and PORV opening.

B. High Pressurizer Pressure trip and Diverse Scram System

C. High Pressurizer Pressure Trip and input to the PORV opening logic.

D. AFAS and Diverse Scram System.

Question Number : 82

Cutting and welding was completed at 1300.

What is the earliest time that the dedicated Fire Watch can be secured?

A. 1315

B. 1330

C. 1345

D. 1400

Question Number : 83

Following a Dropped CEA Recovery, power is being increased to the maximum allowable by the existing FrT of 1.706. With ASI being monitored on the ex-cores, what positive and negative offset limits should be in effect when the allowable power is reached, (assume the FrT value does not change), and what is the maximum allowable power?

A. -0.00 ,+0.08, 100%
B. -0.10, +0.15, 100%
C. -0.09, +0.11, 90%
D. -0.19, +0.21, 90%

Question Number : 84

With the plant at power, VA-20 deenergizes.

How are the Linear Power Range Nuclear Instruments affected by this condition?

A. Channel "B" Lower Detector only deenergized.

B. Channel "B" Upper Detector only deenergized.

C. Channel "B" Upper and Lower Detector both deenergized.

C. Channel "B" Upper and Lower Detectors remain energized.

Question Number : 85

With the Unit 2 Stack Gaseous and Particulate high range Radiation Monitor (Kaman) handswitch on C101 in the "ENABLED" position, what function is enabled?

A. Auto purge of the MP2 Stack Rad Monitor (RM-8132) on a Hi-Rad alarm condition on the Kaman.

B. Auto isolation of the CTMT H2 Purge System on a Hi-Rad alarm condition on the Kaman.

C. Auto purge of the Kaman on a Hi-Rad alarm on the MP2 Stack Rad Monitor (RM-8132).

D. Annunciator "RAD Hi-Hi/Fail" actuation on a Hi-Rad alarm on the Kaman.

Question Number : 86

All the components in both facilities of the 120 VAC and 125 VDC systems are fully operable and in their normal alignment for 100% power operation, with the exception of VA-10 being aligned to its alternate supply.

If inverter INV-1 were to fail, what would be the effect (if any) on the Engineered Safeguards Actuation System (ESAS)?

A. There would be NO effect on the ESAS.

B. Facility 1 Actuation Cabinet would de-energize.

C. Facility 1 Actuation Cabinet and the "A" Sensor Cabinet would de-energize.

D. The "A Sensor cabinet would de-energize.

Question Number : 87

A lightning strike on the 345 KV switchyard causes a plant trip.

The Main Feedwater Regulating Valves and their bypass valves ramped to their expected positions.

What condition caused this valve response?

A. Undervoltage on the CEDM buses

B. Actuation of the Generator Lockouts on C-08 rear.

C. Auxiliary contacts on the RPS TCB's

D. Actuation of the turbine trip relays

Question Number : 88

Which System will actuate on 1 out of 4 logic?

A. Containment Spray (CSAS).

B. Auto Aux Feedwater (AFAS)

C. Containment Purge Valve Isolation (CPVIS)

D. Local Power Density Trip (LPD)

Question Number : 89

Which of the following is a correct response for the Steam Dump and Bypass Valves or Atmospheric Dump Valves?

A. "B,C & D" Steam Dumps operate to maintain Tave on an excess turbine load decrease.

B. With RRS selected to "Y", the Quick Open Permissive Switch in ON, and the ADV Controller in manual, the ADV's will **not** open on a turbine trip from 100%

C. With RRS selected to "X", only the ADV's quick open on a turbine trip from 100%.

D. With RRS selected to "Y" and the Quick Open Permissive switch in OFF, only the "A,B,C & D" Steam dump and Bypass valves quick open on a turbine trip from 100%.

Question Number : 90

On a reactor trip with loss of forced flow in the RCS, why do we place the Steam Dump Tavg Controller HIC-4165 in manual?

A. Enables the 'A' bypass valve to operate in the pressure control mode vice Tavg control mode.

B. Prevents excessive RCS cooldown by disabling the quick open function.

C. Shifts SG pressure control to the ADV's since loss of RCP's is likely due to an LNP.

D. Prevents steam dumps from opening excessively on Th increase to develop Nat. Circ. and causing excessive RCS cooldown.

Question Number : 91

Following a valid initiation of CTMT spray with pressure lowering, what is the maximum pressure at which spray may be secured?

A. 8 psig

B. 6 psig

C. 4 psig

D. 2 psig

Question Number : 92

Ten hours into a large break Loss of Coolant Accident (LOCA), an RCS sample indicates 1500 ppm boron.

A sample taken 4 hours ago by the previous chemist indicated a boron concentration of 1945 ppm.

What action should be taken?

A. Increase the boron concentration in the Reactor Coolant System (RCS) by Emergency Boration.

B. Locate and stop the source of the dilution water flow to the RCS.

C. Instruct the chemist to increase his purge time and resample since this reduction is not possible in SRAS.

D. Inject to the RCS hot leg via the Shutdown Cooling Suction isolation, 2-SI-651 using the "A" Low Pressure Safety Injection (LPSI) pump.

Question Number : 93

With a bubble in the vessel head and RCP(s) operating, the RVLMS will not accurately reflect head level but can be used for trending. What causes the inaccuracy and will level trend higher or lower than actual?

A. Lower due to flashing in the splash tube surrounding the HJTC string.

B. Higher due to DP across the fuel alignment plate.

C. Higher due to spraying into the head region from bypass flow through the core support barrel keyways cooling the HJTC's.

D. Lower due to reduced core delta-T lowering the UJTC reference temperature.

Question Number : 94

During post-trip diagnosis, which of the following parameter responses would be used to discriminate between a LOCA and an ESD?

A. RCS CET subcooling lowering

B. RCS pressure dropping

C. Pressurizer level dropping

D. Reactor vessel head bubble indicated

Question Number : 95

During a LOCA, pressurizer level, by itself, is not considered a valid indication of actual RCS inventory. Why not?

A. Degraded Containment conditions can affect pressurizer level instrument accuracy.

B. Void formation in the RCS will affect indicated pressurizer level.

C. Gases coming out of solution in the pressurizer reference legs will affect indicated pressurizer level.

D. Cold water injection into the surge line will affect indicated pressurizer level.

Question Number : 96

EOP 2536, Excess Steam Demand, specifies an upper limit of 200 degrees F for RCS subcooling. Why?

A. Enhance natural circulation cooldown.

B. Prevent pressurized thermal shock from occurring.

C. Ensure PORV lift pressure is not exceeded.

D. Minimize RCS to faulted SG, delta-P.

Question Number : 97

Which of the following is **NOT** a measure implemented to protect against air-binding the SDC suction header when operating below the centerline of the hot leg?

A. Throttle the SDC Total Flow Control Valve, 2-SI-306, in manual to prevent sudden high flow in the event of a loss of air or power to 2-SI-306.

B. Periodic operation of the SDC Vacuum Cabinet Assembly.

C. Limit total SDC flow to a maximum of 1200 gpm.

D. Limit low level draining to 4" below the centerline.

Question Number : 98

Due to the loss of ventilation during a Station Blackout, doors must be opened to provide cooling for vital electrical equipment. Which of the following areas requires cooling by this method?

A. 6.9 KV and 4.16 KV switchgear rooms.

B. 480V load center rooms.

C. Computer Room

D. DC switchgear rooms.

Question Number : 99

Which of the following activities requires a Restricted Access Entry Permit (RAP) as a confined space for work to proceed?

Breaker PM's on bus 24G.

Cable tray inspections in the 45' cable vault.

Routine mechanical PM's on the de-icing valve, 2-CW-13C.

Visual inspection of the main generator exciter brush racks.

STUDENT IDENTIFICATION

NAME Answer Key I.D.

SCHOOL MP2

TEACHER N/A

GRADE LOUT ROOM

NRC Final 2/20/96

#16 deleted

#48 credit for C + D

IMPORTANT

- USE #2 PENCIL
- MAKE **DARK** MARKS
- EXAMPLE: A B [C marked] D E
- ERASE **COMPLETELY** TO CHANGE

KEY

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

ATTACHMENT 2

MP2 WRITTEN EXAMINATION COMMENT SUMMARY AND NRC RESOLUTION

Facility comments on two questions were submitted to the NRC chief examiner at the exit meeting on February 22, 1996. The following is a summary of these comments NRC resolution.

Question #16

Facility Comment: As written there was no correct answer. The "correct" answer was followed by an acronym in parentheses (IRG), which is not the correct acronym for this withdrawal prohibit. The prohibit associated with "IRG" prevents the shutdown rods from being inserted until all regulating rods have been fully inserted.

Recommendation: Delete the question.

NRC Resolution: Agree with facility and delete the question.

Question #48

Facility Comment: In modes 4 through 1 the Containment Purge Valve Isolation System (CPVIS) actuated equipment is maintained in its accident condition (closed), and de-energized. Being de-energized these dampers do not have any indication in the Control Room nor do they have any control power such that the indicating lights on the status panel (C01X) could be used to determine their position.

Recommendation: Give credit for either answer "C" or "D".

NRC Resolution: Agree with facility and give credit for either answer "C" or "D".

ATTACHMENT 3

SIMULATION FACILITY REPORT

Facility: Millstone 2

Facility Docket No: 50-336

Operating Tests Administered: February 21-22, 1996

This form is used only to report simulator observations. These observations do no 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.

No Comments