

cc w/encl; w/Attachment 1-3:

T. Trepanier, Manager-Training

cc w/encl; w/o Attachment 1-3:

M. Krupa, Director, Nuclear Safety & Licensing

J. Alexander, Director, Nuclear Assessment Group

D. Tarantino, Nuclear Information Manager

S. Brennon, Regulatory Affairs Department Manager

J. Fulton, Assistant General Counsel

R. Hallisey, Department of Public Health, Commonwealth of Massachusetts

The Honorable Therese Murray

The Honorable Vincent DiMacedo

Chairman, Plymouth Board of Selectmen

Chairman, Duxbury Board of Selectmen

Chairman, Nuclear Matters Committee

Plymouth Civil Defense Director

P. Gromer, Massachusetts Secretary of Energy Resources

J. Miller, Senior Issues Manager

A. Noguee, MASSPIRG

Office of the Commissioner, Massachusetts Department of Environmental Quality Engineering

Office of the Attorney General, Commonwealth of Massachusetts

J Perlov, Secretary of Public Safety for the Commonwealth of Massachusetts

Chairman, Citizens Urging Responsible Energy

Commonwealth of Massachusetts, SLO Designee

Electric Power Division

Mr. Robert M. Bellamy

3

Distribution w/encl; w/Attachment 1-3:

DRS Master Exam File
PUBLIC

Nuclear Safety Information Center (NSIC)

Distribution w/encl; w/o Attachment 1-3: (VIA ADAMS)

Region I Docket Room (with concurrences)

NRC Resident Inspector

H. Miller, RA/J. Wiggins, DRA

J. Linville, DRP

R. Summers, DRP

M. Oprendeck, DRP

D. Screnci, PAO

W. Lanning, DRS

B. Holian, DRS

R. Conte, DRS

J. Williams, Chief Examiner, DRS

S. Dennis, Examiner, DRS

V. Curley, DRS (OL Facility File)

DRS File

J. Shea, RI EDO Coordinator

E. Adensam, NRR (RIDSNRDIPMLPDI)

A. Wang, NRR

W. Scott, NRR

J. Wilcox, NRR

J. Clifford, NRR

Inspection Program Branch, NRR (IPAS)

DOCDESK

DOCUMENT NAME: G:\OSB\WILLIAMS\PILG00301.WPD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RI/DRS	RI/DRP	RI/DRS		
NAME	Williams <i>JW</i>	Linville <i>LN</i>	Conte <i>MC</i>		
DATE	05/12/00	05/12/00	05/12/00	05/ /00	05/ /00

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 05000293

License No. DPR-35

Report No. 05000293/2000-301

Licensee: Entergy Nuclear, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, Massachusetts 02360

Facility: Pilgrim Nuclear Power Station

Location: Plymouth, Massachusetts

Dates: May 2-3, 2000 (Operating Test Administration)
May 4-12, 2000 (Grading)

Examiners: J. H. Williams, Senior Operations Engineer (Chief Examiner)
S. Dennis, Operations Engineer

Approved by: Richard J. Conte, Chief
Operational Safety Branch
Division of Reactor Safety

SUMMARY OF FINDINGS
Pilgrim Nuclear Power Station
NRC Inspection Report 05000293/2000-301

The report covers a two day period of onsite examination by NRC region-based examiners. If applicable, the significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process described in Inspection Manual Chapter 0609.

- There were no findings.

Report Details

4. OTHER ACTIVITIES (OA)

4OA4 Cross Cutting Issues

.1 Senior Reactor Operator Initial License Examination

a. Scope

The NRC examination team reviewed the written and operating initial examination submitted by the Pilgrim training staff to verify or ensure, as applicable, the following:

- The exam was developed in accordance with the guidelines of Revision 8 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." The review was conducted both in the Region I office and at the Pilgrim training facility. Final resolution of comments and incorporation of test revisions was conducted during and following the onsite preparation week (April 3-4, 2000).
- The exam met the overall quality goals (range of acceptability) of NUREG-1021, Revision 8 (interim guidance is contained in Report of Interaction 99-18, dated November 24, 1999, and posted on the NRC's internet home page).
- Simulation facility problems, if any, did not interfere with the examination process.
- Facility licensee completed a test item analysis for feedback into the systems approach to training programs.
- Security requirements were met.
- Facility operating procedures can be adequately implemented.

The NRC examiners administered the operating portion of the exam to all applicants on May 2 and 3, 2000. The written exam was administered by Pilgrim training staff on April 28, 2000.

b. Observations and Findings

Grading and Results

All four applicants passed all portions of the initial licensing examination.

The facility submitted two post-examination comments. Both comments were accepted by NRC. See Attachments 1 and 2 for details.

Examination Preparation and Quality

No inspection findings were identified.

Examination Administration and Performance

No inspection findings were identified.

40A6 Exit Meeting Summary

On May 3, 2000, the NRC examiners discussed preliminary overall observations during the examination with Pilgrim Training and Operations personnel. On May 12, 2000, the NRC provided final conclusions and examination results to Mr. M. Santiago, and other staff members, at an exit meeting conducted via telephone. License numbers for the four applicants were also provided during the final exit meeting.

The NRC also expressed appreciation for the cooperation and assistance that was provided during the preparation and actual conduct of the exam by the licensee's training staff.

Attachments:

1. NRC Resolution of Post-Exam Written Comments
2. Facility Post Exam Written Comments
3. SRO Written Exam w/Answer Key

PARTIAL LIST OF PERSONS CONTACTED

Pilgrim

M. Santiago	Manager, Operations Training Division
S. Willoughby	Senior Instructor
V. Magnatta	Senior Instructor
J. Reed	Instructor
T. Trepanier	Training Manager
V. Fallacora	Operations Manager
T. Sullivan	VP and Station Director
J. House	Shift Supervisor
R. Bolduc	Shift Technical Advisor

NRC

H. Williams	Senior Operations Engineer/Examiner
S. Dennis	Operations Engineer/Examiner

Attachment 1

NRC resolution of Post-Exam Written Exam Comments

Question No. 34

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

- a. To prevent failure of the secondary containment.
- b. To ensure that RHR pumps are available for use in the shutdown cooling.
- c. To prevent further RPV inventory loss.
- d. To ensure that pumps are available for use in the LPCI mode.

ANSWER:

- a.

Facility Comment

Per BWR EPGs/SAGs, Appendix B, page B-8-25, emergency RPV depressurization is required when an area water level exceeds its maximum safe operating water level in more than one area since this is a "wide spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in secondary containment, or continued safe operation of the plant." Therefore, answers a, b, and d could all be considered correct.

Recommend deleting the question since it has three correct answers

NRC Resolution

Answers 'b' and 'd' are reasonable to protect equipment in secondary containment to ensure safe and continued plant operation. This equipment includes RHR pumps used in the LPCI and shutdown cooling modes. Therefore accept the facility comment and delete the question, since it has three correct answers.

Question 53

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -40" RPV level, ADS is inhibited.

Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

- a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.
- d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

ANSWER:

d.

Facility Comment

The question was written under the assumption that no LPCI initiation signal was present when RHR was placed in "Maximized Torus Cooling" and "Drywell Spray" modes. Placing the system in this mode would have resulted in one pump operating and one pump being secured in each RHR loop.

A subsequent LPCI initiation signal due to being less than -46" reactor water level for more than 11 minutes would have resulted in starting the RHR pumps that had been secured. This would have resulted in all four RHR pumps being in operation and a system minimum flow of 7200 GPM. (1800 GPM. per pump).

In actuality, the RHR system cannot be placed in Drywell Spray without a LPCI initiation signal present. This is due to the safe region of the Drywell Spray Initiation Limit Curve starting at a pressure of approximately 4 psig. Since one of the LPCI initiation signals is 2.2 psig Drywell Pressure, a LPCI initiation signal must have been present in order to start Drywell Spray.

The operator had to secure one RHR pump in each loop after the LPCI initiation signal in order to go into "Maximize Torus Cooling" and "Drywell Spray". Taking the pump to Stop after an initiation signal has been generated will result in the pump remaining off.

Therefore, only one RHR pump per loop would be operating and the minimum flow would be 1800 GPM per pump or a total of 3600 GPM.

Recommend changing the correct answer to "c".

NRC Resolution

Accept the facility comment and change the correct answer to "c".

Attachment 2

Facility Post Examination Comments on the Written Exam



RECEIVED
REGION 1

Entergy Nuclear Generating Company
Chiltonville Training Center
46 Sandwich Road
Plymouth, MA 02360-2505

2000 MAY -5 AM 9: 54

May 4, 2000

Mr. Julian Williams
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Mr. Williams:

Enclosed is the following information in support of the May, 2000 NRC License Exam:

- Master Exam and Answer Key
- Justification for Changes
- Item Analysis
- Applicant's Exam Cover Sheet and Answer Sheet – Graded Original
- Applicant's Exam Cover Sheet and Answer Sheet – Clean Copy
- Form ES-403-1 Written Exam Grading Quality Checklist
- Questions Asked By and Answers Given During Written Exam
- Applicant's Comments and Resolution
- Written Exam Seating Chart

The Examination Security Agreement, Form ES-201-3, is in the process of being completed and will be provided immediately upon completion.

If there are any questions you may have regarding the above, please contact myself at (508) 830-7617 or Scott Willoughby at (508) 830-7638.

Sincerely,

A handwritten signature in cursive script that reads "M. Santiago".

Mark Santiago
Superintendent, Operations Training

QUESTION NO. 34:

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

- a. To prevent failure of the secondary containment.
- b. To ensure that RHR pumps are available for use in the shutdown cooling.
- c. To prevent further RPV inventory loss.
- d. To ensure that RHR pumps are available for use in the LPCI mode.

ANSWER:

- a.

Comment: Per BWR EPGs/SAGs, Appendix B, page B-8-25, emergency RPV depressurization is required when an area water level exceeds its maximum safe operating water level in more than one area since this is a "wide spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in secondary containment, or continued safe operation of the plant." Therefore, answers a, b, and d could all be considered correct.

Recommendation: Recommend deleting the question since it has three correct answers.

Additionally, a Pen and Ink Change to the training material which was used for development of this question has been completed. In accordance with procedure TRNT.6, this Pen and Ink Change will be incorporated into the next revision of this training material.

References: BWR EPGs/SAGs, Appendix B, page B-8-25

EPG/SAG Step

SC/L-2.2 When an area water level exceeds its maximum safe operating water level in more than one area, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED.

Discussion

Should secondary containment water levels continue to increase and exceed their maximum safe operating values in more than one area, the RPV must be depressurized. Depressurizing the RPV promptly places the primary system in its lowest possible energy state, rejects heat to the suppression pool in preference to outside the containment, and reduces the driving head and flow of primary systems that are unisolated and discharging into the secondary containment.

The criteria of "*more than one area*" specified in this step identifies the rise in secondary containment water level as a wide-spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in the secondary containment, or continued safe operation of the plant.

One parameter (e.g., water level) above its maximum safe operating value in one area and a different parameter (e.g., temperature or radiation) above its maximum safe operating value in the same or another area is not a condition which requires emergency RPV depressurization. A combination of parameters exceeding maximum safe operating values in one area does not necessarily indicate that control of a given parameter cannot be maintained or that previous actions have not been effective in confining the trouble to one area. Expanding the application of "*more than one area*" to encompass multiple parameters might lead to depressurization of the RPV when such action is not, in fact, appropriate or needed.

QUESTION NO. 53:

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -46" RPV level ADS is inhibited.

Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

- a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.
- d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

Comment: The question was written under the assumption that no LPCI initiation signal was present when RHR was placed in Maximized Torus Cooling and Drywell Spray mode. Placing the system in this mode would have resulted in one pump operating and one pump being secured in each RHR loop.

A subsequent LPCI initiation signal due to being less than -46 inches reactor water level for more than 11 minutes would have resulted in starting the RHR pumps that had been secured. This would have resulted in all four RHR pumps being in operation and a system minimum flow of 7200 GPM (1800 GPM per pump.)

In actuality, the RHR system cannot be placed in Drywell Spray without a LPCI initiation signal present. This is due to the safe region of the Drywell Spray Initiation Limit Curve starting at a pressure of approximately 4 psig. Since one of the LPCI initiation signals is 2.2 psig Drywell Pressure, a LPCI initiation signal must have been present in order to start Drywell Spray. (See EOP-03 Drywell Spray Initiation Limit Curve and page 45 of RHR Reference Text listing LPCI initiation signals)

The operator had to secure one RHR pump in each loop after the LPCI initiation signal in order to go into Maximize Torus Cooling and Drywell Spray. Taking the pump to Stop after an initiation signal has been generated will result in the pump remaining off. (See 2.2.19.5 Page 19 of 26 step 1.0[5] and RHR Reference Text page 14 4th sentence)

Therefore, only one RHR pump per loop would be operating and the minimum flow would be 1800 GPM per pump or a total of 3600 GPM.

Recommendation: Change answer key to be answer 'c'.

References: EOP-03, RHR Reference Text and 2.2.19.5.

Each pump is controlled from a switch on panel 903. The switches have four positions (PTL, STOP, AUTO, and START) and are spring-returned to AUTO. In AUTO, the pumps will start automatically during LPCI initiation. With an initiation signal present, the pumps can be stopped by placing the control switch to the STOP position.

Pump status is indicated by a red light when running, and by a green light when stopped. A white light above each pump switch will illuminate if the pump is stopped with a LPCI initiation signal present.

RHR pumps will auto trip when a suction path to the respective pump does not exist. With MO-47, MO-50 or MO-43 not fully open and the corresponding MO-7 valve not fully open, the respective RHR pump will auto trip and remain interlocked off until a suction path is established.

4. RHR Pump Discharge Header (Figure 1)

The RHR pump discharge header runs from the outlet of each pump, and delivers water to the RHR heat exchangers.

A minimum flow line taps into the discharge header from each pump. The minimum flow lines provide protection for the pumps when they are operating in low flow conditions. Each minimum flow line has a check valve, an isolation valve (for maintenance) and a restricting orifice that limits the flow through the line to approximately 500 gpm.

The minimum flow lines from pumps A and C (same for pumps B and D) merge to form a single return to the torus. The minimum flow valves MO-18A,B are the last component prior to the header entering the torus. MO-18A and B are normally open; if they were closed, they would receive an open signal if flow decreases to < 2500 gpm in both RHR loops for 10 seconds. Each valve has a control switch on panel 903 (OPEN, NORM, CLOSE) that is spring-returned to normal; position indication (red-open, green-closed) is provided above the switch. Valve power supplies are:

MO-18A
MO-18B

480 VAC Safeguard MCC B-17
480 VAC Safeguard MCC B-18

The LPCI mode starts automatically when either of the following initiation signals occur:

- Reactor low-low water level $\leq -46"$ with reactor pressure < 400 psig (pumps start and valves reposition)
- High drywell pressure ≥ 2.2 psig, pumps start (valves reposition when RPV pressure decreases to < 400 psig)
- Low-low RPV water level ($\leq -46"$) and expiration of the 15 minute high drywell pressure bypass timer, pumps start (valves reposition when RPV pressure decreases to < 400 psig).

When LPCI is initiated, LPCI logic automatically selects an undamaged reactor recirculation loop. (Figure 21) When the reactor pressure drops to 400 psig, the LPCI injection valve to the undamaged recirculation loop will open, at which time the discharge flow of all four RHR pumps enters the vessel through the recirculation jet pumps. The design of the jet pumps maintains the reactor water level at 2/3 core height or higher. Only 3 out of 4 RHR pumps are necessary to deliver the required LPCI flow.

2. Loop Selection Logic (Figures 21)

Loop selection can be divided into three parts: recirc pump trip logic, break detection logic and valve selection logic.

a. Recirc Pump Trip Logic

The logic determines the number of recirculation pumps operating at the time the LPCI auto initiation signal is received. If the differential pressure across a pump is greater than 2 psig, it is assumed the pump is running. A 0.5 sec. time delay allows time to sense that both pumps are running and if so, goes directly to the break detection logic. If one or no pumps are running, a trip signal is sent to both recirculation pumps. If only one recirculation pump is running when a LPCI auto initiation signal is received, the operating pump is tripped. This trip causes maximum pressure differential to be developed between the two loops. An interlock is provided which prevents any further action until the reactor pressure decreases to 900 psig. This pressure permissive permits complete recirculation pump coastdown before loop selection on smaller breaks. For larger breaks, pump coastdown is not required and the reactor

MAXIMIZE TORUS COOLING

1.0 PROCEDURE

CAUTION

If erratic fluctuations in discharge pressure, flow, and pump motor current occur, then potential blockage of ECCS suction strainers may exist. Consult Attachment 8 to recognize and mitigate suction strainer blockage. **[NRC Bulletin 93-02]**

- [1] **MAXIMIZE RBCCW** cooling in accordance with Attachment 1.
- [2] **OPEN/VERIFY OPEN** MO-4060A **AND/OR** MO-4060B (MO-4010A **AND/OR** MO-4010B), RHR RBCCW Hx A (B) Inlet Valves.
- [3] **IF** it is necessary to override LPCI initiation signals, **THEN PERFORM** the following:
 - (a) **IF** only the LPCI initiation signal is present, **THEN PLACE** the LPCI OVERRIDE switch to "MANUAL OVERRIDE".

OR
 - (b) **IF** RPV level interlock (2/3 core coverage) is present, **THEN:**
 - **OBTAIN** NWE or NOS permission to override the RPV level interlock, **THEN PLACE** the key in the RPV LEVEL OVERRIDE switch **AND TURN** it to "MANUAL OVERRD".

AND
 - **PLACE** the LPCI OVERRIDE switch to "MANUAL OVERRIDE".
- [4] **OPEN** MO-1001-34A (B), Torus Cooling/Spray Block Valve.
- [5] **START/VERIFY STARTED** one RHR Pump per loop.
- [6] **SLOWLY OPEN** MO-1001-36A (B), Torus Cooling Valve, **AND INCREASE** flow to 4500 to 4800 GPM on FI-1040-1A (B).
- [7] **CLOSE** MO-1001-18A (B), Pump Min Flow Valve.

Attachment 3

SRO Written Exam with Answer Key

SRO Exam

Question Number: 1

The plant is in refuel and fuel is currently being moved from the core to the spent fuel pool when power is lost to the 'C' Refuel Floor Radiation Monitor. Which ONE of the following would allow continued refuel operations?

- a. Isolating the Secondary Containment and starting SBGT system.
- b. Entering an active 7-day LCO.
- c. Verifying that the 'A' Refuel Floor Radiation Monitor is operable.
- d. Entering a tracking LCO.

SRO Exam

Question Number: 2

A plant transient has initiated a reactor scram. Which ONE of the following describes when the reactor is determined to be shutdown?

- a. When APRM downscale lights are ON.
- b. When APRM's indicate below 3% and lowering.
- c. When power is in the SRM range.
- d. When power is on or below range 7 of IRM's and lowering.

SRO Exam

Question Number: 3

With the plant initially operating at 100% power, a malfunction in the selected feedwater level control instrument has caused INDICATED RPV level to rise with a sustained reduction in feedwater flow to the RPV. No other malfunctions occur. Following are plant conditions:

- Feedwater flow is 1.0×10^6 lbm/hr
- Actual RPV level is 30" and lowering
- Indicated RPV level is 35" and rising

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system and the bases for that response?

- a. Reactor Recirc Runback to 26% Pump Speed to ensure adequate Recirc pump NPSH.
- b. Reactor Recirc Runback to 26% Pump Speed to prevent a reactor scram.
- c. Reactor Recirc Runback to 44% Pump Speed to prevent a reactor scram.
- d. Reactor Recirc Runback to 44% Pump Speed to ensure adequate Recirc pump NPSH.

SRO Exam

Question Number: 4

A plant startup is in progress and reactor power is 20% with the following conditions:

- Primary containment inerted IAW PNPS 2.1.1 and 2.2.70
- Drywell equipment drain leakage at 8 GPM for the past 3 shifts
- Drywell floor drain leakage increased from 1.2 GPM to 3.4 GPM over the past 3 shifts

Based on current plant conditions, which ONE of the following actions are required?

- a. Reduce the leakage to within acceptable limits within 12 hours or be in hot shutdown within the following 24 hours.
- b. Identify the source of leakage within 4 hours or be in hot shutdown within the next 12 hours and in cold shutdown within the following 24 hours.
- c. Immediately commence a reactor shutdown and be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours without regard to the source of leakage.
- d. Identify the source of leakage within 6 hours or be in hot shutdown within the next 12 hours and cold shutdown within the next 24 hours.

SRO Exam

Question Number: 5

The plant is at power when drywell pressure starts to rapidly rise. Subsequent investigation reveals that the 'A' reactor recirculation pump seals have both failed catastrophically. Based on plant conditions, what actions are required, and what is the bases for these actions?

- a. Close the recirc suction valve before the discharge valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.
- b. Close the recirc suction valve before the discharge valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.
- c. Close the recirc discharge valve before the suction valve based on the discharge valve having a greater capability to close against system ΔP than the suction valve.
- d. Close the recirc discharge valve before the suction valve based on the suction valve having a greater capability to close against system ΔP than the discharge valve.

SRO Exam

Question Number: 6

A RCIC surveillance is in progress with the 'A' loop of RHR being placed in torus cooling. Based on plant conditions, which ONE of the following actions is required and the bases for that action?

- a. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.
- b. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop LPCI injection valves.
- c. LPCI system must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to close the 'A' RHR suppression pool cooling valves.
- d. Drywell spray must be declared inoperable since a LOOP-LOCA coincident with a failure of the 'A' EDG would result in an inability to open the 'A' loop drywell spray valves.

SRO Exam

Question Number: 7

The plant is operating at 100% power on the 100% load line when a loss of feedwater heating occurs resulting in reactor power peaking at 105%. Reactor Recirculation pump speed is being lowered in accordance with station procedures.

Based on plant conditions, which ONE of the following describes when to stop lowering Reactor Recirculation pump speed in accordance with PNPS 2.1.14?

- a. When reactor power lowers to 80%.
- b. When core flow reaches 39 Mlbm/hr.
- c. When core flow reaches 36 Mlbm/hr.
- d. Only when Reactor Recirculation pump speed reaches minimum (26%).

SRO Exam

Question Number: 8

The plant is operating at 100% power when an ATWS occurs concurrent with a loss of both RPS buses and bus A5. Following are plant conditions:

- RPV pressure is being maintained by keeping three (3) SRVs open and cycling the 4th SRV
- Suppression pool temperature is 110°F and rising
- APRM downscale lights are ON

Based on plant conditions, boron injection is _____ (1) _____ and _____ (2) _____ available to perform boron injection.

- a. (1) required, (2) only SBLC train 'B' is
- b. (1) not required, (2) both SBLC trains 'A' and 'B' are
- c. (1) required, (2) only SBLC train 'A' is
- d. (1) not required, (2) only SBLC train 'B' is

SRO Exam

Question Number: 9

The plant was operating at 100% power when a fire requiring the evacuation of the control room occurs. Additionally, RCIC Outboard Injection Valve (MO-1301-48) isolates on a spurious signal and cannot be re-opened.

Based on these conditions, which ONE of the following describes the use the RCIC system?

- a. May be run in pressure control, but without cooling water.
- b. May be run in pressure control, but without minimum flow protection.
- c. May be run in pressure control, but not lined up for injection.
- d. May not be run in either pressure control or injection mode.

SRO Exam

Question Number: 10

A plant startup is in progress with the mechanical vacuum pump being placed in service per station procedures when chemistry technicians report that reactor water samples indicate high levels of coolant activity.

Under these conditions, the main steam line radiation monitors:

- a. Are not required to be operable.
- b. Will trip the mechanical vacuum pump when the HI setpoint is reached.
- c. Will trip the mechanical vacuum pump when the HI-HI setpoint is reached.
- d. Would not show an increase since no steam is flowing through the main steam lines.

SRO Exam

Question Number: 11

The plant is starting up following a refueling outage with Reactor Engineering performing an in-sequence shutdown margin demonstration. Shutdown margin has been determined to be .20% ΔK with the most reactive rod withdrawn.

Based on this information, which ONE of the following actions is required?

- a. Manually scram the reactor and be in cold shutdown within 24 hours.
- b. Initiate an orderly shutdown and remain in hot shutdown until the cause has been determined.
- c. Initiate an orderly shutdown and be in cold shutdown within 24 hours.
- d. Manually scram the reactor and remain in hot shutdown until the cause has been determined.

SRO Exam

Question Number: 12

The plant is in refuel with the following conditions:

- New fuel is being loaded into the core
- All SRM shorting links have been removed
- SRM count rate is at $1E+5$ and increasing
- SRM rod block generated

Based on plant conditions, which ONE of the following describes the response of the SRM system as the count rate increases to $5E+5$ CPS?

- a. A SRM Hi-Hi alarm and no other automatic actions.
- b. A full reactor scram will not occur until any 2 SRM channels reach $5E+5$ CPS.
- c. A full reactor scram will not occur until either 'A' or 'C' AND either 'B' or 'D' SRM reaches $5E+5$ CPS.
- d. When any one SRM channel reaches $5E+5$ counts, a full reactor scram will occur.

SRO Exam

Question Number: 13

A loss of coolant accident has occurred and drywell spray was initiated in accordance with EOP-03. As drywell temperature and pressure are decreasing, the unacceptable region on the Drywell Spray Initiation Limit curve is entered at a drywell temperature of 250°F.

Based on plant conditions, which ONE of the following actions is the required?

- a. Secure drywell spray when drywell pressure drops below 2.2 psig.
- b. Secure drywell spray when torus bottom pressure drops below 2.2 psig.
- c. Adjust drywell spray as necessary to maintain operation within the Drywell Spray Initiation Limit curve.
- d. Immediately secure drywell spray.

SRO Exam

Question Number: 14

The plant was operating at 100% power when a loss of coolant accident occurred. Following are plant conditions:

- Drywell temperature is 275°F
- Drywell pressure is 10 psig
- Torus water level is 130 inches
- Torus bottom pressure is 15 psig
- Reactor water level is being maintained +20 to +40 with condensate
- H₂ Concentration is 7% in the drywell and 2% in the torus
- O₂ Concentration is 6.5% in the drywell and 2% in the torus

Based on plant conditions, which ONE of the following describes the use of drywell spray?

- a. Directed by the drywell temperature control leg of EOP-03, but not directed by the primary containment pressure control and hydrogen/oxygen control legs of EOP-03.
- b. Directed by the primary containment pressure control leg of EOP-03, but not directed by the drywell temperature control and hydrogen/oxygen control legs of EOP-03.
- c. Directed by the hydrogen/oxygen control and drywell temperature control legs of EOP-03, but not directed by the primary containment pressure control leg of EOP-03.
- d. Directed by the drywell temperature control and primary containment pressure control legs of EOP-03, but not directed by the hydrogen/oxygen control leg of EOP-03.

SRO Exam

Question Number: 15

Which ONE of the following actions and/or processes would create an environment, which would have the potential to adversely affect containment integrity following a sustained period of inadequate core cooling?

- a. The operation of reactor building-torus and torus-drywell vacuum breakers.
- b. The radiolyses of water due to hydrogen injection prior to the loss of adequate core cooling.
- c. The initiation of LPCI to restore adequate core cooling.
- d. A feedwater leak into the containment when hydrogen injection is in service.

SRO Exam

Question Number: 16

The plant was operating at 100% power when an ATWS occurred. Which ONE of the following methods for inserting control rods is FIRST directed by PNPS 5.3.23?

- a. Insert rods starting in the center of the core and spiraling outward.
- b. Insert all rods in one group, then all rods in the next group.
- c. Insert rods in the reverse order of the pull sheets.
- d. Insert all steps of the RPR array.

SRO Exam

Question Number: 17

The plant was operating at 100% power when a DBA LOCA occurred and panel Y-4 de-energized. Which ONE of the following describes the operability and use of the suppression pool water temperature recorder on panel C170 under current plant conditions?

- a. Operable and qualified for use as a Post Accident Monitor.
- b. Not operable and not qualified for use as a Post Accident Monitor.
- c. Operable but not qualified for use as a Post Accident Monitor.
- d. Not operable but qualified for use as a Post Accident Monitor.

SRO Exam

Question Number: 18

The plant was operating at 100% power when an inadvertent closure of the MSIV's occurred with a failure of control rods to insert. Following are plant conditions:

- RPV pressure being maintained 1000 psig to 1050 psig with 3 SRV's
- RPV level being maintained at 15" with FWLC in automatic
- SBLC has been initiated based on reaching BIIT with a suppression pool temperature of 115°F
- Blue scram lights are off

Based on plant conditions, which ONE of the following actions is required?

- a. Verify both reactor recirculation pumps are run back to minimum speed.
- b. Stop and prevent injection into the RPV from all sources except boron and CRD.
- c. Perform an alternate depressurization in accordance with EOP-27 due to exceeding the HCTL.
- d. Stop and prevent injection into the RPV from all sources except boron, CRD and RCIC.

SRO Exam

Question Number: 19

The plant was operating at 100% power when a transient caused both recirc pumps to trip, resulting in a small break LOCA. Following are plant conditions:

- RPV level at -75" on Fuel Zone indication
- RPV pressure at 1000 psig
- Drywell temperature at 212°F.

Based on plant conditions, which ONE of the following describes the reliability of the Fuel Zone Level instrument?

- a. Will be unreliable since the reference leg has reached saturation temperature.
- b. Will read erroneously low since it is calibrated with both reactor recirculation pumps running.
- c. Will read erroneously low since it is calibrated at a reactor water temperature of 212°F
- d. Will read erroneously high since it is calibrated at a reactor water temperature of 212°F.

SRO Exam

Question Number: 20

The plant was operating at 100% when a loss of main condenser vacuum occurred. Following are plant conditions:

- Main condenser at 5" Hg vacuum and stable
- RPV level at +50" and lowering slowly
- RPV pressure at 1050 psig and rising
- All scram actions complete

Based on plant conditions, which ONE of the following system(s) is(are) available for RPV pressure control?

- a. SRVs only.
- b. SRVs and Bypass Valves.
- c. SRVs and Main Steam Line Drains.
- d. SRVs, Main Steam Line Drains, HPCI and RCIC.

SRO Exam

Question Number: 21

The plant is operating at 100% power with the 'A' oil pump on the 'B' Recirculation MG set out of service when a loss of D-5 occurs. Following are plant conditions:

- DC lube oil pump on the 'B' Recirculation MG set fails to start
- Amps peg high on the 'B' Recirculation MG set

Based on plant conditions, which ONE of the following describes the method for securing the 'B' Recirculation MG set and the bases for that action?

- a. Scramming the plant since this will de-energize bus A-4.
- b. Opening the field breaker locally since it cannot be opened from the control room.
- c. Opening the drive motor breaker locally since it cannot be opened from the control room.
- d. Scramming the plant since this will automatically trip the drive motor breaker when RPV level drops below +12".

SRO Exam

Question Number: 22

A plant startup is in progress with the following conditions:

- Reactor power at 16%
- RPV level at 52" and rising due to FWLC malfunctions
- All efforts to reverse the rising RPV level trend have been unsuccessful

Based on plant conditions, which ONE of the following actions is now required?

- a. Transfer RPV level control to the startup feed reg flow valve.
- b. Close 1st point feedwater heater A & B outlet block valves.
- c. Trip the running feed pump.
- d. Scram the reactor.

SRO Exam

Question Number: 23

The plant is operating at 100% power when the following alarms occur:

- STATOR COOLING WATER TROUBLE
- STATOR COOLING INLET FLOW LO
- TURBINE RUNBACK

There is no reactive load (0 MVAR) on the main generator. Due to a failure of the speed/load changer motor, main generator load remains constant.

Which ONE of the following is the expected automatic response of the system if no operator action is taken?

- a. A turbine trip in 3 ½ minutes.
- b. A generator lockout in 2 minutes.
- c. A turbine trip in 2 minutes.
- d. A generator lockout in 3 ½ minutes.

SRO Exam

Question Number: 24

The plant has been operating at 100% power for the last month when an instrument air header leak above the capacity of the K110, K111 and K104A, B, C air compressor occurs. The Atlas Copco air compressor must be placed in service to prevent which ONE of the following?

- a. Closure of inboard MSIVs.
- b. Repositioning of the reactor head vent valves (AO-220-46 and 47).
- c. RBCCW surge tank level control valves failing closed.
- d. Lockup of the 'A' and 'B' feedwater regulating valves (FV-642-A and B).

SRO Exam

Question Number: 25

The plant is operating at 100% power when an inadvertent Group I isolation occurs resulting in the following conditions:

- RPV level being maintained at +20" to +40"
- All control rods fully inserted
- RPV pressure peaks at 1240 psig and starts to lower
- DW temperature at 150°F and rising
- Torus temperature has remained stable during the transient

Based on plant conditions, which ONE of the following describes the response of the safety and safety/relief valves?

- a. All SRVs actuated in the ADS mode.
- b. All SRVs actuated in the relief mode.
- c. Safety valves actuated and SRV's failed to actuate as designed.
- d. Safety valves and SRVs actuated as designed.

SRO Exam

Question Number: 26

The plant is shutdown with reactor coolant temperature at 190°F when a loss of shutdown cooling occurs with both reactor recirculation pumps secured.

Based on plant conditions, which ONE of the following describes the acceptable RPV level band?

- a. +20" to +25"
- b. +35" to +60"
- c. +30" to +40"
- d. +65" to +75"

SRO Exam

Question Number: 27

The plant is in startup at 780 psig when the 'A' CRD pump trips. After several attempts the operators start the 'B' CRD pump. The following annunciators have alarmed on C905:

- CHARGING WTR PRESSURE LO
- CRD PUMP 'A' TRIP
- Accumulator Trouble Lights for HCU's 06-19 and 10-23

Based on current plant conditions, which ONE of the following actions is required?

Note: Refer to attached PNPS 2.2.87, Attachment 9, HCU Location Matrix

- a. Immediately commence an orderly shutdown and declare the accumulators for the alarming HCU's INOP.
- b. Declare the control rods for the alarming HCU's INOP and continue with the startup.
- c. Immediately scram the reactor.
- d. Declare the control rods for the alarming HCU's INOP and enter LCO to commence an orderly shutdown and be in cold shutdown within 24 hours.

SRO Exam

Question Number: 28

Alternate Depressurization is required when the drywell temperature cannot be maintained below 280°F. Which ONE of the following describes the bases for this action?

- a. Prevent damage to the reactor recirculation pump seals.
- b. Prevent damage to DC valve motors in the drywell.
- c. Prevent failure of the drywell coolers upon restoration.
- d. Prevent failure of the containment structure.

SRO Exam

Question Number: 29

The plant was operating at 100% power when a small break LOCA occurs causing drywell and torus bottom pressure to start rising. Drywell sprays have been placed in service in accordance with EOP-03, Primary Containment Pressure Control Leg. Immediately after placing drywell spray in service a point is reached in the torus level leg of EOP-03 which requires securing drywell spray. Following are plant conditions:

- RPV pressure is 1000 psig
- Torus water level has stabilized

Based on plant conditions, which ONE of the following describes the correct Emergency Plan classification?

- a. Unusual Event
- b. Alert
- c. Site Area Emergency
- d. General Emergency

SRO Exam

Question Number: 30

In accordance with EOP's, which ONE of the following conditions would require the component to be isolated?

- a. HPCI being used to provide core cooling when the pump develops a severe packing leak causing water level on the floor of the HPCI quad to rise to 2".
- b. HPCI being used to provide core cooling when a steam leak develops causing the HPCI compartment to become contaminated.
- c. CRD being used to insert one control rod which failed to insert on a reactor scram when a severe packing leak develops causing CRD quad water level to rise to 2".
- d. A fire hose rigged to fight a fire in the RCIC quad when a leak occurs at a fitting that causes water level in the RCIC quad to rise to 2". At the same time, RCIC turbine area temperature is 200°F.

SRO Exam

Question Number: 31

As CRS you have been assigned for the past 12 months to outage planning and have not actively been performing the functions of a SRO. Additionally, you have been scheduled to supervise refuel floor activities during the upcoming refuel outage. Prior to relieving the refuel floor SRO and assuming the watch, which ONE of the following are you required to perform?

- a. Complete a minimum of 40 hours of shift functions under the direction of a SRO in the control room, including a complete plant tour and all required shift turnover procedures.
- b. Complete a minimum of one shift under the direction of a SRO on the refuel floor, including review of control room logs for the past 30 days and all required shift turnover procedures.
- c. Complete a minimum of 6 hours under the direction of a SRO in the control room, including a complete plant tour and review of control room logs for the past 30 days.
- d. Complete a minimum of 40 hours of refuel activities under the direction of a SRO on the refuel floor, including all required shift turnover procedures.

SRO Exam

Question Number: 32

Given that all the following systems respond and operate as designed, which ONE of the following conditions would require manual operation to isolate?

- a. Valid RB Ventilation Radiation Hi and Hi-Hi alarm.
- b. Valid Refuel Floor Ventilation Radiation Hi alarm.
- c. Valid Off-Gas Pre-Treat Radiation Hi and Hi-Hi alarms with the Off-gas PRM selector switch on CP-600 in the Pre-treat position.
- d. Valid Off-Gas Post-Treat Radiation Hi and Hi-Hi alarms with the Off-Gas PRM selector switch on CP-600 in the Post-Treat position.

SRO Exam

Question Number: 33

The plant was operating at 100% power when a LOCA occurs. Due to fuel failure the torus water is highly contaminated. Subsequently, a leak develops in the 'A' RHR quad that can only be isolated by manually closing the 1001-6A (RHR pump 'C' Torus Manual Suction Valve). Following are plant conditions:

- The 'C' RHR pump is necessary to provide core cooling.
- The 'A' RHR quad has 9 inches of water on the floor and a radiation level of 1200 mr/hr.

Based on plant conditions, which ONE of the following actions is required?

- a. Manually close the 1001-6A valve.
- b. Operate all available sump pumps.
- c. Open breakers for the RB floor drain and equipment drain pumps
- d. Defeat low RPV water level isolation interlocks.

SRO Exam

Question Number: 34

Both RHR quadrants have water levels above the maximum safe values caused by a primary system discharging into secondary containment. Based on this condition EOP-04 requires that Alternate RPV Depressurization be performed.

Which ONE of the following is the bases for Alternate RPV Depressurization?

- a. To prevent failure of the secondary containment.
- b. To ensure that RHR pumps are available for use in the shutdown cooling.
- c. To prevent further RPV inventory loss.
- d. To ensure that RHR pumps are available for use in the LPCI mode.

*Question Deleted. Answers a, b, d may
all be considered correct.*

Refer to exam analysis for details.

*[Signature] 5/3/00
M. Santiago 5/4/00*

SRO Exam

Question Number: 35

Which ONE of the following satisfies the requirements of PNPS 1.3.10 regarding Vital Area access keys assigned to Operations?

Keys are inventoried and accounted for:

- a. Each shift and an entry made in the Primary Access Control Point Log.
- b. Daily and an entry made in the CRS log.
- c. Each shift and an entry made in the CRS log.
- d. Daily and an entry made in the Primary Access Control Point Log.

SRO Exam

Question Number: 36

Hotwork is to be performed in the RCIC Quad. The Maintenance Work Plan contain no requirement to disable the smoke detectors in the RCIC Quad. As a result, the smoke detectors actuate after the job has commenced. Based on this information, alarm(s) will occur in which ONE of the following panels?

- a. Panel C223 in the Makeup Demin Room only.
- b. Panel C220 in the Control Room only.
- c. Panel C114 in the Control Room only Panel C223 in the Makeup Demin Room.
- d. Panel C220 in the Control Room and Panel C223 in the Makeup Demin Room.

SRO Exam

Question Number: 37

The plant is at 40% power when a feedwater line break occurs in the drywell resulting in the following conditions:

- RPV level at +20" and rising from HPCI Injection
- Drywell pressure at 3.2 psig
- All available feedwater pumps have tripped on overcurrent

Based on plant conditions, which ONE of the following describes the response of the Reactor Recirculation system with no operator action?

- 'A' Recirc pump runback to 44% speed and the 'B' Recirc pump trips.
- 'A' and 'B' Recirc pumps runback to 26% speed.
- 'A' Recirc pump runback to 26% and the 'B' Recirc pump trips.
- 'A' and 'B' Recirc pumps runback to 44% speed.

SRO Exam

Question Number: 38

The 'B' RHR Pump Discharge check valve (1001-67B) seating surface is degraded causing leakage from the RHR system into the Torus. All other valves in the RHR system are in their normal standby lineup and seating properly. Which ONE of the following describes the source of water entering into the Torus?

- a. Condensate Transfer.
- b. The RPV.
- c. RHR full flow test line.
- d. Fuel Pool Cooling cross-tie.

SRO Exam

Question Number: 39

The plant was operating at 100% power when a steam line break in the HPCI room occurs. Automatic and manual isolation has failed.

The high pressure condition caused by this break is designed to be relieved via which ONE of the following?

- a. Blowout panels into the 23' Aux. Bay and then through the Aux. Bay rollup door.
- b. Vent pipes from the HPCI room to the 'B' RHR quad and then through the blowout panels on the RB roof.
- c. Blowout panels from the HPCI room to the 23' RB and then through the blowout panels on the RB roof.
- d. Blowout panels into the RB truck lock and then through the RB truck lock rollup door.

SRO Exam

Question Number: 40

HPCI is being used in the pressure control mode following a reactor scram. A leak in the drywell occurs causing drywell pressure to rise to 3.0 psig. RPV water level is currently at -10" and stable. Which ONE of the following actions would now be effective in re-establishing a means of RPV pressure control?

- a. Manually realign HPCI in pressure control.
- b. Manually align RCIC in pressure control.
- c. Establish RWCU blowdown to the main condenser.
- d. Manually cycle SRVs as required.

SRO Exam

Question Number: 41

A change to procedure PNPS 2.2.20, Core Spray System, requires clarification of procedural steps to more accurately reflect Core Spray System equipment configuration. Based on this procedure change, which ONE of the following applies with regards to a Safety Evaluation?

- a. A Safety Evaluation is required based on this being an intent change.
- b. A Safety Evaluation is not required based on this being a non-intent change.
- c. A Preliminary Evaluation Checklist is required to be completed to determine the need for a Safety Evaluation.
- d. The Operations Review Committee is required to determine the need for a Safety Evaluation.

SRO Exam

Question Number: 42

The plant was operating at 100% power when a transient occurred resulting in an ATWS. Following are the operator actions taken and plant conditions:

- The SBLC control switch on C905 was taken to the SYS 'A' position, then through OFF to SYS 'B', then through OFF to SYS 'A'.
- The piping just downstream of the 'A' SBLC squib valve is completely obstructed.

Based on plant conditions, which ONE of the following describes the response of the 'A' SBLC pump?

- a. SBLC pump 'A' never injected to the RPV.
- b. SBLC pump 'A' did not inject to the RPV the first time the control switch was placed in SYS 'A', but did inject to the RPV the second time the control switch was placed in SYS 'A'.
- c. SBLC pump 'A' did inject to the RPV the first time the control switch was placed in SYS 'A', but did not inject to the RPV the second time the control switch was placed in SYS 'A'.
- d. SBLC pump 'A' injected to the RPV the first time the control switch was placed in SYS 'A', and also injected to the RPV the second time the control switch was placed in SYS 'A'.

SRO Exam

Question Number: 43

The plant is in Refuel (Cold Shutdown) with all electrical and fluid systems aligned normally. Additionally, the following conditions exist:

- Hi Level in the east Scram Discharge Instrument Volume
- The Scram Discharge Instrument Volume Hi Level Scram Bypass Switch is in Bypass
- The Mode Switch is in Shutdown with the Scram Reset

Based on plant conditions, which ONE of the following would result in a full reactor scram?

- a. Loss of bus Y-1.
- b. Loss of power to Scram Discharge Instrument Volume thermocouples.
- c. Loss of bus B-23.
- d. High level in the west Scram Discharge Instrument Volume.

SRO Exam

Question Number: 44

With the plant operating at 100% power a leak develops between the high and low pressure sensing points on the shutdown level transmitter. The deviation from calibration conditions prior to the leak will cause the instrument to read erroneously (1) ; and after the leak to read erroneously (2) .

- a. (1) high
 (2) high
- b. (1) low
 (2) high
- c. (1) high
 (2) low
- d. (1) low
 (2) low

SRO Exam

Question Number: 45

During a plant startup with SRM counts at $1E+3$, the recorder pen for SRM Channels A and C fails downscale. All other equipment is functioning normally.

Which ONE of the following describes the affect on SRM Channels A and C?

- a. Loss of recorder indication only.
- b. Loss of recorder indication and a SRM downscale rod block
- c. Loss of recorder indication and the inability to withdraw SRM Channel A and C detectors.
- d. Loss of recorder indication and the inability to receive an SRM upscale rod block.

SRO Exam

Question Number: 46

The plant is operating at 100% power when an LPRM fails upscale. The LPRM is placed in bypass and no other operator action is taken.

Which ONE of the following describes the expected condition of the upscale lights on panel C937 and the full core display for this LPRM?

- a. C937 Upscale Light ON
Full Core Display Upscale Light ON
- b. C937 Upscale Light OFF
Full Core Display Upscale Light OFF
- c. C937 Upscale Light OFF
Full Core Display Upscale Light ~~OFF~~ ON
- d. C937 Upscale Light ON
Full Core Display Upscale Light OFF

*Changed during exam
after conversation with
Chief Examiner.*

[Signature] 5/3/00

M. Santiago 5/4/00

SRO Exam

Question Number: 47

The plant is operating at 100% power when an SRV is suspected to have spuriously opened. The acoustic monitor for the SRV indicates all red lights on. Which ONE of the following would be the approximate tailpipe temperature for the affected SRV?

- a. 110°F
- b. 295°F
- c. 340°F
- d. 545°F

SRO Exam

Question Number: 48

The plant is operating at power when a total loss of TBCCW occurs. Which ONE of the following describes how RPV pressure and level should be controlled in accordance with station procedures?

- a. RCIC should be used in the level control mode and HPCI should be used in the pressure control mode.
- b. HPCI should be used in the level control mode and RCIC should be used in the pressure control mode.
- c. HPCI should be used in the level control mode and SRV's should be used to control pressure. RCIC remains shutdown.
- d. RCIC should be used in the level control mode and SRV's should be used to control pressure. HPCI remains shutdown.

SRO Exam

Question Number: 49

A worker in the Emergency Response Organization had 100mRem TEDE for the current year and 2.5 Rem TEDE lifetime prior to the declaration of an emergency. Which ONE of the following is the MAXIMUM TEDE this worker can receive over the course of the emergency without special authorization?

- a. 2.4 Rem
- b. 2.5 Rem
- c. 4.9 Rem
- d. 5.0 Rem

SRO Exam

Question Number: 50

The plant is in a refuel outage. Fuel movements began last shift following the completion of all Tech Spec and administratively required refueling and neutron monitoring surveillances. No surveillances are scheduled or required during the present shift. Currently, a fuel assembly is over the core and ready to be lowered by refueling personnel.

Based on these conditions, which ONE of the following actions is required by the control room reactor operator?

- a. Verify a control rod withdrawal block is received when the refueling mast is lowered from the "Full Up" position.
- b. Verify refuel mode single rod permissive interlock light illuminates when the refueling mast is unloaded.
- c. Inform undervessel maintenance personnel to leave the area to avoid being in a high radiation area.
- d. Continuously monitor SRM instrumentation for count rate increase until the fuel assembly has been loaded into the core and the grapple is visibly clear of fuel.

SRO Exam

Question Number: 51

During a loss of coolant accident, the drywell-torus vacuum breakers will open to prevent which ONE of the following?

- a. Collapsing the drywell.
- b. Collapsing the torus.
- c. Excessive drywell internal pressure.
- d. Excessive torus internal pressure.

SRO Exam

Question Number: 52

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Reactor power at 20%
- MSIV's isolated on hi steam flow
- All rods not full in
- RPV level at 25"
- Torus temp at 111°F

Based on plant conditions, which ONE of the following systems are available for RPV pressure control?

- a. Bypass valves after bypassing the RPV Lo Level interlock and opening the MSIV's.
- b. Safety relief valves.
- c. RWCU in blowdown mode.
- d. Main steam line drains.

SRO Exam

Question Number: 53

In response to a leak in the drywell both loops of RHR have been placed into the "Maximized Torus Cooling" and "Drywell Spray" modes. Reactor water level then lowers from +12" to -50" and is maintained at that level for 14 minutes with RCIC injection. At -46" RPV level ADS is inhibited.

Assuming that no additional operator action is taken, and that the reactor stays at operating pressure, which ONE of the following describes the minimum flow requirements and protection for the RHR pumps?

- a. RHR system minimum flow is 3600 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- b. RHR system minimum flow is 7200 GPM. This minimum flow will be provided indefinitely by the MO-1001-18A(B) RHR loop A(B) minimum flow valve.
- c. RHR system minimum flow is 3600 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.
- d. RHR system minimum flow is 7200 GPM. Operation with flow only through the minimum flow valves shall not be allowed for longer than 2 hours.

SRO Exam

Question Number: 54

A plant startup is in progress. Main turbine bypass valves would be expected to start opening at approximately ____ (1) ____ psig due to reaching the ____ (2) ____ setpoint.

- a. (1) 810, (2) EPR
- b. (1) 810, (2) MPR
- c. (1) 940, (2) EPR
- d. (1) 940, (2) MPR

SRO Exam

Question Number: 55

With the plant operating at 100% power, the 'A' and 'B' feedwater flow detectors are inadvertently bypassed. Which ONE of the following actions will occur?

- a. A reactor scram on low reactor level.
- b. A reactor recirc pump runback terminating at 44%.
- c. A reactor recirc pump runback terminating at 26%.
- d. An initiation of a Group I isolation on high reactor level resulting in a reactor scram.

SRO Exam

Question Number: 56

The plant is operating at 100% power with the following conditions:

- The 'A' SBTG fan is in AUTO
- The 'B' SBTG fan is in STBY
- The 'A' and 'B' refuel floor radiation monitors fail upscale
- The 'A' SBTG initiates, runs for 10 seconds, then trips

Based on plant conditions, which ONE of the following describes the expected automatic response of the 'B' SBTG fan?

- a. Will start when the initiation signal is received, run for 65 seconds, stop, then restart.
- b. Will start immediately after the 'A' SBTG fan trips and continue running uninterrupted.
- c. Will start after 65 seconds and continue to run uninterrupted.
- d. Will start when the initiation signal is received and continue running uninterrupted.

SRO Exam

Question Number: 57

The plant was operating at 100% when a LOCA concurrent with a loss of offsite power has occurred. The 'B' EDG failed to start. The SBO diesel generator is started and loaded onto bus A-6. Bus A-5 is being supplied by the 'A' EDG. Based on plant conditions, which ONE of the following describes the load limit for the SBO diesel generator and the bases for that limit?

- a. 1700 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.
- b. 1700 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.
- c. 2000 KW, based on preventing an overload condition in the event the 'A' EDG failed and caused bus B-6 to transfer to the SBO diesel generator.
- d. 2000 KW, based on preventing an overload condition in the event the LOCA signal clears and reoccurs causing the secured RHR pump to restart.

SRO Exam

Question Number: 58

The plant is operating at 100% power with the 'A' SBGT Train out of service and in day 3 of a 7 day LCO when the 'B' EDG jacket water cooling system fails. All other systems are fully operable and all surveillances complete.

Based on plant conditions, which ONE of the following is the MAXIMUM amount of time allowed before the plant must reach cold shutdown?

- a. 24 hours.
- b. 36 hours.
- c. 72 hours.
- d. 36 hours following the expiration of the original SBGT 7 day LCO.

SRO Exam

Question Number: 59

A control rod is withdrawn one notch. Which ONE of the following describes the sequence in which the control rod drive SETTLE, Rod IN, and Rod OUT lights will energize?

- a. Rod SETTLE, Rod IN, Rod OUT
- b. Rod IN, SETTLE, Rod OUT
- c. Rod IN, Rod OUT, SETTLE
- d. Rod OUT, SETTLE, (Rod IN light remains de-energized)

SRO Exam

Question Number: 60

The plant is being started up. Reactor power is 15% with the mode switch in Run. Three control rods, which are known to be fully withdrawn and at their withdrawal limits per the rod sequence, have reed switch failures such that the Rod Worth Minimizer does not know the current position.

Which ONE of the following is allowed and would be effective in allowing continued control rod withdrawal?

- a. Bypass the rod worth minimizer.
- b. Fully insert the three affected control rods.
- c. Enter substitute position for each of the affected control rods.
- d. Raise reactor power above the low power setpoint using reactor recirculation pumps.

SRO Exam

Question Number: 61

The plant is shutdown with the 'B' loop of RHR in shutdown cooling. The 'A' reactor recirculation pump is running. Due to improper maintenance activities MO-1001-18B, RHR loop 'B' minimum flow valve, opens, which results in the RPV level lowering to +10".

Based on plant conditions, which ONE of the following would provide accurate indication of reactor water temperature?

- a. Reactor vessel flange temperature.
- b. 'B' reactor recirc pump suction temperature.
- c. Reactor vessel bottom drain temperature.
- d. 'A' reactor recirc pump suction temperature.

SRO Exam

Question Number: 62

The operators are lowering CRD drive water ΔP that results in a sufficient enough change in CRD cooling water ΔP to cause control rod 06-19 to drift. Control rod 06-19 is currently selected, is not being moved by RMCS, and had an original position of 46.

Based on these conditions, which ONE of the following describes the response of the rod drift alarm for rod 06-19 and bases for that response?

- a. Will not alarm based on the rod being selected.
- b. Will alarm when the reed switch for notch position 46 opens.
- c. Will alarm when the reed switch for notch position 45 opens.
- d. Will alarm when the reed switch for notch position 47 closes.

SRO Exam

Question Number: 63

The plant was operating at 100% power when a transient occurred resulting in the following conditions:

- Torus water level at 130"
- Drywell temperature at 150°F
- Torus bottom pressure at 60 psig and rising
- Drywell pressure at 55 psig

Based on plant conditions, which ONE of the following describes the requirement and use of containment sprays?

- a. Drywell and torus sprays are both required. Pumps required for adequate core cooling may be directed to the torus and drywell.
- b. Torus spray is required. Pumps required for adequate core cooling may be diverted to spray the torus. Drywell spray is prohibited.
- c. Drywell and torus sprays are both required. RHR pumps required for adequate core cooling may NOT be diverted to spray the torus and drywell.
- d. Torus spray is required. RHR pumps required to provide adequate core cooling may NOT be diverted to spray to torus. Drywell spray is prohibited.

SRO Exam

Question Number: 64

The plant is operating at 100% power with drywell pressure at 1.6 psig and slowly rising. Following are plant conditions:

- The 'B' RHR pump is in torus cooling
- RPV level at +30" and stable.

The reactor is then manually scrammed. One minute later a loss of bus D-5 occurs. Two minutes following the loss of D-5 drywell pressure reaches 2.2 psig

Which ONE of the following describes the expected automatic response of the 'B' RHR pump and the MO-1001-34B, RHR Loop 'B' torus block valve?

- a. The 'B' RHR pump will trip when D-5 de-energizes and MO-1001-34B will close when drywell pressure reaches 2.2 psig.
- b. The 'B' RHR pump will remain running and MO-1001-34B will close when drywell pressure reaches 2.2 psig.
- c. The 'B' RHR pump will trip and MO-1001-34B will close when D-5 de-energizes.
- d. The 'B' RHR pump will remain running and MO-1001-34B will remain open.

SRO Exam

Question Number: 65

The plant was operating at 20% power when a transient occurred requiring the operators to manually scram the reactor. Following are plant conditions:

- Reactor power is on IRM range 5 and decreasing
- Three control rods are at position 06 and all other control rods are fully inserted
- No other scram signals exist

Which ONE of the following actions is required to insert the three control rods at position 06?

- a. Execute PNPS 2.1.6, "Reactor Scram" only
- b. Enter EOP-01, then exit EOP-01 and enter EOP-02 at R-1.
- c. Enter PNPS 2.1.6, "Reactor Scram" and then EOP-02 at R-1.
- d. Execute PNPS 2.1.6, "Reactor Scram" and then PNPS 5.3.23, "Alternate Rod Insertion".

SRO Exam

Question Number: 66

The plant was operating at 100% power when a loss of TBCCW has occurred. Attempts to start the temporary air compressor have failed.

Based on plant conditions, which ONE of the following methods may be used to provide temporary cooling in order to restart an air compressor and restore instrument air pressure in accordance with PNPS procedures?

- a. Lineup demineralized water to cool instrument air compressor K-111.
- b. Lineup fire water to cool instrument air compressor K-111.
- c. Lineup demineralized water to cool instrument air compressor K-104A.
- d. Lineup fire water to cool instrument air compressor K-104A.

SRO Exam

Question Number: 67

Upon receipt of a turbine trip, water flashing in the 1st point heaters will NOT cause a turbine overspeed condition based on which ONE of the following?

- a. The Combined Intermediate Valves going shut.
- b. A MOV in the 1st point heaters extraction steam line going shut.
- c. An AOV in the 1st point heaters extraction steam line going shut.
- d. The water in the 1st point heater is of a low enough energy that flashing is not a problem.

SRO Exam

Question Number: 68

The plant is operating at 100% power when a loss of all annunciators occurs. Based on plant conditions, which ONE of the following actions is required?

- a. Log A-5 and A-6 buses every ½ hour. Restore the alarms or be in cold shutdown within 24 hours.
- b. Log A-5 and A-6 bus voltages every ½ hour until the annunciators are restored.
- c. Immediately commence an orderly shutdown and be in cold shutdown within 24 hours.
- d. Jumper circuitry such that a LOCA signal will initiate a load shed.

SRO Exam

Question Number: 69

Which ONE of the following is the bases for maintaining the Turbine Building Ventilation System in operation while executing EOP-05?

- a. Prevents Reactor Building Ventilation from entering the Turbine Building.
- b. Prevents a direct reactor scram due to high temperature in the MSL tunnel.
- c. Prevents having an unmonitored ground release from the Turbine Building.
- d. Ensures adequate dilution of the gases discharged through the stack.

SRO Exam

Question Number: 70

The plant is starting up from a refuel outage. At 104 psig RPV pressure, the RCIC system is placed in standby operation. When placing RCIC in standby operation, in accordance with station procedures, operators are required to _____ (1) _____ to avoid _____ (2) _____.

- a. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system initiation.
- b. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) overpressurizing downstream piping.
- c. (1) slowly jog open MO-1301-16, inboard steam isolation valve;
(2) an inadvertent system isolation.
- d. (1) equalize around MO-1301-17, outboard steam isolation valve;
(2) excessive heatup of downstream piping.

SRO Exam

Question Number: 71

The plant is operating at 100% power when a SRV opens. In accordance with station procedures, which ONE of the following actions is required?

- a. Scram the reactor if Torus water temperature rises 5°F to prevent exceeding HCTL.
- b. Simultaneously de-energize bus D-4 and bus D-5 to interrupt power to the SRV solenoids.
- c. Simultaneously open appropriate breaker on bus D-4 and appropriate breaker on bus D-5 to interrupt power to the SRV solenoids.
- d. Separately cycle appropriate breaker on bus D-4 followed by appropriate breaker on bus D-5 to interrupt power to the ADS logic.

SRO Exam

Question Number: 72

The plant was operating at 100% power when a transient resulting in an ATWS occurs. Following are plant conditions:

- Boron is being injected with the SBLC system
- Initial SBLC tank level was 4100 gallons. Current SBLC tank level is 3000 gallons
- RPV level is -100" and is being lowered to reduce reactor power

Based on plant conditions, which ONE of the following actions is required?

- a. Raise RPV level to the +12" to +45" band and perform Alternate Depressurization.
- b. Maintain RPV level at its current value. Do not perform Alternate Depressurization.
- c. Maintain RPV level at its current value and perform Alternate Depressurization.
- d. Raise RPV level to the +12" to +45" band. Do not perform Alternate Depressurization.

SRO Exam

Question Number: 73

While executing EOP-01, it is determined that Alternate Depressurization is anticipated. Based on these conditions, which ONE of the following describes the opening of the bypass valves?

- a. Bypass valves should be opened without regard to the effect on RPV level and cooldown rate.
- b. Bypass valves should be opened while maintaining RPV level in the desired band. Cooldown rate limitations may be exceeded.
- c. Bypass valves should be opened while maintaining cooldown rate within limits. RPV level may be allowed to go outside the desired band.
- d. Bypass valves should be opened while maintaining reactor water level in the desired band and cooldown rate within limits.

SRO Exam

Question Number: 74

The plant was operating at 100% power when a loss of coolant accident occurs resulting in the following plant conditions:

- Torus water level is 150" and stable.
- Containment pressure is rising rapidly.

Which ONE of the following describes the vent path and requirement for venting the primary containment?

The primary containment is vented through the:

- a. Torus before torus bottom pressure reaches 60 psig.
- b. Torus, but only after torus bottom pressure exceeds 60 psig.
- c. Drywell before torus bottom pressure reaches 60 psig.
- d. Drywell, but only after torus bottom pressure exceeds 60 psig.

SRO Exam

Question Number: 75

Which ONE of the following describes the effect of leaving the Mechanical Pressure Regulator sensing line isolation valve closed during a reactor startup?

- a. EPR will control reactor pressure when it exceeds 200 psig.
- b. Turbine bypass valves can only be opened by raising the MPR setpoint.
- c. Turbine bypass valves would not open when steam pressure increased to MPR setpoint.
- d. There will be no adverse effect because the turbine stop valves are closed.

SRO Exam

Question Number: 76

The primary containment is required to be vented regardless of radioactive release rate:

- a. If drywell hydrogen concentration reaches 6% with drywell oxygen concentration of 3%.
- b. If more than two general areas in the reactor building exceed 135°F.
- c. Before Torus pressure and Torus level exceeds the pressure suppression pressure limit.
- d. Before Torus bottom pressure exceeds the primary containment pressure limit.

SRO Exam

Question Number: 77

The plant is operating at 100% power when a loss of bus Y-1 occurs. Bus Y-1 has been transferred to B-15. Based on plant conditions, which ONE of the following feedwater heaters will require extraction steam to be re-established?

- a. 2nd and 3rd point heaters.
- b. 1st and 2nd point heaters.
- c. 3rd and 4th point heaters.
- d. 4th and 5th point heaters.

SRO Exam

Question Number: 78

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- RPV level at -50" and stable
- Torus water level at 98" and lowering

Based on plant conditions _____ (1) _____ is (are) required to be secured at _____ (2) _____ to prevent _____ (3) _____ .

- a. (1) HPCI; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.
- b. (1) SRV's; (2) 95"; (3) exceeding the Primary Containment Pressure Limit.
- c. (1) HPCI; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.
- d. (1) SRV's; (2) 90"; (3) exceeding the Pressure Suppression Pressure Limit.

SRO Exam

Question Number: 79

The plant was operating at 100% power when a DBA loss of coolant accident occurred resulting in the declaration of a General Emergency. Following are plant conditions:

- Primary containment is being vented IAW EOP-3 step H-13 and PNPS 5.4.6
- CHRM's are indicating $2.8E4$ R/Hr.
- Wind direction is from 090°

Based on plant conditions, which ONE of the following Protective Action Recommendations is required?

Note: Refer to attached EP-IP-400, Attachment 1

- a. Evacuate sub-areas 1, 12 and 3. Shelter all other sub-areas.
- b. Evacuate sub-areas 1, 12, 2, 3, 4, 6, 7, 8 and 11. Shelter all other sub-areas.
- c. Evacuate sub-areas 1 and 12. Shelter all other sub-areas.
- d. Evacuate sub-areas 1, 12, 2, 3 and 4. Shelter all other sub-areas.

SRO Exam

Question Number: 80

An Alert has been declared. Which ONE of the following is an Emergency Director responsibility which may be delegated?

- a. Approval of press releases
- b. Off-site Protection Action Recommendations
- c. Termination of an Alert
- d. Authorizing the use potassium iodine by on-site personnel

SRO Exam

Question Number: 81

The plant was operating at 100% power when a loss of coolant accident occurred causing a RPV depressurization and rapid increase in drywell temperature. Following are plant conditions:

- Drywell temperature is approaching 280°F
- Drywell Pressure is 20 psig
- RPV level is unknown

Based on plant conditions, which ONE of the following describes the use of the RHR pumps?

- a. Use both loops of RHR to spray the drywell before drywell temperature reaches 280°F.
- b. Use both loops of RHR to spray the drywell, but only after drywell temperature reaches 280°F.
- c. Use both loops of RHR to inject to the RPV.
- d. Close the MO-1001-19 RHR cross-tie valve. Use one loop of RHR to spray the drywell before drywell temperature reaches 280°F. Use the other loop of RHR to inject to the RPV.

SRO Exam

Question Number: 82

The plant is operating normally at 100% power when a leak occurs on the suction line of RCIC. Water level is 3 inches in the RCIC quadrant when the leak is discovered. Level in the RCIC quadrant is currently approaching 6 inches. In accordance with Emergency Operating Procedures, the leak (1) required to be isolated and a reactor scram (2) required before reaching 6 inches in the RCIC quadrant.

- a. (1) is, (2) is
- b. (1) is, (2) is not
- c. (1) is not, (2) is
- d. (1) is not, (2) is not

SRO Exam

Question Number: 83

ADS has been initiated and a blowdown is in progress. Which ONE of the following actions would terminate the blowdown and prevent ADS from re-initiation?

- a. Placing the core spray and RHR pumps in pull-to-lock.
- b. Depressing the ADS initiation logic reset pushbutton.
- c. Placing the ADS initiation inhibit switch to inhibit and placing the core spray and RHR pumps in pull-to-lock.
- d. Depressing the ADS initiation logic reset pushbutton and placing the ADS initiation inhibit switch to inhibit.

SRO Exam

Question Number: 84

The plant is operating at 100% power when it is discovered that the keylock switch for opening the HPCI alternate shutdown panel has been tampered with. In accordance with PNPS 5.3.14, "Security Incidents", which ONE of the following is to be immediately informed of this condition?

- a. NRC resident
- b. The Plant Manager
- c. The SAS or CAS operator
- d. Access Authorization Supervisor

SRO Exam

Question Number: 85

The plant was operating at 100% power when a transient causes a loss of feedwater concurrent with a Group I isolation. Based on decay heat generation and SRV operation, which ONE of the following system(s) is(are) designed to provide the minimum makeup requirements to the RPV to maintain RPV level above top of active fuel?

- a. RCIC only.
- b. RCIC and ADS.
- c. HPCI only.
- d. ADS and low pressure injection.

SRO Exam

Question Number: 86

It is desired to isolate the makeup to the TBCCW head tank to allow maintenance inside the tank during an outage. Which ONE of the following would allow the use of LV-4141 as an isolation point when preparing this DANGER tagout?

Note: Refer to attached P&ID M-216, Sheet 1

- a. Setting LV-4141 at the minimum level position.
- b. DANGER tagging the air supply of LV-4141 in the open position.
- c. DANGER tagging the air supply to LV-4141 in the closed position.
- d. Applying a gag to LV-4141 to prevent it from opening.

SRO Exam

Question Number: 87

A Special Test is being planned that would introduce the possibility of an accident not previously evaluated in the FSAR. Based on this information and in accordance with 10CFR50.59 and plant procedures, which ONE of the following is required prior to the conduct of the test?

- a. ORC review only
- b. NRC approval only
- c. Safety evaluation only
- d. ORC review and NRC approval

SRO Exam

Question Number: 88

The plant was operating at 100% power when a loss of coolant accident occurred resulting in the following plant conditions:

- Drywell hydrogen concentration at 6.5%
- Drywell oxygen concentration at 2%
- Torus hydrogen concentration at 3%
- Torus oxygen concentration at 5.5%

While venting primary containment in response to these conditions it (1) permissible to exceed the release rate LCO. Jumper installation (2) permitted in order to bypass isolations allowing the venting to take place.

- a. (1) is, (2) is
- b. (1) is, (2) is not
- c. (1) is not, (2) is
- d. (1) is not, (2) is not

SRO Exam

Question Number: 89

The plant is operating at 100% power when the "TORUS ROOM TROUGH HI/LO" alarm is received in the control room. Investigation reveals that the water level in the trough is below the bottom of the two pipes located in the torus troughs.

If a LOCA in the drywell were to occur, which ONE of the following would be of potential concern with regards to the condition of the torus trough?

- a. Loss of pressure suppression pressure capability.
- b. Over-pressurization of the secondary containment.
- c. Ground release through the secondary containment.
- d. Vent path directly from the drywell to torus room.

SRO Exam

Question Number: 90

A lead in a safety related system is to be lifted and you have been directed to verify this activity. Which ONE of the following describes how this verification is to be performed?

- a. Independent and direct.
- b. Non-independent and direct.
- c. Independent and indirect.
- d. Non-independent and indirect.

SRO Exam

Question Number: 91

The plant has been scrammed and a control room evacuation conducted. Following are plant conditions:

- MO-1301-17, RCIC Outboard Steam Isolation Valve, has failed closed.
- Dose rates in the TIP Room are unknown.
- The TIP Room Door is posted as GRAVE DANGER --VERY HIGH RADIATION AREA – TWO PERSONS REQUIRED FOR ENTRY.
- The OSS has determined that plant conditions DO NOT warrant an emergency entry to the TIP room. (i.e. all normal requirements for entry to a VERY HIGH RADIATION AREA are in effect.)
- A properly qualified door guard is standing by.

Based on plant conditions, which ONE of the following requirements must be met to enter the TIP room in order to open MO-1301-17?

- a. An additional operator with a radiation dose rate meter who is qualified to use the meter must be dressed out and standing by to enter the room if required.
- b. An additional operator with a radiation dose rate meter who is qualified to use the meter must actually enter the TIP Room with you.
- c. A RPT equipped with a radiation dose rate meter must be dressed out and standing by to enter the room if required.
- d. A RPT equipped with a radiation dose rate meter must actually enter the TIP Room with you.

SRO Exam

Question Number: 92

The plant is in refuel with core reload complete and the Reactor Building truck lock doors open in support of a control rod drive shipment. Based on current plant conditions, which ONE of the following activities is allowed to be performed?

- a. Movement of new fuel to the spent fuel pool.
- b. Replacement of LPRM's.
- c. Replacement of control rod blades.
- d. Control rod scram time testing.

SRO Exam

Question Number: 93

The plant is operating at 100% power when instrument air is lost to the following valves:

- AO-7011A, Drywell Equipment Drain Sump Discharge to Radwaste
- AO-7017A, Drywell Floor Drain Sump Discharge to Radwaste.

Based on these conditions, which ONE of the following actions is(are) required?

Note: All other systems are fully operable.

- a. Ensure that AO-7011B, Drywell Equipment Drain Sump Discharge to Radwaste, and AO-7017B, Drywell Floor Drain Sump Discharge to Radwaste are open and that administrative controls are placed on the operation of AO-7011B and AO-7017B.
- b. Gag open AO-7011A and AO-7017A.
- c. Be in hot shutdown within 12 hours and in cold shutdown within the following 24 hours.
- d. Be in cold shutdown within 24 hours.

SRO Exam

Question Number: 94

The plant is operating at 90% power with the Reactor Feed Pump Tripping Sequence switch in the ABC position. If the 'B' condensate pump tripped, which ONE of the following automatic actions would occur?

- a. The 'A' feed pump only would trip.
- b. The 'B' feed pump only would trip.
- c. The 'C' feed pump only would trip.
- d. All 3 feed pumps would trip.

SRO Exam

Question Number: 95

The plant was operating at 100% power when a loss of 480 VAC bus B-21 occurred. Based on the loss of bus B-21, which ONE of the following describes the response of the Reactor Building Ventilation System and secondary containment pressure?

- a. RB supply and exhaust fans de-energize and the secondary containment becomes less negative.
- b. Only the RB exhaust fans de-energize and the secondary containment becomes less negative.
- c. RB supply and exhaust fans remain running and the secondary containment pressure remains constant.
- d. Only the RB supply fans de-energize and the secondary containment becomes more negative.

SRO Exam

Question Number: 96

The plant is operating at 100% power. Which ONE of the following conditions would cause automatic closure of the condenser vapor valves and subsequent loss of main condenser vacuum?

- a. 70 psig steam pressure to the SJAE inlet.
- b. 10 psig downstream of the SJAE condenser.
- c. 2600 lbm/hr steam flow to the jet compressor.
- d. 225°F downstream of the SJAE condenser.

SRO Exam

Question Number: 97

The plant is at 30% power with RPV pressure at 955 psig. A shutdown is in progress following a record breaking 600 day run when an inadvertent main turbine trip occurs. Assuming no operator action is taken, which ONE of the following describes the expected RPV pressure several minutes following the turbine trip?

- a. 810 psig
- b. 940 psig
- c. 955 psig
- d. 1095 psig

SRO Exam

Question Number: 98

During normal plant operations the control room is maintained at a _____ (1) _____ pressure and during accident conditions (with initiation of the CREAM) at a _____ (2) _____ pressure.

- a. (1) positive, (2) negative
- b. (1) negative, (2) negative
- c. (1) negative, (2) positive
- d. (1) positive, (2) positive

SRO Exam

Question Number: 99

The plant was operating at 98% power when #15 jet pump flow drops to 0.1×10^6 lbm/hr indicating a jet pump failure.

Based on this condition, the expected plant response would be for reactor power to (1) and Recirc Loop 'B' flow to (2) .

- a. (1) decrease, (2) decrease
- b. (1) increase, (2) increase
- c. (1) decrease, (2) increase
- d. (1) increase, (2) decrease

SRO Exam

Question Number: 100

The plant is operating at 100% power when a loss of bus D-16 occurs. All other systems are aligned normally. Five minutes later bus D-16 is restored.

The expected response of 125 VDC panel D-6 upon the loss of D-16 will be to _____ (1) _____ and upon restoration of D-16 to _____ (2) _____.

- a. (1) immediately transfer to D-17
(2) transfer back to D-16 after a time delay
- b. (1) transfer to D-17 after a time delay
(2) immediately transfer back to D-16
- c. (1) immediately transfer to D-17
(2) immediately transfer back to D-16
- d. (1) immediately transfer to D-17
(2) remain on D-17 indefinitely unless manual action is taken to transfer back to D-16

ANSWER KEY

Question Number	Correct Answer
1	a
2	d
3	a
4	b
5	a
6	c
7	b
8	a
9	d
10	c
11	c
12	d
13	a
14	c
15	a
16	d
17	a
18	b
19	c
20	c
21	a
22	d
23	c
24	d
25	c
26	d
27	c
28	d
29	b
30	c
31	a
32	a
33	c
34	
35	c
36	d
37	c
38	a
39	a

Question Number	Correct Answer
40	d
41	b
42	b
43	c
44	b
45	a
46	d
47	b
48	a
49	d
50	d
51	a
52	b
53	c
54	c
55	c
56	a
57	b
58	b
59	c
60	c
61	d
62	b
63	a
64	d
65	d
66	a
67	a
68	b
69	c
70	c
71	c
72	d
73	b
74	a
75	c
76	d
77	a
78	a

Question Number	Correct Answer
79	b
80	d
81	c
82	b
83	d
84	c
85	a
86	d
87	d
88	a
89	c
90	b
91	d
92	b
93	c
94	a
95	d
96	c
97	b
98	d
99	c
100	a

DELETED