

**Post-Exam Comment Resolution – Limerick Written Exam**

**Administered December 14, 2023**

**ADAMS Package ML23004A142**

**Written Exam Question # 17:**

Unit 1 plant conditions:

- SE-1 (Remote Shutdown) has been entered and the MCR has been evacuated due to toxic gas
- Prior to evacuating the MCR, the Reactor was scrammed and All MSIVs were closed
- No other control room actions were completed

The Remote Shutdown Panel was staffed and SE-1 activities performed

- All RSP Transfer Switches are in EMERG
- Operators are controlling level with RCIC at 35 inches
- Controlling pressure with SRVs

A primary coolant leak in the drywell causes DW pressure to rise to 1.70 psig up slow.

With no additional action, what is the status of RCIC and HPCI 5 minutes later?

	<u>RCIC</u>	<u>HPCI</u>
A.	Running	Running
B.	Running	Tripped
C.	Tripped	Running
D.	Tripped	Tripped

Answer: B

**Summary of Facility/Applicant Recommendation:**

Question 17 is a question with an unclear stem that confused the applicants or did not provide all the necessary information. The state of RCIC (Running) is correct and is not disputed. However, the leak in the drywell is not quantified and therefore leads to confusion on the status of the HPCI system. HPCI injection would occur due to drywell pressure exceeding 1.68 psig and would result in the reactor water level reaching +54 inches (HPCI Tripped). However, if the

leak was beyond the capability of RCIC, reactor water level would drop to -38 inches and cause HPCI to restart (HPCI Running). Simulator plots have been provided to support this conclusion. As a result, both Distractors A and B should be accepted as correct.

#### Applicant Performance on Question 17

Five out of 10 applicants selected a wrong Distractor. No applicant asked for any clarification of this question during the exam administration.

#### NRC Comment Resolution:

Question 17 will be deleted based upon ambiguity in the stem.

The facility/applicant have requested that HPCI Running (Distractor A) and HPCI Tripped (Distractor B) both be accepted as correct. These two distractors contain conflicting information; specifically, they describe a plant condition that cannot be true or exist at the same time (running and tripped). In accordance with NUREG 1021 ES-4.4, the NRC will not accept both answers as correct when both answers contain conflicting information.

The facility/applicant provided simulator data plots to support their explanation that HPCI would be running 5 minutes after drywell pressure rose to 1.70 psig. The stem states that drywell pressure rises to "1.70 psig up slow". The term "up slow" with respect to drywell pressure is not quantifiable; therefore, it is possible that a leak in excess of the capacity of RCIC could cause reactor level to decrease to the point of restarting HPCI. Since the stem did not provide clear enough information about the size of the leak, the question will be deleted.

**Written Exam Question # 46:**

Regarding the Standby Gas Treatment System, which of the following describes

- 1) The basis for the SGTS filter train and
- 2) The design feature to maintain filter efficiency

	<u>Basis for SGTS Filter Train</u>	<u>Component to Maximize Filter Efficiency</u>
A.	Limit iodine and particulate concentration in gases, prior to discharge	Electric Heaters
B.	Limit iodine and particulate concentration in gases, prior to discharge	Purge Air
C.	Limit particulate concentration ONLY in gases, prior to discharge	Electric Heaters
D.	Limit particulate concentration ONLY in gases, prior to discharge	Purge Air

Answer:        A

**Summary of Facility/Applicant Recommendation:**

Question 46 is a question with an unclear stem that confused the applicants or did not provide all the necessary information. The first part of the question asking for the basis is correct and is not disputed. However, the second part is asking for the design feature that maintains or maximizes filter efficiency. Both Electric Heaters and Purge Air are described in Design Basis Document L-S-32, "Standby Gas Treatment System and Reactor Enclosure Recirculation System," Revision 9, Section 3.3, "Design Features," and their function is to lower relative humidity, maintain clean dry air and prevent condensation of water vapor on the charcoal filters. Since the question does not specifically ask when the design feature would be used (operation or standby), both options in the second part of Distractors A and B would be correct for maintaining filter efficiency. As a result, both Distractors A and B should be accepted as correct.

**Applicant Performance on Question 46**

Four out of 10 applicants selected a wrong Distractor. No applicant asked for any clarification of this question during the exam administration.

NRC Comment Resolution:

Both Distractors A and B are accepted as correct.

The question stem asks for the design feature that maintains (maximizes) filter efficiency. The NRC reviewed the Design Basis Document L-S-32 and found numerous instances where the electric heaters are specifically mentioned as designed to maintain charcoal filter efficiency. Additionally, the specific design feature of Purge Air is to prevent condensation of water vapor on the filters when the system is in standby. This design feature would act to keep the filters dry, which would maintain or maximize the efficiency of the filters in a similar way as the heaters. Since the stem did not specify the mode (operating or standby), both Distractors A and B can be considered correct.

**Written Exam Question # 92:**

WHICH ONE of the following is required during Transient Response per OP-LG-103-102-1002, Strategies for successful Transient Mitigation?

- A. An RO obtaining CRS permission prior to securing HPCI following automatic initiation
- B. Shift Technical Advisor ensure identification of critical parameters
- C. Shift Manager approval when action taken is necessary to prevent personal injury
- D. An RO obtaining CRS permission to manually initiate RRCS during an ATWS

Answer: A

**Summary of Facility/Applicant Recommendation:**

There is additional technical information for Question 92 in procedure OP-LG-103-102-1002 that supports a change to the answer key. While assignment of critical parameters is the responsibility of the Unit Supervisor/CRS, Distractor B does not state the STA determines critical parameters to be assigned but that the STA “ensure identification of critical parameters.” Specifically, step 5.3 identifies the STA’s role to “identify critical parameters for trending”. As a result, both Distractors A and B should be accepted as correct.

**Applicant Performance on Question 92**

2 out of 8 SRO applicants selected a wrong Distractor. No applicant asked for any clarification of this question during the exam administration.

**NRC Comment Resolution:**

Both Distractors A and B are accepted as correct.

The NRC reviewed OP-LG-103-102-1002 and found that the Unit Supervisor/CRS is identified as having the responsibility to ensure identification of critical parameters. Specifically, step 4.2.2.4 states, in part, “The determination of critical parameters to be assigned is the responsibility of the Control Room Supervisor.” Additionally, the STA has an advisory role and provides input during a transient in making this identification, which helps ensure the critical parameters are identified. Since the STA helps ensure critical parameters are identified, both Distractors A and B can be considered correct.