

NRC Resolution of Post-Exam Comments: 2017 Indian Point 3 Initial Exam

Question 21

NRC Resolution:

Delete the question. There is no correct answer provided among the choices.

Discussion:

Three applicants chose the originally designated correct answer of Choice C. Two applicants chose Choice A, one applicant chose Choice D, and no applicant chose Choice B.

There were no questions asked by the applicants on Question 21.

This was a new question.

The licensee proposed deleting this question because there is no correct answer. This question was developed based upon an actual event. Based on the event, the intent of the question was for the applicant to understand the type and location of radiation monitors in the PAB to confirm the location of a leak. The exam author was aware that a leak at the inlet of the reactor coolant filter contaminated the 73' elevation in the PAB but he was not aware that the 15' elevation was also contaminated. The leak initiated on the 73' elevation but water traveled through a pipe chase directly down to the 15' elevation. The licensee provided data from the rad monitor on the 15' elevation that showed a small increase of approximately 0.17mR/hr. (There was no historical data available for the rad monitor on the 73' elevation.) Based upon control room logs, there were no alarms received from rad monitors on either of these two elevations that alerted operators to the existence of a leak. Thus, given the spread of the contamination throughout the PAB, the very small increase in the radiation levels, and the absence of any radiation alarms, there was no correct answer among the choices provided in this question.

Justification for deleting the question:

Based upon a detailed review of the actual event upon which the question was based, there was no correct answers provided among the choices.

Summary:

The NRC has determined that there are no correct answers and that the question should be deleted.

References:

Unit 3 control log
CR-IP3-2017-03208
CR-IP3-2017-03241

Exam Outline Cross Reference:	Level	RO	SRO
	Tier#	1	
	Group#	2	
	K/A#	000060K201	
		Knowledge of the interrelations between the Accidental Gaseous Radwaste Release and the following: - ARM system, including the normal radiation-level indications and the operability status	
	Importance	2.6	2.9

Question # 21

With U3 at 100% power, operators note an increase on R-27 effluent monitor indicating an inadvertent gaseous release. If the leak was at the inlet of the Reactor Coolant Filter, which of the following describes a radiation monitor response that could confirm the source of the leak?

- A. Increase in general area dose rate indication on R-68 on 15' PAB elevation.
- B. Increase in particulate activity on R-68 on 15' PAB elevation.
- C. Increase in general area dose rate indication on R-65 on 73' PAB elevation.
- D. Increase in particulate activity on R-65 on 73' PAB elevation.

Answer: C

Explanation/Justification:

There are radiation monitors throughout the U3 PAB. It is important the candidates understand that these are just area radiation monitors. These are not monitors that are routinely addressed by AOPs and EOPs, so a less than adequately prepared candidate may believe these monitors measure particulate activity. Adding to the plausible confusion of what these radiation monitors measure is the fact that the radiation protection group has portable particulate monitors throughout the PAB. In order to make a valid multiple choice question, this also tests location of plant equipment. There is a filter cell in the 15' PAB. However, the Reactor Coolant Filter is on 73' PAB in a cell that is not often accessed. A less than adequately prepared candidate may not know the location.

A. Incorrect but plausible if the candidate believes the reactor coolant filter is with the other plant filters in the 15' filter cell.

B. Incorrect but plausible if the candidate believes the reactor coolant filter is with the other plant filters in the 15' filter cell, and also believes the radiation monitor is a particulate monitor.

C. Correct answer.

D. Incorrect but plausible if the candidate believes the radiation monitor is a particulate monitor.

Technical References: 3-SOP-RM-010

Proposed References to be provided: None

Learning Objective I3LP-ILO-RMSARM 4

Question Source: New

Question History: N/A

Question Cognitive Level: Fundamental Knowledge

10 CRF Part 55 Content: 55.41 (b) 11

Comments

Question 28

NRC Resolution:

Delete the question. There is no correct answer provided among the choices.

Discussion:

Two of the applicants chose the originally designated correct answer of Choice A. One applicant chose Choice B, three applicants chose Choice C, and no applicant chose Choice D.

There were no questions asked by the applicants on Question 28.

This was a new question.

The licensee proposed deleting this question because there is no correct answer. The question asked about the consequences of the closure of a common RCP seal return valve on RCP operation. With the return valve closed, the seal return relief valve would lift (and cycle). In running this event in the simulator, seal return flows on 32 and 33 RCPs would be 0.10 and 0.40 gpm, respectively, (and the other seal returns remained about 1 gpm). The values for RCP 32 and 33 are below the 0.84 gpm value required to operate the RCPs per AOP-RCP-1. According to step 4.30 of the AOP, a normal reactor shutdown is required to allow the effected RCP to be stopped within 8 hours. The intended correct answer (Choice A) is ambiguous because it simply states that pump operation may continue. This could be interpreted to mean that the pumps could run indefinitely which is not correct.

The NRC agrees that the intended correct answer is ambiguous. It should be noted that no seal return flow or seal temperature data were provided to the applicants. The applicants were then left to make assumptions about the amount of seal return flow for the RCPs and the impact on seal temperatures. Therefore, depending upon the assumptions made by the applicants, RCP operation could continue or the resulting conditions would require a reactor trip. These are two divergent responses that would preclude accepting two correct answers.

Justification for deleting the question:

Based upon a review of the details of this question, there was no technically correct answer provided among the choices. Furthermore, because of assumptions regarding plant response (seal return flow), the applicants could conceivably reach two different and mutual exclusive conclusions about RCP operation.

Summary:

The NRC has determined that there are no correct answers and that the question should be deleted.

References:

AOP-RCP-1, Reactor Coolant Pump Malfunctions

Exam Outline Cross Reference:	Level	RO	SRO
	Tier#	2	
	Group#	1	
	K/A#	003000K604	
		Knowledge of the effect of a loss or malfunction of the following will have on the RCPS: - Containment isolation valves affecting RCP operation	
	Importance	2.8	3.1

Question # 28

A malfunction caused MOV-222, Seal Return, from RCPs to go closed.

What are the consequences of allowing the RCP's to continue operation?

- A. Seal return flow cycles based on relief valve position.
Pump operation may continue.
- B. Seal return flow decreases to 0.
AOP-RCP-1, Reactor Coolant Pump Malfunctions, will direct tripping RCPs if condition last > 5 minutes.
- C. Seal return flow decreases to 0.
Pump operation may continue.
- D. Seal return flow cycles based on relief valve position.
AOP-RCP-1, Reactor Coolant Pump Malfunctions, will direct tripping RCPs if condition last > 5 minutes.

Answer: A

Explanation/Justification:

A. Correct. A relief valve to the PRT will maintain seal return flow.

B. Incorrect. Plausible closing MOV-222 isolates seal return from all pumps to the VCT; however a relief valve to the PRT will maintain seal return flow.

C. Incorrect. Plausible closing MOV-222 isolates seal return from all pumps to the VCT; however a relief valve to the PRT will maintain seal return flow. Also continued pump operation with seal injection is true for loss of thermal barrier cooling.

D. Incorrect. Plausible because with seal return cycling AOP-RCP-1 may direct a trip..

Technical References: 3-AOP-RCP-001

Proposed References to be provided: None

Learning Objective I3LP-ILO-RCSRCP 10

Question Source: New

Question History: NA

Question Cognitive Level: Fundamental Knowledge

10 CRF Part 55 Content: 55.41 (b) 7

Comments

Question 33

NRC Resolution:

Delete the question. It is based upon erroneous information presented in the stem.

Discussion:

All six applicants chose Choice C. The intended correct Choice was A.

There were no questions asked by the applicants on Question 33.

This was a bank question.

The licensee proposed deleting this question because when it was created from an SOP, information from the procedure was not presented accurately in the stem of the question. Instead of presenting the bulletized items for minimum boron concentration in a series of "OR" statements, the items were presented inclusively implying that all criteria were required to be met. The stem of the question was therefore flawed.

The NRC expects that examination questions are to be technically accurate and based upon facility licensee reference material. As written, the question was flawed because it misrepresented the licensee's procedure. Therefore, the NRC agrees that the question should be deleted.

Justification for deleting the question:

The question incorrectly incorporated the intent of the licensee's procedure into the stem. Therefore, the question is flawed because it is technically incorrect. Technically incorrect questions lack the ability to distinguish between a knowledgeable or unknowledgeable applicant and should be deleted from the examination.

Summary:

The NRC has determined that the question is flawed and will be deleted from the examination.

References:

SOP-RHR-001, Residual Heat Removal System

Exam Outline Cross Reference:	Level	RO	SRO
	Tier#	2	
	Group#	1	
	K/A#	006000A111	
		Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: - Boron concentration	
	Importance	3.1	3.4

Question # 33

Given the following conditions:

The plant is being cooled down to 140°F for maintenance which will NOT require the RCS be opened. The crew is in the process of placing the first Residual Heat Removal (RHR) train in service for RCS cooling. Current RCS temperature is 345°F. Core burnup is 490 EFPDs.

SOP-RHR-001 Requires RHR boron concentration to be greater than

- 68°F cold Shutdown boron concentration
- RCS boron concentration
- Minimum required boron concentration per 3-GRAPH-RCS-4

Current boron concentrations are as follows:

- RHR (train to be placed in service) boron 1020 ppm
- Required Shutdown Margin at 300°F boron 1610 ppm
- Required Shutdown Margin at 68°F boron 1720 ppm
- RCS boron 2025 ppm
- Refueling boron 2150 ppm

Before the RHR train can be placed in service for RCS cooling, RHR boron concentration must be increased by a MINIMUM of

- A. 590 ppm
- B. 700 ppm

C. 1005 ppm

D. 1130 ppm

Answer: A

Explanation/Justification:

A. Correct. 590 represents the minimum required per GRAPH-RCS-4.

b. Incorrect. 700 represents the amount necessary to achieve 68°F concentration. This is not necessary to place RHR in service it is necessary for the RCS if temperature is being reduced to 68°F.

C. Incorrect. This is the amount of boric acid required to match RCS boron concentration.

D. Incorrect. This is the amount of boric acid required to match Refueling boron concentration.

Technical References: 3-GRAPH-RCS-4
3-SOP-RHR-001

Proposed References to be provided: 3-GRAPH-RCS-4

Learning Objective I3LP-ILO-POP002 7

Question Source: Bank

Question History: NA

Question Cognitive Level: Comprehension

10 CRF Part 55 Content: 55.41 (b) 5

Comments