

## **Guidance for SRO-only Questions Rev 0**

### Purpose

The purpose of this document is to promote *consistency* for examiners and licensees when developing and reviewing SRO-only written test items.

### Scope

This document provides the Region 2 Operator Licensing Branch *expectations* for fulfilling the intent of 10CFR55.43 and NUREG 1021, ES-401 as they pertain to SRO-only test items. This document is not a regulatory requirement and the following limitations are applicable:

1. NUREG-1021 always takes precedence if a conflict is identified.
2. Anyone discovering a conflict shall promptly bring it to the attention of the Region 2 Operator Licensing Branch.
3. This document does not replace or eliminate the requirements or the need to be familiar with NUREG 1021.
4. This document does not impose any requirements or expectations on licensees beyond those in NUREG 1021.

### References

- K/A catalogs (NUREG 1122 and NUREG 1123)
- 10CFR55.43
- NUREG 1021
- 2006 Region 2 Examiner's Workshop SRO-only topic presentation
- Operator Licensing Report on Interaction (ROI) # 2000-30

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**I. K/A Catalog Sample Plan Requirements** [ES-401, Section D.1.c]

For all three tiers in the sample outline, SRO-only K/A statements **MUST** be either an:

- “A2” statement [All emergency/abnormal “A2” catalog statements are linked to 10CFR55.43(b). Plant systems “A2” statements are still valid SRO-only K/A material even though some do not have a 10CFR55.43 designator in the catalog.]

OR

- “G” statement with a 10CFR55.43 designator
- One exception: In Tier 2, Group 2, selection does not have to be either A2 or G provided it is related to fuel handling equipment.

**ES-401** **PWR Examination Outline** **Form ES-401-2**

Facility:		Date of Exam:																
Tier	Group	RO K/A Category Points											SRO-Only Points					
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total		
1. Emergency & Abnormal Plant Evolutions	1													18			6	
	2					N/A						N/A		9			4	
	Tier Totals													27			10	
2. Plant Systems	1													28			5	
	2													10			3	
	Tier Totals													38			8	
3. Generic Knowledge and Abilities Categories						1	2	3	4				10	1	2	3	4	7

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**II. Expectations for the type of knowledge that is unique to the SRO position for each of the seven topics in 10CFR55.43(b)** [ES-401, Section D.1.c]

A. Conditions and limitations in the facility license [10CFR55.43(b)(1)]

Examples of exam items that are unique to the SRO position include:

- Reporting requirements when the maximum licensed thermal output is exceeded
- Administration of fire protection program requirements such as compensatory actions associated with inoperable sprinkler systems, fire doors, etc.
- Administrative controls listed in Tech Spec Section 5 (or 6 depending on the facility), e.g., shift staffing requirements
- National Pollutant Discharge Elimination System (NPDES) requirements, if applicable
- Processes for Tech Spec and FSAR changes

This category does not include analysis and selection of required actions in tech specs Section 3 and 4 because tech specs is captured in the next topic.

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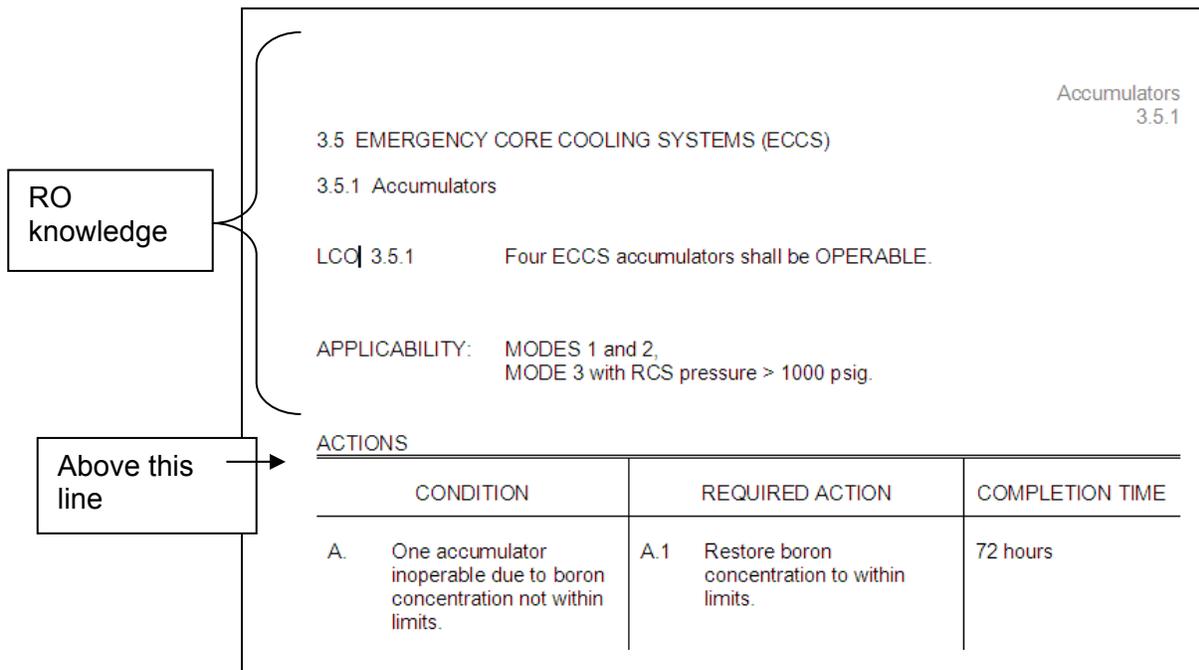
### B. Facility operating limitations in the technical specifications and their bases [10CFR55.43(b)(2)]

Examples of exam items that are unique to the SRO position include:

- Application of required actions (Section 3) and surveillance requirements (Section 4) in accordance with rules of application requirements (Section 1)
- Application of generic LCO requirements (LCO 3.0.1 thru 3.0.7; SR 4.0.1 thru 4.0.4)
- Knowledge of tech spec bases that is required to analyze tech spec required actions and terminology
- Same items listed above for the Technical Requirements Manual (TRM)

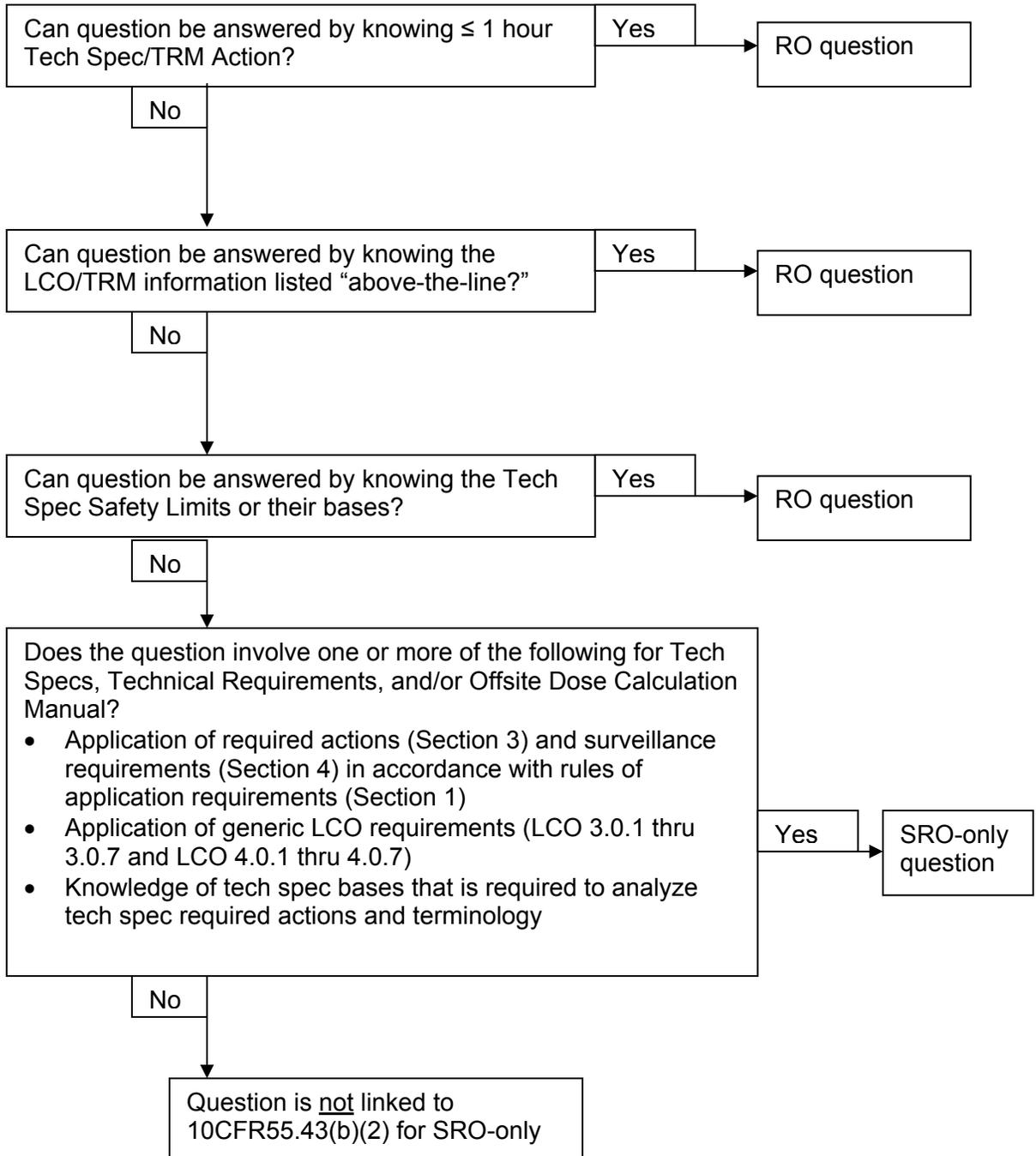
SRO-only knowledge cannot be claimed for questions that can be answered solely based on knowledge of  $\leq 1$  hour action statements or safety limits and bases since ROs are required to know these items.

SRO-only knowledge cannot be claimed for questions that can be answered solely based on RO Tech Spec knowledge. RO's are expected to know the LCO statement, applicability, and any notes i.e., the information above the double line separating the actions from the LCO and applicability statements (standardized tech specs; see example below)



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**Figure 1: Screening for SRO-only linked to 10CFR55.43(b)(2)  
(Tech Specs)**



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- C. Facility licensee procedures required to obtain authority for design and operating changes in the facility [10CFR55.43(b)(3)]

Examples of exam items that are unique to the SRO position include:

- 10CFR50.59 screening and evaluation processes
- Administrative processes for temporary modifications
- Administrative processes for disabling annunciators
- Administrative processes for the installation of temporary instrumentation
- Processes for changing the plant or the plant's procedures

- D. Radiation hazards and contamination conditions that may occur during normal and abnormal situations, including maintenance activities and various contamination conditions [10CFR55.43(b)(4)]

Examples of exam items that are unique to the SRO position include:

- Process for gaseous/liquid release approvals, i.e., release permits
- Analysis and interpretation of radiation and activity readings as they pertain to selection of administrative, normal, abnormal, and emergency procedures.
- Analysis and interpretation of coolant activity, including comparison to emergency plan criteria and/or regulatory limits.

SRO-only knowledge cannot be claimed for questions that can be answered solely based on RO knowledge of radiological safety principles; e.g., RWP requirements, stay-time, DAC-hours, etc.

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E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations [10CFR55.43(b)(5)]

Examples of exam items that are unique to the SRO position include:

- Assessing plant conditions (normal, abnormal, or emergency) and then prescribing a procedure or section of a procedure to mitigate, recover, etc.
- Recalling what strategy or action is written into a plant procedure, including when the strategy or action is required

SRO-only knowledge cannot be claimed for questions that can be answered solely based on “systems knowledge”; e.g.:

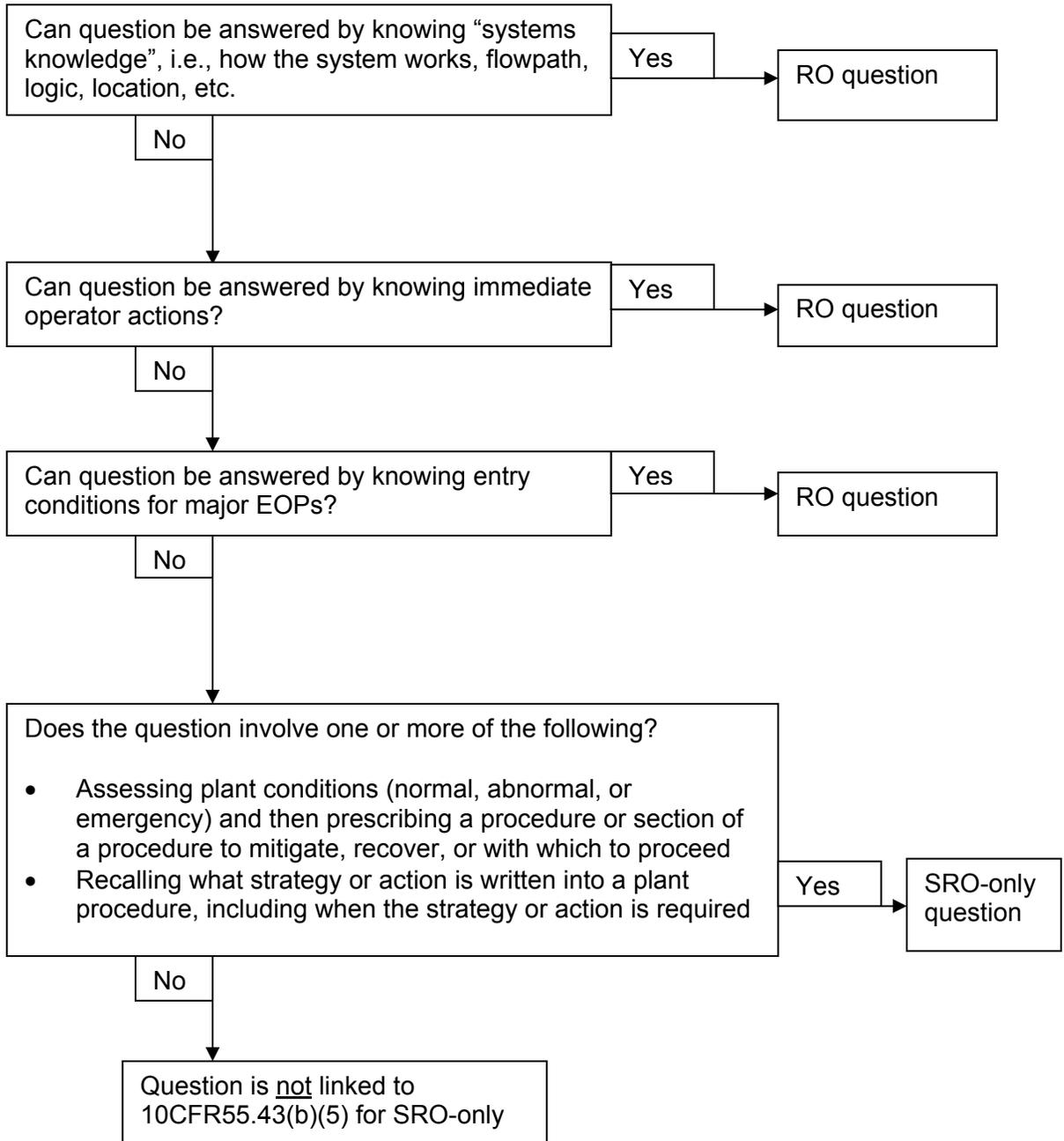
- how the system works
- flowpath
- component locations, etc.

SRO-only knowledge cannot be claimed for questions that can be answered solely based knowledge of:

- immediate operator actions of a procedure or
- entry conditions of all major EOPs, e.g., Westinghouse E0, E1, E2, etc.; General Electric EOP-1, -2, -3, etc.

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**Figure 2: Screening for SRO-only linked to 10CFR55.43(b)(5)**  
**(Procedures)**



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- F. Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external reactivity effects [10CFR55.43(b)(6)]

Examples of exam items that are unique to the SRO position include:

- Evaluating core conditions such as coolant activity and emergency classifications based on core conditions.
- Administrative requirements associated with low power physics testing processes
- Administrative requirements associated with refueling activities, such as approvals required to amend core loading sheets or administrative controls of potential dilution paths and/or activities
- Administrative controls associated with the installation of neutron sources.
- Knowledge of tech spec bases for reactivity controls

- G. Fuel handling facilities and procedures [10CFR55.43(b)(7)]

Examples of exam items that are unique to the SRO position include:

- Refuel floor SRO responsibilities
- Assessment of fuel handling equipment surveillance requirement acceptance criteria
- Vessel disassembly and reassembly
- Decay heat assessment
- Assessment of surveillance requirements for the refueling mode
- Reporting requirements
- Emergency classifications

This does not include items that the RO may be responsible for at some sites such as fuel handling equipment and refueling related control room instrumentation operability requirements, abnormal operating procedure immediate actions, etc. For example, an RO is required to stop the refueling process when communication is lost between the control room and the refueling floor; therefore, this is a task that is both an RO and SRO responsibility and is not SRO-only.

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### III. Justification for Plant Specific Exemptions

The 25 SRO-only questions **must** evaluate the additional knowledge and abilities required for the higher license level in accordance with 10CFR55.43(b). [NUREG 1021, Section ES-401D.2.d]

The fact that a facility licensee trains its ROs to master certain 10 CFR 55.43 knowledge, skills, and abilities does NOT mean that they can no longer be used as the basis for "SRO-level" questions. [OL Feedback Web page Item 401.36]

The SRO-only test item is required be tied to one of the 10CFR55.43(b) items. However, if a licensee desires to evaluate a knowledge/ability that is not tied to one of the 10CFR55.43(b) items, then the licensee can classify the test item as "SRO-only" provided that there is documented evidence that ties the test item to the licensee's systematic analysis of the SRO job position duties.

➤ **Justification:** A question that is not tied to one of the 10CFR55.43(b) items can still be classified as "SRO-only" provided the licensee has documented evidence to prove the fact. Examples of documented evidence include:

- The question is linked to a learning objective that is specifically labeled in the lesson plan as being SRO-only (e.g., some licensee lesson plans have columns in the margin that differentiate AO, RO, and SRO learning objectives) [NUREG 1021, ES-401, Section D.2.d]

OR

- A question is linked to a task that is labeled as an SRO-only task, and the task is NOT listed in the RO task list.

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**IV. Examples of Good SRO-only questions**

**K/A E07 Saturated Core Cooling**

**EA2.2 Ability to determine and interpret the following as they apply to the (Saturated Core Cooling): (CFR: 43.5/ 45.13)**

**Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments 3.3/3.9**

Given the following plant conditions:

A Steam Generator Tube Rupture has occurred.  
Due to equipment failures, the crew is performing actions contained in EOP-4.3, *SGTR with Loss of Reactor Coolant - Saturated Recovery*.

All CSF Status Trees are GREEN with the exception of the following:

- Core Cooling - YELLOW due to RVLIS level
- Inventory - YELLOW due to RVLIS level

Which ONE (1) of the following describes the correct implementation of procedures for this event?

- A. Select another post-SGTR cooldown method IAW EOP-4.0.  
Implementation of Yellow Path procedures is not allowed while in EOP-4.3.
- B. Remain in EOP-4.3 while addressing BOTH Yellow Path procedures.  
The actions of either Yellow Path procedure may be performed.
- C. Select another post-SGTR cooldown method IAW EOP-4.0 and address ONLY the Core Cooling Yellow Path, due to its higher priority.
- D. Remain in EOP-4.3 and address ONLY the Inventory Yellow Path due to conflict between the Core Cooling Yellow Path and EOP-4.3 actions.

***Justification: The question requires the applicant to assess plant conditions and to know the content of procedures in order to select a required course of action. Linked to 10CFR55.43(b)(5)***

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**IV. Examples of Good SRO-only questions (cont'd)**

**K/A 295028 High Drywell Temperature**

**EA2.01 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: (CFR 41.10/ 43.5/ 45.13)**

**Drywell temperature.... 4.0\*/ 4.1\***

Following a small break LOCA on Unit Two (2) the following conditions exist:

Drywell temperature	270°F
Drywell pressure	5.0 psig
Torus pressure	2.5 psig
Torus level	+5 inches
Reactor pressure	395 psig

Containment H<sub>2</sub>O<sub>2</sub> Monitors CAC-AT-4409 & 4410 are not available at this time. Chemistry has been notified but they have not yet sampled the drywell.

Which **ONE** of the following procedures provides the required actions that mitigate these plant conditions?

- A. SEP-05, Primary Containment Purging.
- B. SEP-10, Circuit Alteration Procedure (section 4, Defeating Drywell Cooler LOCA Lockout)
- C. SEP-03, Suppression Pool Spray Procedure.
- D. SEP-02, Drywell Spray Procedure.

***Justification: The question requires the applicant to assess plant conditions and to know the content of procedures in order to select a required course of action. These procedures are not major EOPs, i.e., they are supplementary emergency procedures directed from within the major EOP. Linked to 10CFR55.43(b)(5).***

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**IV. Examples of Good SRO-only questions (cont'd)**

**K/A 072 Area Radiation Monitoring System**

**AA2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the ARM system- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR:41.5/43.5/43.3/45.13) Detector Failure 2.8/2.9**

The following radiation monitors were declared inoperable yesterday:

- RE-2565A, Containment Particulate Monitor
- RE-2565B, Containment Iodine Monitor
- RE-2565C, Containment Gaseous Monitor

Today, Unit 1 is heating up with  $T_{avg}$  at 300°F when RE-003, Containment Area Low Range Monitor, is declared inoperable due to a detector failure.

Given these current conditions, which ONE of the following identifies whether the LCO for Tech Spec 3.3.6, Containment Ventilation Isolation Instrumentation, is currently satisfied and, if not, also identifies the minimum actions required to satisfy the LCO without reliance on any action statement?

- A. LCO 3.3.6 is met  
No action statements are required to be entered.
- B. LCO 3.3.6 is NOT met.  
Performing maintenance and declaring RE-2565A operable will allow all action statements to be exited.
- C. LCO 3.3.6 is NOT met.  
Performing maintenance and declaring RE-2565B operable will allow all action statements to be exited.
- D. LCO 3.3.6 is NOT met.  
Performing maintenance and declaring RE-003 operable will allow all action statements to be exited.

***Justification: The question has been linked to tech specs instead of procedures (note the A2 K/A statement). The correct answer also requires the applicant to know information in the tech spec bases. SRO-only linked to 10CFR55.43(b)(5).***

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**IV. Examples of Good SRO-only questions (cont'd)**

**K/A G2.2.7 Knowledge of the process for making changes in procedures as described in the safety analysis report: (CFR: 43.5/45.13)**

Which ONE of the following identifies the minimum required evaluations for a new test procedure which is not described in the FSAR and requires a change to technical specifications in accordance with 00056-C, 10CFR50.59 Screening and Evaluations?

- A. A 10CFR50.59 screening is required, but no evaluation is needed because the test will be classified as “screened out.”
- B. A 10CFR50.59 evaluation is required with Plant Review Board approval. NRC approval is not required.
- C. A 10CFR50.59 evaluation and a license amendment are required regardless of the effect on the risk to the public
- D. A 10CFR50.59 evaluation and a license amendment are required only if there is an increased risk to the public

***Justification: The question is linked to one of the duties unique to the SRO position, i.e., 10CFR55.43(b)(5). (Procedures used to obtain authority for design and operating changes to the facility) This is also supported by the RO importance rating for this generic K/A statement = 2.0***

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**IV. Examples of Good SRO-only questions (cont'd)**

**K/A 027 Pressurizer Pressure Control Malfunction**

**G2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls: (CFR: 41.10/ 43.2/ 45.6)  
....RO 4.0/SRO 4.0**

Unit 1 plant conditions are:

- 80% power
- Seat leakage exists on PORV 1-RC-PCV-1456 estimated at 10.5 gpm
- PORV 1456 is in automatic control
- Block valve 1-RC-MOV-1535 is closed, with power available

Subsequently, 1-RC-PCV-1455C spuriously opened and cannot be closed. RCS pressure is 2200 psig and slowly decreasing with all pressurizer heaters on.

Which ONE of the following lists required actions per 1-AP-44, "Loss of Reactor Coolant System Pressure", and Technical Specifications?

- A. Enter 1-E-0, Reactor Trip or Safety Injection, while continuing with 1-AP-44. Be in Mode 3 within 6 hours and Mode 4 within 12 hours.
- B. Close and maintain power to block valve 1-RC-MOV-1536 within 1 hour. Restore pressure to within limits within 2 hours.
- C. Close block valve 1-RC-MOV-1536 and remove power within 1 hour. Restore 1-RC-PCV-1455C operable within 72 hours.
- D. Close and maintain power to block valve 1-RC-MOV-1536 within 1 hour. Be in Mode 3 within 6 hours and Mode 4 within 12 hours.

***Justification: The question requires the applicant to apply tech specs in the second half of the question. SRO-only linked to 10CFR55.43(b)(2)***

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**V. Examples of UNSATISFACTORY SRO-only questions**

**K/A: 008AA2.22: Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident (CFR: 43.5 / 45.13): Consequences of loss of pressure in RCS; methods for evaluating pressure loss. 3.8/4.2**

- A pressurizer steam space LOCA has caused PPLS and SIAS actuation.
- CETs are stable at 550 °F.
- RCS pressure is stable at 1300 psia.
- Pressurizer level is 20% and rising.
- HPSI flow is 390 gpm.

With no operator action and assuming temperatures remain constant, how will pressurizer level, pressurizer pressure, and HPSI flow respond?

- A. Pressurizer level will stabilize slightly above 20%, pressure will lower and HPSI flow will increase.
- B. Pressurizer level will rise to 100% , pressure and HPSI flow will remain constant.
- C. Pressurizer level will rise to 100%, pressure will rise and HPSI flow will decrease.
- D. Pressurizer level will stabilize slightly above 20%, pressure will rise and HPSI flow will decrease

***The question stem does not link to one of the seven 10CFR55.43(b) statements even though the K/A is linked to 10CFR55.43(b)5. The question only tests assessment of plant conditions. An RO is expected to understand integrated system response. Unsatisfactory SRO-only question.***

**K/A G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation (CFR 43.5 / 45.12 / 45.13)..... RO 3.7/ SRO 4.4**

Reactor power is 29% during a reactor startup when the reactor operator trips the main turbine due to high vibration. Which one of the following identifies the required procedures?

The SRO should now anticipate implementing procedures that will:

- A. Maintain reactor power less than 29% since power will increase after the main turbine trip
- B. Recover from the reactor scram caused by the turbine trip
- C. Recover vessel level using the feed and condensate system
- D. Scram the reactor

***The question is asking for plant response and what to do about it, NOT selection or application of a procedure. An applicant can answer the question using integrated plant and system knowledge, i.e., knowledge that is not unique to the SRO.***

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### VI. Questions & Answers regarding SRO-only test items

Q#1 [OL Feedback Item 401.36]: According to ES-401, the 25 "SRO-level" questions on the written examination shall be derived from the seven areas in 10 CFR 55.43. However, this guidance is sometimes being misinterpreted such that questions testing 10 CFR 55.43 topics are being rejected as "SRO-level" if the facility licensee also expects ROs to possess the same 10 CFR 55.43 knowledge. Is it correct to say that an "SRO-level" question is simply different from the questions on the RO examination and related to one of the seven items listed in 10 CFR 55.43 (b)?

A#1 [OL Feedback Item 401.36]: The fact that a facility licensee expects its ROs to master certain 10 CFR 55.43 knowledge, skills, and abilities does not mean that they can no longer be used as the basis for "SRO-level" questions. However, ES-401 also requires questions to be "appropriate for the job level being examined." Therefore, "SRO-level" questions need to be carefully constructed to ensure that they accurately test the additional knowledge and abilities required for the higher license level according to 10 CFR 55.43(b). For example, both 10 CFR 55.41(b)(10) and 55.43(b)(5) require emergency operating procedure (EOP) knowledge, but the latter requires the "SRO-level" questions to evaluate the additional knowledge and abilities necessary for "assessment of facility conditions and selection of appropriate procedures during ... emergency situations." Questions that evaluate the knowledge of specific bases for EOPs and/or the operational implications of EOP cautions, but not the higher level "assessment and selection" knowledge, would generally not be valid "SRO-level" questions because they are applicable only to 10 CFR 55.41(b)(10) according to K/A numbers 2.4.18 and 2.4.20 of NUREGs-1122 and -1123. However, questions that evaluate K/A number 2.4.21 (knowledge of the parameters and logic used to assess the status of EOP safety functions) would generally be considered valid "SRO-level" questions even if the facility licensee's SAT-based program has identified this additional 10 CFR 55.43(b)(5) knowledge as an RO job requirement. Consequently, questions that test knowledge and abilities per 10 CFR 55.43(b) can be considered "SRO-level" per Section D.2.d of ES-401 even though the facility licensee's training program requires the same level of knowledge for its ROs.

Q#2: Do learning objectives have to be annotated in facility licensee lesson plans as "SRO only" if a written test item is developed for a topic related to these learning objectives? (*Versus the list of 10CFR55.43(b) topics*)

A#2 Yes. For example, some licensee lesson plans have columns in the margin that differentiate AO, RO, and SRO learning objectives. If lesson plans do not specifically identify SRO learning objectives, then the test item must be tied to one of the 10CFR55.43(b) items. However, the test item could be tied to the licensee's systematic analysis of the SRO job position duties, i.e., the task list. However, the task cannot be duplicated in the RO task list.

Q#3: Student comments after the exam was that the 25 SRO questions felt like 50 questions - because of the two part questions. What's the general philosophy on trying to match K/A here with these SRO only questions?

A#3: Write a question that matches the K/A AND incorporates an element from 10CFR55.43b; e.g., you may be able to write a question that requires knowledge of system parameters AND tech specs.

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**VI. Questions regarding SRO-only questions (cont'd)**

Q#4: Don't SRO only written test items developed by the Region inappropriately mix two different concepts when they require the applicant to provide a system knowledge answer response and a tech spec application answer response for the same test item? (*Limiting a question to one concept or topic is a generic psychometric principle listed in NUREG 1021, Appendix B. Licensee post exit interviews with applicants have indicated that the 25 SRO only questions "feel" like 50 different questions and are sometimes confusing.*)

A#4: Just because the question response requires system knowledge and a Tech Spec knowledge doesn't necessarily mean it is testing two different concepts. For example, in order to apply a tech spec instrumentation LCO, knowledge of the instrument's redundancy, function, or location may be required.

Q#5: What Tech Specs, and what elements of Tech Specs, are testable for RO applicants?

A#5: RO applicants are responsible to know all of the:

- information listed above the page division line (i.e., modes, operability items, and modifying notes) which separates the limiting condition of operation from the action statements in standardized format editions of technical specifications;
- action statements with completion times of  $\leq 1$  hour; and
- Tech Spec Safety Limits, including the bases associated with these safety limits.  
Note: Licensees that have customized Tech Specs do not have the bold "page division line" that separates the action statement from the limiting condition of operation.

Q#6: Is there a difference between "one hour or less" versus "less than 1 hour?"

A#6: These are considered the same thing.

Q#7: Take for example we have standardized Tech Specs, we must have 2 trains OPERABLE and OPERABLE is further defined in the bases. Are they (ROs) required to know OPERABLE as listed in the bases?

A#7: No.

Q#8: Does 1 hour or less mean that we have to know every part of a given Tech Spec? Because it has some subsequent action statements, (e.g., 3.0.3 and immediately,) that fall into the "immediately" category

A#8: No.

Q#9: Does this shift on RO Tech Spec required knowledge mean that you're going to change the definition or your philosophy of when a reference is provided? If the RO has to know the mode when required does this mean a reference is not provided?

A#9: Yes. Depends on the question too.

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**VI. Questions regarding SRO-only questions (cont'd)**

Q#10: [OL Feedback Item 301.2] - Our experience has been that we are told ALL items of 10 CFR 55.45 and 55.43(b) must be sampled. If 100% of sampling for topics in 55.45(a) is not required, is there a definition of representative sample? What is meant by a "representative sample" of the 13 items identified in 10 CFR 55.45(a)?

A#10: Section B of ES-301 states that all 13 items in 10 CFR 55.45 do not need to be sampled on every operating test. Although NUREG-1021 does not include a similar statement with regard to the written examination, the same policy still applies. In accordance with Section D.1.b of ES-401, the topics for the written examination are to be systematically selected from the appropriate Knowledge and Abilities Catalog (NUREG-1122 or 1123). Although the NRC has not developed a definition of a "representative sample," logic dictates that it should include a reasonably complete, thorough, balanced, and varied cross-section of the items in the population to be sampled. All of the items should be sampled from time to time, and, absent a basis for emphasizing certain items, it is expected that every item would be sampled at about the same frequency. An examination constructed in accordance with NUREG-1021 will normally contain a "representative sample" of the required items.

Q#11: The list of topics for SROs in 10CFR55.43(b) includes topics that are RO K/A statements with an importance rating greater than 2.5. How can we say that the 10CFR55.43(b) topics are "SRO-only" if the RO's also have K/A statements associated with these topics?

A#11: The list of SRO topics listed in 10CFR55.43(b) must be targeted and focused towards those job responsibilities that are unique to the SRO position. For example, the first topic listed in 10CFR55.43(b) is "Conditions and Limitations of the Facility License." There is also a generic K/A statement (PWR G2.2.38 RO importance rating 3.6) associated with this topic. However, the SRO-only question must target knowledge associated with this topic that the RO is not required to know, i.e., reporting requirements when the maximum licensed thermal output is exceeded; fire protection program requirements; security/safeguards procedures and/or protocols, e.g., vital & controlled access, sabatoge, etc.; administrative controls listed in Tech Spec Section 5 (or 6 depending on the facility), e.g., shift staffing requirements; National Pollutant Discharge Elimination System (NPDES) requirements; Accident bases and operational commitments in the FSAR.