401-9 Reviews

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Goals

- Discuss ES-401-9 reviews, including:
  - expectations for the initial quality of the written exam submittal
  - criteria used to determine enhancement vs. unacceptable
- Review examples of the types of changes required for written questions
- Discuss the implications of a draft submittal which is outside the acceptable quality range

Region II's expectations for the quality of the draft written exam

If the examination was prepared by the facility licensee, it shall be independently reviewed by a supervisor or manager before it is submitted to the NRC's regional office for review and approval in accordance with ES-201. The reviewer should evaluate the examination using the criteria on Form ES-401-6 and include the signed form in the examination package submitted to the NRC. Facility licensees are responsible for ensuring that contractor-prepared examinations meet the guidelines specified herein and are encouraged to verify the origins of the questions used to construct the examination. ES-401, Section E.1

Examinations that are written by the NRC shall be clean, properly formatted, and "ready-to-administer" before they are reviewed with the facility licensee. The region shall not rely on the facility licensee to ensure that the quality of the examination is acceptable for administration. ES-401, Section E.2.e

ES-401-9 reviews

When providing feedback to the facility licensee regarding unacceptable questions, the chief examiner shall, at a minimum, *explain* how the Appendix B psychometric quantitative and qualitative attributes are not being met.
For example, if the question is determined to have more than one implausible distractor, the attendant explanation shall articulate the reasons the examiner believes each of the faulty distractors is not credible.

ES-401, Section E.2.e

ES-401-9 reviews

k. If the facility licensee developed the examination, the licensee will generally make any necessary changes as agreed upon with the NRC; however, the NRC retains final authority to approve the examinations.

ES-201, Sect C.1.k

d. There are no minimum or maximum limits on the number or scope of changes the regional office may direct the author or facility contact to make to the proposed examinations, provided that they are necessary to make the examinations conform with established acceptance criteria.

ES-401, Section E.2.d

ES-401-9 reviews

The facility licensee shall meet with the NRC in the regional office or at the facility, as necessary and appropriate, to review the examinations and discuss potential changes.

ES-201, Sect C.1.j

The chief examiner may conduct the examination review via telephone, in the regional office, or at the facility, as appropriate to the circumstances, depending on the extent of the changes, and as approved by the responsible regional supervisor (refer to Item C.2.f).

ES-201, Section C.3.g

After reviewing the examination with the facility licensee, the chief examiner will ensure that any comments and recommendations are resolved and the examination is revised as necessary. If the facility licensee developed the examination, it will generally be expected to make whatever changes the NRC recommends.

ES-401, Section E.2.f

How the NRC determines that a question is "unacceptable"

All unacceptable flaws identified by using Form ES-401-9 (including questions that do not match the intent of the approved K/A, have more than one implausible distractor, or are intended as SRO-only questions but are not at the SRO license level as discussed in Section D.2.d) shall be corrected by rewriting or replacing the questions before the examination is administered. Questions that do not match the intent of the approved K/A statement, but are otherwise good questions, shall, nonetheless, be replaced with questions that match the K/A. Other flaws of a less serious nature (e.g., editorial clarifications or enhancements, single implausible distractors) should still be corrected before the examination is administered, but they will not be categorized as unacceptable for purposes of documentation in the examination report in accordance with Section E.3 of ES-501, "Initial Post-Examination Activities.

ES-401, Section E.2.d

Assessment of the RO and SRO exams

- The NRC will evaluate the submitted written examination questions (RO and SRO questions shall be considered separately) using the guidance in Sections E.2-3 of ES-401 to determine the percentage of submitted questions that required replacement or significant modification or that clearly did not conform with the intent of the approved K/A statement. Any questions that were deleted during the grading process, or for which the answer key had to be changed, will also be included in the count of unacceptable questions.

ES-501, Section E.3.a

How the NRC determines that a question is "unacceptable"

- Unacceptable if:
  - Two non-plausible distracters
  - K/A mismatch
  - Not at the SRO level
  - Question had to be deleted during the grading process (i.e., no correct answer)
  - Question required a change to the answer key (i.e., two correct answers or a different answer)

“Before” and “After” Examples

065 AK3.04 015

Which ONE of the following identifies the pressure that Aux Air Compressor B-B starts and 0-FCV-32-85 "Train B Control Air Supply" closes on a loss of pressure in the Control & Service Air system and why?

A. B-B starts at 77 psig and 0-FCV-32-85 closes at 69 psig to ensure ABGTS will have a reliable source of instrument air under all design basis accident conditions.

B. B-B starts at 77 psig and 0-FCV-32-85 closes at 50 psig to ensure that a leak in the Essential air header in CNMT will **not** effect the Control Room Vent Dampers during accident conditions.

C. B-B starts at 90 psig and 0-FCV-32-85 closes at 69 psig to ensure that a reliable source of air is provided to the MFW regulation valves during all postulated transient conditions.

D. B-B starts at 90 psig and 0-FCV-32-85 closes at 88 psig to ensure that a reliable source of breathing air provided to personnel working in airborne contaminated environments.

Tier: 1 **Group** 1

K/A: 065 AK3.04
Loss of Instrument Air
AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air:
Cross-over to backup air supplies.

Before

15. Given the following:

- Both units are operating at 100% power.
- A loss of control air is occurring.
- All available Station Control & Service Air Compressors and both Auxiliary Air Compressors have started and loaded.

Which ONE of the following identifies the pressure that 0-FCV-32-82 "Train A Control Air Supply" and 0-FCV-32-85 "Train B Control Air Supply" will close as the pressure in the Station Control & Service Air System drops and why?

A. At 69 psig to ensure control air is provided to the essential components for safe shutdown.

B. At 69 psig to prevent exceeding containment design pressure in the event of a design bases accident when the air leak is inside containment.

C. At 50 psig to ensure control air is provided to the essential components for safe shutdown.

D. At 50 psig to prevent exceeding containment design pressure in the event of a design bases accident when the air leak is inside containment.

After

024 AA2.01 083

Given the following:

- A Reactor Trip occurred on Unit 1.
- The crew initiates emergency boration in accordance with EA-68-4, Section 4.2, "Emergency Boration from BAT" due to multiple stuck rods.
- After placing 1-HS-62-138A, Emergency Boration FCV in OPEN direction, the OATC released the handswitch after observing flow indicated on 1-FI-62-137A, Emerg Boration Flow.
- Three minutes later, the OATC observed both the RED and GREEN lights LIT on1-HS-62-138A and flow stable at 40 gpm on 1-FI-62-137A.

Which ONE of the following identifies the status of the required emergency boration and the actions required?

A. 1-FCV-62-138 should be full open but the breaker has tripped. EA-68-4 Section 4.3, "Emergency Boration from RWST" is required to be implemented to inject the required number of gallons from the RWST.

B. 1-FCV-62-138 should be full open but the breaker has tripped. EA-68-4 Section 4.3, "Emergency Boration from RWST" is required to be implemented to raise the RCS boron concentration to the concentration required for shutdown margin.

C. 1-FCV-62-138 stopped opening when the handswitch was released and the current flow would be continued until the required number of gallons of boric acid have been injected in accordance with EA-68-4, Section 4.2

D. 1-FCV-62-138 stopped opening when the handswitch was released and the flow is less than the minimum required. Handswitch would be used to further open the valve and flow continued until the required number of gallons of boric acid have been injected in accordance with EA-68-4, Section 4.2

Tier: 1 **Group** 2

K/A: 024AA2.01
Emergency Boration
Ability to determine and interpret the following as they apply to the Emergency Boration:
Whether boron flow and/or MOVs are malfunctioning, from plant conditions

Before

83. Given the following:

- Unit 1 was operating at 100% power near EOL when a Reactor Trip occurred.
- While performing ES-0.1, "Reactor Trip Response," the crew initiated EA-68-4, Section 4.2, "Emergency Boration from BAT" due to low RCS temperature.
- After placing 1-HS-62-138A, Emergency Boration FCV to the OPEN position, the OATC immediately released the handswitch as soon as minimum required flow was observed on 1-FI-62-137A, Emerg Boration Flow.

Which ONE of the following identifies...

(1) the indicating light(s) that will be lit on 1-HS-62-138A five minutes after the handswitch was released

and

(2) whether one operable BAT (alone) has sufficient volume to satisfy the SDM requirement for maintaining the unit in Mode 5, in accordance with Technical Requirement 3.1.2, Boration Systems, basis?

A. (1) RED indicating light, only.
(2) One BAT can meet the requirement.

B. (1) RED indicating light, only.
(2) One BAT will **NOT** meet the requirement.

C. (1) Both the RED and GREEN indicating lights lit.
(2) One BAT can meet the requirement.

D. (1) Both the RED and GREEN indicating lights lit.
(2) One BAT will **NOT** meet the requirement.

After

073 A4.02 051

Given the following:

- U-1 operating at 100% power.

0900 - 1-RA-90-119A, "CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD" alarms.
0905 - The following radiation monitor trends are noted:
Condenser Vacuum Exhaust Rad Monitor,1-RM-90-119 trending up.
In service SGBD Rad Monitor, 1-RM-90-120 stable.
0910 - Reactor Trip and Safety Injection are manually initiated due to rapidly lowering Pressurizer level.

Which ONE of the following identifies ...:

(1) why 1-RM-90-120 trend would be stable at 0905.

and

(2) how SGBD Containment Isolation Valves would be positioned to allow Chemistry to take a sample after the safety injection occurred?

A. (1) Because SGBD isolates on High Radiation.
(2) Closed.

B. (1) Because SGBD isolates on High Radiation.
(2) Open.

C. (1) Because of the SGBD piping transport time.
(2) Closed.

D. (1) Because of the SGBD piping transport time.
(2) Open.

Tier: T2 **Group** 1

K/A: 073 Process Radiation Monitoring System
A4.02 Ability to manually operate and/or monitor in the control room:
Radiation monitoring system control panel

Before

51. Given the following:

- U-1 operating at 100% power.

0900 - "1-RA-90-119A CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD" (M12A, C-1) alarms.
0905 - The following radiation monitor trends are noted:

Condenser Vacuum Exhaust Rad Monitor,1-RM-90-119 trending up.
SGBD Rad Monitor, 1-RM-90-120 stable.

0910 - Reactor Trip and Safety Injection are manually initiated due to rapidly lowering Pressurizer level.

Which ONE of the following identifies ...

(1) why 1-RM-90-120 trend is stable at 0905

and

(2) where the SGBD sample lines tap off the SGBD system?

A. (1) SGBD isolates on High Radiation.
(2) Upstream of the inside SGBD CNMT isolation valves.

B. (1) SGBD isolates on High Radiation.
(2) Downstream of the inside SGBD CNMT isolation valves.

C. (1) SGBD piping transport time.
(2) Upstream of the inside SGBD CNMT isolation valves.

D. (1) SGBD piping transport time.
(2) Downstream of the inside SGBD CNMT isolation valves.

After

31. Which one of the following predicts the response of the Lube Oil Temperature Control Valve (TCV) as DG3 load is increased?

Initially the DG3 Lube Oil temperatures to the heat exchanger will __(1)__ and the Lube Oil TCV will throttle __(2)__.

A. (1) rise
(2) closed

B. (1) rise
(2) open

C. (1) lower
(2) closed

D. (1) lower
(2) open

Feedback

K/A: 264000 A1.01
Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including:
Lube oil temperature
(CFR: 41.5 / 45.5)

Before

31. 264000 A1.01 002

During monthly load testing of DG3, engine outlet lube oil temperature stabilizes at 182° F. A manual adjustment to LO-TCV-2077, Lube Oil Automatic Temperature Control Valve, causes DG3 to trip and lockout on high lube oil temperature.

Prior to the lockout being reset, a line break in the drywell results in the following plant conditions:

RPV water level	+40 inches
RPV pressure	430 psig
Drywell pressure	14.5 psig
Bus E3	Energized from Off-Site power

Which one of the following would be the response of DG3?

DG3 will:

A. ✓ auto start and run with no operator action.

B. auto start only after the lockout relay is manually reset.

C. remain tripped because no auto start signal is present.

D. remain tripped because of the high lube oil temperature trip.

After

90. The following plant conditions exist on Unit Two:

- An ATWS with a spurious Group I Isolation has occurred
- HPCI is injecting to the RPV to maintain RPV level
- *SUPPRESSION CHAMBER LVL HI-HI* is in alarm

Which one of the following identifies the action required for long term HPCI system operation and the reason for this action?

When suppression pool temperature reaches 140°F, __(1)__ to prevent __(2)__.

A. (1) lower HPCI flow to less than 2000 gpm IAW LPC
(2) pump bearing damage

B. (1) lower HPCI flow to less than 2000 gpm IAW LPC
(2) a loss of NPSH

C. (1) defeat the automatic suction transfer logic and transfer HPCI suction to the CST IAW SEP-10
(2) pump bearing damage

D. (1) defeat the automatic suction transfer logic and transfer HPCI suction to the CST IAW SEP-10
(2) a loss of NPSH

K/A: 295029 G2.01.07
Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
High Suppression Pool Water Level
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

Before

90. S295029 G2.01.07 002

The following plant conditions exist on Unit Two:

- An ATWS with a spurious Group I Isolation has occurred
- HPCI is injecting to the RPV to maintain RPV level
- *SUPPRESSION CHAMBER LVL HI-HI* is in alarm

Which one of the following identifies:

(1) the reason that HPCI is re-aligned from its current suction source and
(2) the procedure that contains the steps to perform the actions to transfer the HPCI suction valves?

A. (1) To prevent pump bearing damage
(2) 2OP-19, High Pressure Coolant Injection System Operating Procedure

B. (1) To prevent pump bearing damage
(2) SEP-10, Circuit Alteration Procedure

C. (1) To prevent HPCI exhaust check valve damage
(2) 2OP-19, High Pressure Coolant Injection System Operating Procedure

D. (1) To prevent HPCI exhaust check valve damage
(2) SEP-10, Circuit Alteration Procedure

After

Implications of submitting "unacceptable" questions

- IF > 20% of the questions were unacceptable THEN the exam report must state that the overall submittal was outside the acceptable quality range expected by the NRC
  - RO and SRO exams assessed separately
- Lessons learned must be incorporated in the exam bank and not repeated for next exam submittal
- Could lead to a IP 41500 inspection, delay in exam administration, or NRC may write the exam

Questions?

- Discuss ES-401-9 reviews, including:
  - expectations for the initial quality of the written exam submittal
  - criteria used to determine enhancement vs. unacceptable
- Review examples of the types of changes required for written questions
- Discuss the implications of a draft submittal which is outside the acceptable quality range