

# LORT Written Exam

Requirements and Observations

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# WARNING

The topic we are about to cover requires subjective judgment.

This means:

- If there is more than 1 person, there is a difference of opinion
- If there is a difference of opinion there must be discussions
- Even after discussions, there may be difference of opinion

# 71111.11-03 General Guidance

Regarding requalification examinations, each licensed operator at a facility must, in accordance with 10 CFR 55.59(a), pass a comprehensive (biennial) written examination and an annual operating test. However, in order for the requalification examinations to be an effective tool for evaluating licensed operator performance, it is necessary that facility licensees develop and administer these examinations in accordance with accepted standards<sup>4</sup>.

## 71111.11-03 General Guidance Note 4

Industry or self-imposed standards for requalification examinations can be found, as applicable, in facility licensee procedures, industry accreditation guidelines, NUREG-1021, and 10 CFR 55. The standard(s) applicable to a particular facility licensee do not necessarily constitute regulatory requirements; however, failure to meet a standard may establish the basis for a performance deficiency. The Appendices of this IP, where performance deficiencies are identified based upon not meeting certain metrics, were developed from these standards.

Requalification Written Examination Question Review Worksheet from 71111.11 Appendix B Page B-2

Written examination reviewed or date administered:

Q#	1. LOD (1-5)	2. Question Flaws						3. Q flawed or not flawed? (F/NF)	4. Explanation
		LOD	Direct L/U	Correct Answer	Cues	T/F	Cred. Dist.		

Instructions:

1. Enter the level of difficulty (LOD) of each question using a 1-5 (easy – difficult) rating scale.
2. Check the appropriate block if a question flaw is identified:

The question's level of difficulty is inappropriate (LOD = 1 too easy; LOD = 5 too hard).

The question is a direct look-up, which only requires an examinee to recall where to find the answer (see NUREG-1021, ES-602 Attachment 1 for additional guidance). The question has no correct answer or more than one correct answer.

Short-answer questions must contain objective scoring, with clear guidance on granting partial and full credit.

In addition, check the following items for all multiple choice questions (see NUREG-1021, Appendix B):

The stem or answer choices contain cues as to the correct answer (i.e., clues, specific determiners, phrasing, length, etc.)

The answer choices are a collection of unrelated true false statements such that the question can be answered correctly without reading the question stem. Two or more distractors are not credible. For open-reference questions, distractors should be judged as if the question was closed-reference.

3. Based on review item 2 above, the question as written is either flawed (F) or not flawed (NF).
4. Provide a brief explanation for all questions that are determined to be flawed (F).

# NUREG Guidance (ES-602, Att. 1)

- **Examination Validity**
- **Level of Knowledge**
- **Operational Orientation**
- **Question Novelty**

# NUREG Guidance (ES-602, Att. 1, Page 13 of 27)

## **Direct Look-up Questions**

The key phrase here, “direct lookup,” conveys the meaning that little mental activity is involved other than simply copying an answer that is readily available in a reference (i.e., simple recall of where to find the information). Merely omitting from the item stem any mention of where to find the answer does not make it an acceptable open-reference question.



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Questions that do not require any analysis, synthesis, or application of information by the applicant should be answerable without the aid of reference materials.



# EXAMPLE ONE

Given the following conditions:

- The Plant is at full power
- 'A' Train of Control Room HVAC (CRHVAC) is in service in Normal Mode
- EK-0239, "CR HVAC TRAIN A RIA-1818A HI RAD/FAIL." annunciates
- Investigation into this alarm determines that RIA-1818A, Control Room Continuous Air Monitor for 'A' Train of CRHVAC has failed and CANNOT be immediately repaired.

Based on the above conditions, which one of the following describes whether LCO 3.7.10, "CRV Filtration," is met and the action, if any, that will be taken?

- A. LCO 3.7.10 is NOT met.  
Immediately transfer to 'B' CRHVAC Train in NORMAL Mode per SOP-24, "Ventilation and Air Conditioning System."
- B. LCO 3.7.10 is NOT met.  
Immediately place 'A' CRHVAC Train in EMERGENCY Mode per SOP-24, "Ventilation and Air Conditioning System."
- C. LCO 3.7.10 is met.  
Immediately place 'A' CRHVAC Train in EMERGENCY Mode per SOP-24, "Ventilation and Air Conditioning System."
- D. LCO 3.7.10 is met. No actions are required.

**ANALYSIS:** "C" is CORRECT. This is a direct lookup,

# NUREG Guidance (ES-602, Att. 1)

## Simple memory

- **Can be viewed as recall or recognition of simple bits and chunks of information.**
- **May still be involved when the volume of information increases (i.e., the amount of information is large, but the process is basically simple memorization of more bits of information).**

# ES-602 Att. 1, Page 15 of 27

Complex memory, as the term suggests, involves a higher level of cognitive processing. The bits and chunks of information must now be combined or integrated to create something new, solve a problem, predict a response, or make a decision. Therefore, both the amount of information and what is to be done with it makes the cognitive mental processes complex.

## 71111.11 Appendix B Worksheet

The worksheet also states “In addition, check the following items for all multiple choice questions (see NUREG-1021, Appendix B)”

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# NUREG 1021 APPENDIX B

## WRITTEN EXAMINATION GUIDELINES

Specifically, this appendix addresses the following topics:

- written examination background
- the basic psychometric principles and other guidelines applicable to the question development process
- a checklist for reviewing multiple-choice questions
- examples of questions that illustrate the psychometric principles
- a list of references that provide additional information concerning the development of written examinations



**EXAMPLE**

**TWO**

Given the following plant conditions:

- Reactor power is currently 40%.
- Unit 2 is raising power following maintenance.
- Three (3) Condensate Demineralizers are in service.
- Condensate Demineralizer differential pressure is 55 psid and rising.

Which action is required?

- A. Remove a Condensate Demineralizer from service.
- B. Place a fourth Condensate Demineralizer in service.
- C. Throttle closed the Condensate Demineralizer bypass valve.
- D. Throttle open Condensate Booster pump minimum flow valve.

Answer: B SOLUTION: D/P is too high. Placing an additional service unit on-line will lower D/P within limits. This is discussed in the normal operating procedures.

# 71111.11 and NUREG 1021 Appendix B

## Other Flaws

- Implausible Distractors
- Backward Logic
- Collection of True-False Questions
- Doesn't Meet K/A.
- Not SRO-only.
- Improper Format (Not Multiple Choice)
- More (or less) than One Correct Answer
- Not Relevant
- Question not written at the Comprehension level or greater.



# EXAMPLE THREE

Given the following conditions:

- Unit 2 is being shutdown IAW DGP 2-1
- Reactor pressure is currently at 500 psig and lowering slowly
- Condenser vacuum is 18 inches of Hg and steady
- The 2A RPS Bus is being fed from its reserve power supply
- U-2 Instrument Bus is being fed from its backup transformer

Then a fault in the Instrument Bus causes a fire in the backup transformer and the transformer is rendered inoperable.

Based on these conditions, Unit 2 will \_\_\_\_\_.

- A. receive a full scram signal
- B. receive a half scram on RPS Channel A
- C. receive a half scram on RPS Channel B
- D. continue to operate with no RPS actuation

Answer: A

B and C are also correct. In this case the question needed to be worded such that there was only one answer.

## 71111.11-01 INSPECTION OBJECTIVES

01.03 To assess the facility licensee's ability to properly develop and administer requalification annual operating tests and biennial written examinations.

# 71111.11-02 INSPECTION REQUIREMENTS

02.03 Biennial Requalification Written Examination Quality.  
Assess the adequacy of the facility licensee's biennial written examination.

What is the purpose of the requalification written exam?

10CFR 55.4 Element (4) and (5) answer the question.

10CFR 55.59 further explains the answer:

(4) Evaluation. The requalification program must include —  
(i) Comprehensive requalification written examinations and annual operating tests **which determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.**

# Inspection Manual Guidance

- **0609 Appendix I:**
  - With respect to the quality of individual test items, where there is a degree of reviewer-based subjectivity, a licensee control band of **20%** has been established for a Green Finding.
  - Were greater than **40%** of the reviewed written examination questions flawed is a White Finding

# SUMMARY

Different assumptions for starting points of ILT and LORT exams.

The operator is considered already competent.

Direct Lookup Definition

No difference

Level of Difficulty Definition

No difference



**Any  
Questions**