

LORT EXAMINATION QUALITY

Requirements and Observations

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Why do we assess examination quality?

- Ensure that the examinations meet the requirements of 10 CFR 55.59(a)(2).
- Ensure that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives, as specified in Element (4) of a SAT

How do we assess quality?

- Ensure that facility licensees develop and administer the examinations in accordance with accepted standards.
- 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.

What standards?

- 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.

IP 71111.11 Appendices B and C

The Appendices were developed from these standards.

[IP 71111_11 APPENDIX B.docx](#)

[IP 71111_11 APPENDIX C.docx](#)

LOD

- Assigning a level of difficulty rating to an individual test item is a somewhat subjective process.
 - examination authors and reviewers must “detach themselves” as subject matter experts (SMEs),
 - place themselves in the position of the novice applicant,
 - apply what they know about previous applicants’ performance on similar test items.

Direct Look-up Questions (NUREG 1021; ES-602, Att. 1)

- Little mental activity is involved other than simply copying an answer that is readily available (i.e., simple recall of where to find the information).
- This type of question does not test the understanding or analysis of the information that can be applied on the job.
- This type of question will not discriminate the safe operator from the unsafe operator.

NUREG 1021 APPENDIX B

WRITTEN EXAMINATION GUIDELINES

- Basic psychometric principles and other guidelines applicable to the question development process
- Checklist for reviewing multiple-choice questions
- Examples of questions that illustrate the psychometric principles

SRO ONLY QUESTIONS

- IP 71111.11 does not specifically address SRO ONLY questions.
- NUREG 1021 ES-401 Attachment 2, Clarification Guidance for SRO-only Questions



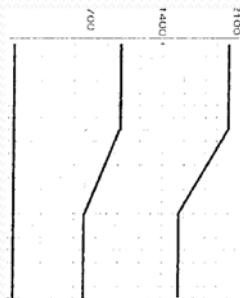
EXAMPLE ONE

Question

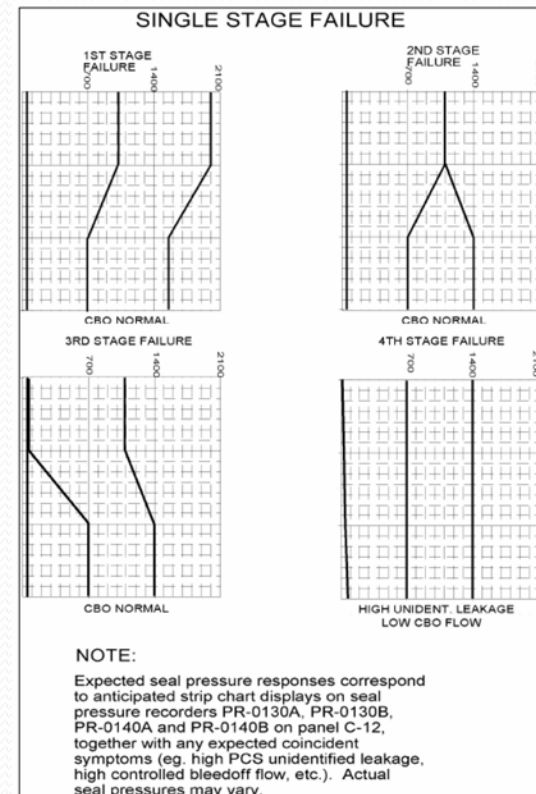
Given the following with the Plant in MODE 3:

- All Primary Coolant Pumps (PCPs) in service
- The Reactor Operator is in the process of adjusting PCP Controlled Bleedoff pressure.
- Alarm EK-0951, "PRJ COOLANT PUMP P-50C SEAL PRESS OFF NORMAL," annunciates.


Based on the above conditions and the below drawing of PR-0140A, PCP, P-50C, Seal Pressure Recorder, which one of the following describes the seal stage that has failed and the expected Controlled Bleed off flow?



Page from ARP



- A. 1st Stage Failure with 0.0 gpm Controlled bleedoff flow.
- B. 2nd Stage Failure with 0.0 gpm Controlled bleedoff flow.
- C. 1st Stage Failure with 1.0 gpm Controlled bleedoff flow.
- D. 2nd Stage Failure with 1.0 gpm Controlled bleedoff flow.



EXAMPLE TWO

Question

The Plant is at full power with Control Rod exercising is in-progress. It is Monday day shift.

- At 1330 control rod 39 is inserted 7.5 inches.
- When the NCO attempts to withdraw control rod 39 it does not move.
- At 1332 the NCO then inadvertently inserts control rod 39 an additional inch and EK-0912, Rod Position 8 Inches Deviation alarms.
- Attempts to withdraw control rod 39 are not successful.

Which ONE of the following describes actions required for these conditions?

- A. Verify peaking factors by 1732
- B. Reduce thermal power to 74% by 1632
- C. Be in MODE 3 by 1932
- D. Raise shutdown margin by boration per EM-04-08

ARP Actions

AUTOMATIC FUNCTION:

- None

OPERATOR ACTION:

- **IDENTIFY** affected Control Rod AND extent of its deviation.
- **COMPARE** affected rod position with secondary rod position.
- IF a dropped Control Rod is evident, THEN **REFER TO AOP-5**.
- IF a dropped Control Rod is NOT evident, THEN:
 - **REPOSITION** affected Control Rod in Manual Individual as necessary to clear alarm per SOP-6.
 - **REFER TO** Technical Specifications LCO 3.1.4.

FOLLOWUP ACTION:

- IF unanticipated or anomalous behavior of the Reactor is observed, THEN **TRIP** Reactor.
- IF a Control Rod is stuck in the withdrawn position, THEN **LIMIT** further motion of affected Control Rod Group to within 8 inches of the stuck rod.
- **NOTIFY** Reactor Engineering.
- **INCREASE** Shutdown Margin by Boration to compensate for inoperable Control Rod per EM-04-08.



EXAMPLE THREE

Question

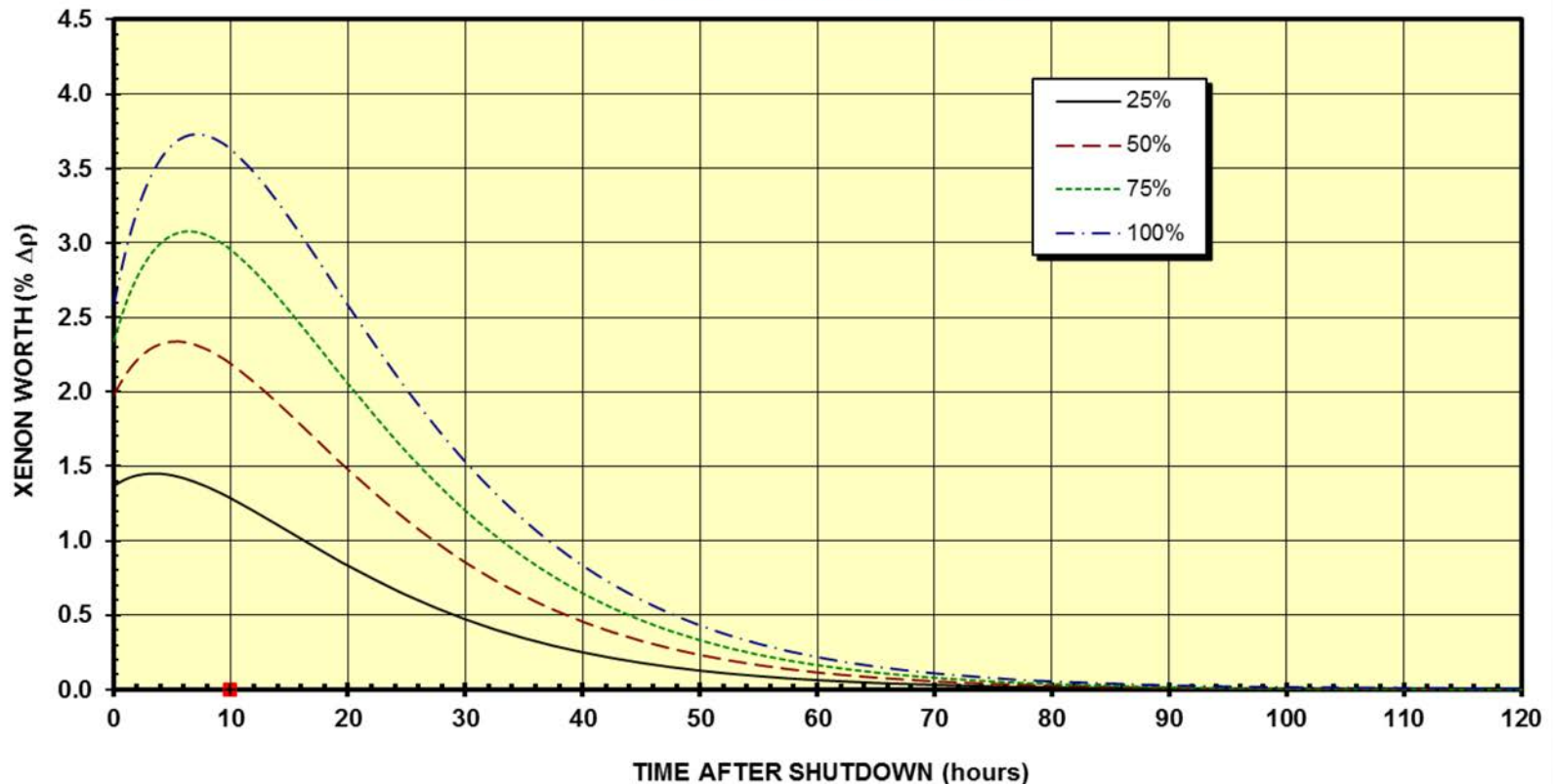
Two identical reactors have been operating at a constant power level for one week. Reactor A is at 100% power and reactor B is at 50% power.

If both reactors trip/scram at the same time, Xe-135 will peak first in reactor _____ and the highest Xe-135 reactivity peak will occur in reactor _____.

- A. A; B
- B. A; A
- C. B; B
- D. B; A

Curve Book Figure

Figure 2.2a: BOC (100 MWd/MTU) XENON WORTH vs TIME
TRIPS FROM VARIOUS POWERS



Question

Instrument Air Compressor, C-2A, is in operation with Instrument Air Compressor, C-2C, in AUTO. Instrument Air Compressor, C-28, is tagged out for maintenance. An air leak caused air header pressure to lower to 85 psig. The air leak was subsequently isolated, at which time header pressure returned to 110 psig.

How would C-2C respond to this instrument air pressure transient? C-2C will. ..

- A. not auto-start during this instrument air transient.
- B. auto-start and continue to run unloaded until placed in OFF and returned to AUTO.
- C. auto-start, but will stop after running unloaded for a period of time.
- D. auto-start and run fully loaded until placed in OFF and returned to AUTO.

Notes from SOP

NOTE: If air header pressure drops to 92 psig, then the compressor selected for AUTO will start and maintain pressure.

NOTE: C-2A will stop after running unloaded for 10 minutes. In this case, the Control Room indication (red light) will remain lit. C-2A will automatically restart and load at 95 psig and will load and unload normally until the compressor stays unloaded for 10 minutes again.

NOTE: C-2A will run unloaded for seven seconds prior to loading when initially started.

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IP 71111_11 APPENDIX C.docx



Sample Appendix C Worksheet

[ip71111_11appC.docx](#)

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
 - IF $\leq 20\%$ of the test items sampled are considered flawed, then these instances will be screened out prior to reaching this SDP
- **GREEN FINDING** – IF the percentage of test items sampled are considered flawed is $> 20\%$, but $\leq 40\%$
- **WHITE FINDING** – IF the percentage of test items sampled are considered flawed is $> 40\%$



Any Questions