

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-315/OL-90-0L

Docket Nos. 50-315; 50-316

Licenses No. DPR-58; DPR-74

Licensee: Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43216

Facility Name: D. C. Cook

Examination Administered At: Bridgeman, Michigan

Examination Conducted: January 29 - February 2, 1990

RIII Examiners:	<u><i>K. Shembarger for</i></u> K. Shembarger	<u>2/12/90</u> Date
	<u><i>D. Shepard for</i></u> D. Shepard	<u>2/12/90</u> Date
Chief Examiner:	<u><i>D. Damon</i></u> D. Damon	<u>2/12/90</u> Date
Approved By:	<u><i>T. Burdick</i></u> T. Burdick, Chief, OLS2	<u>2/12/90</u> Date

Examination Summary

Examination administered on January 29 - February 2, 1990 (Report No. 50-315/OL-90-01) To six Senior Reactor Operator candidates (three retakes) and four Reactor Operator candidates (two retakes).

Results: One reactor operator candidate and one Senior Reactor Operator candidate failed the examinations. All other candidates passed the examinations.

REPORT DETAILS

1. Examiners

*D. Damon
K. Shembarger
D. Shepard

*Chief Examiner

2. Exit Meeting

On February 2, 1990, the examination team met with members of the facility staff to discuss the examination process. The following persons attended the meeting:

A. A. Blind, Plant Manager, IMP
K. Baker, Assistant Plant Manager, IMP
J. R. Sampson, Operations Superintendent, IMP
H. F. Runser, Operations Production Supervisor, IMP
W. R. Burgess, Simulator Supervisor, IMP
J. Stubblefield, Program Administrator, IMP
S. J. Wolf, Senior QA Auditor, AEPSC
B. L. Jorgensen, Senior Resident Inspector, NRC
T. Burdick, OLS Section Chief, NRC
D. Damon, Chief Examiner, NRC
K. Shembarger, Examiner, NRC
D. Shepard, Examiner, NRC

The examiners detailed the following comments:

Weaknesses

- SRO's were weak in Technical Specification application during the simulator examinations.
- Some immediate actions in procedures were not performed correctly or were incompletely performed during the simulator examinations.
- Weaknesses were noted in candidate knowledge of 10 CFR 20 limits and requirements.

General Comments

- Progress in cleanup of contaminated areas in the plant is good. The facility is urged to continue it's efforts.
- Interface between the exam team and members of the security staff and radiation protection staff was extremely smooth.

- Procedure 4022.012.004 (Dropped Rod Recovery) leaves the control rod system in an abnormal configuration if the recovery was unsuccessful. The facility has agreed to review the procedure for possible changes.

ENCLOSURE 2

Facility Comments and NRC Resolution

QUESTION: (SRO ONLY)

007 (2.00)

State the THREE actions to be performed by the Site Emergency Coordinator during a Site Area Emergency that may NOT be delegated.

ANSWER:

007 (2.00)

1. Classification [of emergency] [0.5]
2. Directing the notification [0.5] of offsite officials [0.5]
3. Making protective action recommendations [0.5]

REFERENCE:

PMP.2080.EPP.104, pg. 1 of 4

194001A116

..(KA's)

COMMENT:

Request that "directing notifications" be acceptable for full credit for answer 2. The portion, "of offsite officials," is inferred by directing notifications.

Note, offsite notification of protective action recommendations is also inferred for answer 3 but is not required for full credit.

NRC Resolution:

Comment accepted. Answer key modified.

QUESTION: (RO/SRO)

025 (1.00)

The plant is in Mode 6 and you are dispatched to the Containment to join a 2 man work crew of operators inspecting the No. 11 RCP. Which ONE of the following are you required to contact for authority to enter the containment:

- a. Shift Supervisor
- b. Work Crew Member

c. Security Captain

d. Unit Supervisor

ANSWER:

025 (1.00)

b. [1.0]

REFERENCE:

PMI4010, p2-3

194001K105 . .(KA's)

COMMENT:

The question as stated implies that authorization is required prior to entry (. . . contact for authority to enter the containment). The question is actually testing the candidate's knowledge of proper application of the two man rule for containment access. We are requesting that either answer 3, "Unit Supervisor" or answer b. "Work Crew Member" be accepted for full credit.

NRC Resolution:

Comment partially accepted. Question deleted.

QUESTION: (RO/SRO)

035 (1.00)

LIST the TWO interlocks/permisives which must be satisfied to start a Reactor Coolant Pump. Include setpoints where applicable.

ANSWER:

035 (1.00)

1. Lift oil pressure [0.25], greater than or equal to 510 psig [0.25].
2. Oil lift pump motor starter switch [0.25] must be ON [0.25].

REFERENCE:

RO-C-NS2P, pg. 13.

003000K113 . .(KA's)

COMMENT:

Request that a $\pm 10\%$ be applied to setpoint or a statement that "white light is lit" be acceptable for full credit to keyed answer No. 1.

Request that "oil lift pump is running" be acceptable for full credit as answer to keyed answer No. 2.

REFERENCE:

2-OHP 4021.002.003 Section 6.1.11 which states:

"Start oil lift pump at least two minutes before starting RCP. Observe pressure permissive interlock clears."

NRC RESOLUTION:

Comment not accepted. A range of acceptable answers is standard for values that must be calculated. A well defined setpoint is allowed no tolerance. Since the question was testing the candidate's knowledge of interlock requirements, and not the indications used to verify that interlocks are met, "white light lit" is not accepted for credit.

Since the interlock stated in answer No. 2 is clearly dependent on switch position, answer key remains unchanged.

QUESTION: (RO/SRO)

037 (1.00)

Which ONE of the following is the basis for opening the Reactor Trip Breakers and/or the MG set Output Breakers when cooling down the plant with all shutdown and control rods inserted:

- a. Prevents inadvertent rod withdrawal.
- b. Minimizes stationary coil wear.
- c. Prevents damage to the flux ring in the CRDM.
- d. Prevents mechanical binding of the rods.

ANSWER:

037 (1.00)

d [1.00]

REFERENCE:

OHP 4021.001.004 Paragraph 6.1

COMMENT:

"Key Points" in referenced procedure states:

Prevents mechanical binding of rods during cooldown, prevents rod control system from being capable of rod withdrawal with startup STP's not current. . .

Request that answer (a) "prevents inadvertent rod withdrawal or answer (d) "prevents mechanical binding of rods" be accepted for full credit.

NRC Resolution:

Comment partially accepted. Question deleted.

QUESTION: (RO/SRO)

041 (3.00)

Match the Control Rod System function/purpose in COLUMN A with its associated controlling component(s) in COLUMN B. COLUMN A functions/purposes may have more than one answer. COLUMN B choices may be used more than once or not at all [0.5 each].

COLUMN A	COLUMN B
a. Provides input into the Rod Insertion Limit Circuits.	1. Auctioneered Hi Tavg
b. Provides input into the AUTO Rod Speed Circuits.	2. Auctioneered Hi delta T
c. Controls rod withdrawal and insertion sequence.	3. Group Position Indication [step counters]
	4. Individual Rod Position Indication.
	5. Pulse to Analog Converter
	6. Auctioneered Hi Reactor Power

- 7. Turbine Impulse Pressure
- 8. Bank Overlap Unit
- 9. Master Cyclers
- 10. Slave Cyclers

ANSWER:

041 (3.00)

- a. 2. [0.5], 5. [0.5] 7. [0.5]
- b. 1. [0.5], 6. [0.5]
- c. 8. [0.5]

REFERENCE:

LP RO-C-NS04, TP-2, pg. 10.

001000K403 . .(KA's)

COMMENT:

Request COLUMN A question (c) "Controls rod withdrawal and insertion sequence" to include COLUMN B answer 9, "Master Cyclers." Reference RO-C-NS04, pg. 12 of 25 C.2 which states:

Master Cyclers - Receives pulses from pulser and applies "GO" pulses to 4 slave cyclers to ensure groups w/i a bank move properly. Receives input from bank overlap unit to tell it which bank to move. Master Cyclers then sends "GO" pulses to correct slave cyclers to move the groups sequentially. Is reversible so that if Group 1 is the last to receive out "GO", it will be first to get in "GO".

NRC RESOLUTION:

Comment not accepted. The Bank Overlap Unit is the controlling device that determines which slave cyclers receive a signal from the master cycler. The master cycler itself does not determine which slave cycler receives a signal. The Bank Overlap Unit also biases multiplexor thyristor networks in the power cabinets, thus determining which group receives a signal from the slave cycler. Thus, the Bank Overlap Unit (only) and not the master cycler controls the rod withdrawal and insertion sequence.

Answer key remains unchanged.

QUESTION: (RO/SRO)

062 (1.00)

Which ONE of the following describes actions to be taken for a malfunction of ONE source range channel during a refueling outage (per 1-OHP 4022.013.001, Source Range Malfunction):

- a. Containment Integrity must be maintained until the inoperable source range channel is returned to service.
- b. All operations that could add negative reactivity to the core must be suspended until the channel is returned to service.
- c. Refueling operations must be suspended until the remaining source range channel is verified to be functioning properly.
- d. The audio count circuit must be verified operable and selected to the operable source range channel.

ANSWER:

062 (1.00)

d. [1.0]

REFERENCE:

1-OHP 4022.013.001, pg 2 of 2

COMMENT:

Distractor (c) refueling operations must be suspended . . . is a modification of a subsequent action to make it false. Answer (d) is subsequent action 3 of this procedure. Immediate manual action 2 (4.2.2) states "If refueling is in progress stop all core alterations or positive reactivity changes. This statement is very similar to keyed answer (c). Candidates are only responsible for immediate automatic and manual actions.

Request deletion of question as answer(c) is misleading and very similar to required immediate manual action.

NRC Resolution:

Facility agrees that distractor (c) is false. Comment noted. Answer key remains unchanged.

QUESTION: (RO/SRO)

063 (1.00)

Which ONE of the following statements is MOST accurate concerning the basis for transferring to hot leg recirculation:

A transfer from cold leg recirculation to hot leg recirculation is performed 12 hours following a large break LOCA event because . . .

- a. . . . Cold leg recirculation only fills the downcomer region, and no flushing of the core occurs.
- b. . . . hot leg recirculation is a more effective means of providing boric acid to the core.
- c. . . . heat transfer from the fuel to the reactor coolant is improved during hot leg recirculation, since in this mode, cooler water enters the core.
- d. . . . cold leg recirculation allows for boron precipitation on the control rods, which reduces the rod worth and resultant shutdown margin.

ANSWER:

063 (1.00)

a.

REFERENCE:

COMMENT:

The keyed answer states that "cold leg recirculation only fills the downcomer region, . . .". This statement is taken out of context from ERG ES-1.4 Reference which states, ". . .for large breaks the downcomer level is low and injection flow is primarily refilling the downcomer as opposed to the core, and no flushing of the core occurs." Therefore answer (a) as written is not accurate and therefore is a distractor, not an answer. Request that the question be deleted from examination.

NRC RESOLUTION:

Comment accepted. Question deleted.

QUESTION: (RO/SRO)

081 (1.00)

Pressurizer Power Relief Valve [PORV], NRV 151, is leaking while in Mode 1. The leakage is stopped by closing its associated block valve, NMO 151, and operation in Mode 1 continues. Which ONE of the following is the basis for continued operation in Mode 1 under this condition:

- a. The PORV's are not required by Technical Specifications.
- b. Closing the block valve prevents further damage to NRV 151 valve seat.
- c. NRV 151 is not required for overpressure protection in Mode 1.
- d. The remaining two unisolated PORV's provide the required overpressure protection in Mode 1.

ANSWER:

081 (1.00)

c. [1.0]

REFERENCE:

COMMENT:

The question does not reference a procedure or document for basis. Therefore the candidate is forced to choose from only true statements:

- 1) Answer (a) is true for the reason stated in answer (c).
- 2) Answer (b) is true because closing the clock valve will prevent further leakage past the PORV.
- 3) Answer (d) is correct because this is the basis for FR-H.1 step 16. "if at least two PZR PORV's are not maintained open, the RCS may not depressurize sufficiently to permit adequate feed of subcooled SI flow to remove core decay heat.

Request that answers (a) or (c) or (d) be accepted as correct for full credit.

NRC RESOLUTION:

Comment partially accepted. Question deleted. The facility should note that the original question does reference a procedure, 2-OHP 4022.002.009, page 1. The facility is cautioned to provide a complete submittal for comments per ES-201, Attachment 2, Enclosure 4, Paragraph 3.

QUESTION: (RO/SRO)

088 (1.50)

Fill in the blanks: [Each blank may require more than one word] [0.5 each].

the limitation on the specific activity of the RCS ensures that the resulting _____ [time] doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a _____ accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of _____.

ANSWER:

088 (1.50)

1. 2 hour [0.5]
2. SGTR [0.5]
3. 1.0 gpm [0.5]

REFERENCE:

Technical Specification basis for T.S. 3/4.4.8

000076G004

COMMENT:

The basis for limitations on the specific activity in the RCS is:

- 1) Minimize dose at the site boundary.
- 2) Following an SGTR.
- 3) In conjunction with primary to secondary steam generator leakage.

The question as written requires the candidate to memorize specific details about the basis that does not enhance their knowledge/understanding of the actual basis.

For this reason we request that the question be deleted from the examination.

It should also be noted that this topic 000076G004 has an importance factor of 2.1 for RO's.

NRC Resolution:

Question deleted from RO exam. SRO exam remains unchanged, since the KA importance for the SRO question is 3.7.

SIMULATION FACILITY REPORT

Facility Licensee: D. C. Cook

Facility Licensee Docket No. 50-315; 50-316

Operating Tests Administered At: Bridgeman, MI

During the conduct of the simulator portion of the operating tests, the following items were observed:

ITEM

DESCRIPTION

1. Modeling during LOCA allows steam generator pressure to decrease, thus preventing exit to procedure ECA-1.1.
2. Value on intermediate range nuclear instrument failure is incorrectly ranged.