Omaha Public Power District
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Omaha, Nebraska 68102-2247
402/636-2000

November 15, 1990
LIC-90-0908

Mr. John L. Pellet
Chief, Operator Licensing Section
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Reference: Docket No. 50-285

Dear Mr. Pellet:

SUBJECT: Technical Review of the Reactor Operator and Senior Reactor Operator Licensing Examinations

Omaha Public Power District (OPPD) has reviewed the Reactor Operator and Senior Reactor Operator licensing examinations that were administered by the NRC at Fort Calhoun Station on November 13, 1990. Enclosed are OPPD's comments on the examination, in accordance with the requirements specified in the Operator Licensing Examiners Standard, NUREG 1021.

If you should have any questions, please contact me.

Sincerely,

W. G. Gates for
Division Manager
Nuclear Operations

WGG/sel

Enclosure

c: LeBoeuf, Lamb, Leiby & MacRae (w/o enclosure)
R. D. Martin, NRC Regional Administrator, Region IV
R. P. Mullikin, NRC Senior Resident Inspector
Document Control Desk

QUESTION: 010 RO, 007 SRO (1.00)

WHICH ONE (1) of the following is the basis for the 2 of 4 SUR trip provided by the Nuclear Instrumentation System (NIS)?

a. It provides protection against an uncontrolled dilution during startup at EOL.

b. It provides protection against a large steam break accident during startup when steam generator inventory is the greatest at BOL.

c. It limits power overshoot prior to VOPT actuation on a continuous rod withdrawal during startup.

d. It limits power overshoot prior to VOPT actuation from a ruptured steam generator during startup.

ANSWER: 010 RO, 007 SRO (1.00)

c. [+1.0]

REFERENCE:

1. Lesson Plan 7-12-18, "Nuclear Instrumentation Wide Range Log Channels", EO 2.8, page 66.
2. KA 015000G006 (2.6/3.7).

015000G006 ..(KA's)

OPPD RESPONSE TO QUESTION 010 RO, 007 SRO

OPPD requests accepting as equally correct answers (a) and (c).

In the Reactor Protection System and Diverse Scram System lesson plan, an objective is to "EXPLAIN the bases for each reactor trip." In this lesson we explain that the SUR trip is provided to protect against uncontrolled CEA withdrawal or boron dilution while at low power. Distractor (a) is a correct statement from the stated reference.

REFERENCE:

FCS LP 7-12-25, page 37
STM Reactor Protection page 13, Section 3.2.2

QUESTION: 021 RO, 015 SRO (1.00)

WHICH ONE (1) of the following describes the affect of a total loss of instrument air header pressure lasting several hours on the Auxiliary Feedwater System?

a. -Recirc valves (FCV-1368/1369) fail closed.
-Control valves (HCV 1107A/B & 1108A/B) fail closed.
-FW 10 steam stop valves eventually open and FW 10 starts.
-FW 10 has NO governor control.
-Steam Generator levels will slowly decrease.

b. -Recirc valves (FCV-1368/1369) fail closed.
-Control valves (HCV 1107A/B & 1108A/B) fail closed.
-FW 10 steam stop valves fail closed.
-Steam Generator levels will slowly decrease.

c. -Recirc valves (FCV-1368/1369) fail open.
-Control valves (HCV 1107A/B & 1108A/B) fail open.
-FW 10 steam stop valves eventually open and FW 10 starts.
-FW 10 has NO governor control.
-Steam Generator levels will increase to FULL.

d. -Recirc valves (FCV-1368/1369) fail open.
-Control valves (HCV 1107A/B & 1108A/B) fail open.
-FW 10 steam stop valves eventually open and FW 10 starts.
-FW 10 goes on governor control.
-Steam Generator levels will increase to FULL.

ANSWER: 021 RO, 015 SRO (1.00)

d. [+1.0]

REFERENCE:

1. Lesson Plan 7-11-1, "Auxiliary Feedwater System", EO 1.0 and 1.8.
2. KA 061000A207 (3.4/3.5).

061000A207 ..(KA's)

OPPD RESPONSE TO QUESTION 021 RO, 015 SRO

OPPD requests accepting as equally correct answers (c) and (d).

The technical manual describes the control of the turbine speed in all cases through the operation of the single balanced governor steam valve. During normal operation, the position of this governor steam valve is determined by the pneumatic controller. This device adjusts turbine speed to maintain pump discharge pressure at least 40 psig greater than the steam supply pressure. If this governor valve control device malfunctions or control air (supplied from instrument air) pressure is lost, the turbine is limited in speed by another control device, the speed limiting governor. The better a student understands the methods of positioning the governor steam valve, the more confusing this question becomes due to the words used to describe the control devices. The normal device used for controlling governor valve position and therefore turbine speed is called a controller while the safety feature that prevents overspeed and only limits, does not control, turbine speed is called a governor device.

REFERENCE:

FCS LP 7-11-1 pages 20 and 21, Coffin Turbine Technical Manual pages 14 and 15

QUESTION: 023 RO, 017 SRO (1.00)

WHICH ONE (1) of the following is the correct interval for recording data for a liquid waste release if any of the recorders itemized in the Waste Liquid Release Operation Checklist are inoperable?

a. 15 minutes

b. 30 minutes

c. 60 minutes

d. once per shift

ANSWER: 023 RO, 017 SRO (1.00)

b. [+1.0]

REFERENCE:

1. Lesson Plan 7-15-4, EO 1.8 and 2.7.
2. KA 068000G013 (2.5/2.7), 068888G001 (2.7/3.1).

068000G013 068000G001 ..(KA's)

OPPD RESPONSE TO QUESTION 023 RO, 017 SRO

OPPD requests deletion of this question.

There is no correct answer. The correct interval is every two hours. The referenced lesson plan was cancelled prior to 1990.

REFERENCE:

FCS Chemistry Form FC-211 (Release Permit) Operations Checklist page 4 of 6 and note 1 of Liquid Discharge Log page 5 of 6, Standing Order T-2, Waste Liquid Release Item 3.3 page 2 of 2.

QUESTION: 032 RO, 022 SRO (1.00)

WHICH ONE (1) of the following correctly describes the ROD BLOCK function?

a. Rod Block is initiated by the Primary CEA Position Indication System in response to CEA Deviation and prohibits ALL movement of regulating CEAs.

b. Rod Block is initiated by the Secondary CEA Position Indication System (SCEAPIS) in response to CEA Deviation and prohibits ALL movement of regulating CEAs.

c. Rod Block is initiated by the Primary CEA Position Indication System in response to OUT OF SEQUENCE/OVERLAP condition and allows ONLY movement of individual CEAs.

d. Rod Block is initiated by the Secondary CEA Position Indication System in response to OUT OF SEQUENCE/OVERLAP condition and prohibits ALL movement of CEAs.

ANSWER: 032 RO, 022 SRO (1.00)

d. [+1.0]

REFERENCE:

1. Lesson Plan 7-12-26, "Control Rod Drive System", EO 1.8, page 45.
2. KA 014000K406 (3.4/3.7).

014000K406 ..(KA's)

OPPD RESPONSE TO QUESTION 032 RO, 022 SRO

OPPD requests accepting as equally correct answers (b) and (d).

Distractor (b) is a correct statement. Rod Block is initiated by SCEAPIS in response to PDIL, CEA Deviation, or an OUT OF SEQUENCE/OVERLAP condition. It does prohibit all CEA motion which would limit all Regulating CEA movement.

REFERENCE:

FCS LP 7-12-26, page 45
STM Reactor Protection, page 16

QUESTION: 049 RO, 038 SRO (1.00)

WHICH ONE (1) of the following prevents the Steam Dump and Bypass Control valves from OPENING when the AUTO-INHIBIT switch (HC-909) on CB-10 is in the INHIBIT position?

a. The Reactor Regulating (Tavg) input signal is interrupted.

b. Steam Dump and Bypass Valve Control System (SDBCS) input to the valve positioners is blocked.

c. Control air to the Steam Dump and Bypass Control valves is isolated.

d. Steam Dump and Bypass Control valves are mechanically blocked.

ANSWER: 049 RO, 038 SRO (1.00)

a. [+1.0]

REFERENCE:

1. Lesson Plan 7-12-31, "Reactor Regulating and Steam Bypass System", EO 2.3, page 11.
2. KA 041020K603 (2.7/2.9).

041020K603 ..(KA's)

OPPD RESPONSE TO QUESTION 049 RO, 038 SRO

OPPD requests changing the correct answer to (b).

The AUTO-INHIBIT switch (HC-909) inhibits the Tavg controller output signal not the Tavg input signal. Once Tavg is converted to milliamps, in the controller block, it becomes a valve positioning signal to the E/Ps for Steam Dump and Bypass valves. The Reactor Regulating Tavg input signal is not affected by HC-909.

REFERENCE:

FCS LP 7-12-31 page 10 and 11 and SHB figure "Steam Dump and Bypass System Block Diagram" page 11.

QUESTION: 065 RO, 055 SRO (1.00)

The following plant conditions exist:

- A loss of coolant accident (LOCA) has occurred inside containment.
- All containment isolation valves are closed.
- Hydrogen concentration is 2.8%.

WHICH ONE (1) of the following conditions will satisfy containment integrity per EOP-20, "Functional Recovery Procedure"?

a. Two (2) containment coolers operating with maximum CCW flow.

b. One (1) containment cooler operating with maximum CCW flow AND one (1) containment spray header at 1900 gpm.

c. Two (2) containment coolers operating with maximum CCW flow AND one (1) containment spray header at 1500 gpm.

d. One (1) containment cooler operating with maximum CCW flow AND two (2) containment spray headers at 1900 gpm each.

ANSWER: 065 RO, 055 SRO (1.00)

d. [+1.0]

REFERENCE:

1. EOP-20, "Functional Recovery Procedure", page 310.
2. KA 000069A201 (3.7/4.3).

000069A201 .. (KA's)

OPPD RESPONSE TO QUESTION 065 RO, 055 SRO

OPPD requests deletion of this question.

To correctly answer this question requires memorization of an EOP-20 Safety Function acceptance criteria which identifies three possible combinations of containment coolers and sprays. Because of this complexity, Ft. Calhoun Station's position is that an operator should not attempt to determine acceptance of the Safety Function from memory.

REFERENCE:

FCS LP 7-18-28 Objectives, EOP-20 pages 29 and 315, 316

QUESTION: 075 RO, 069 SRO (1.00)

WHICH ONE (1) of the following is the FIRST response to an ATWS per EOP-20, "Functional Recovery Procedure"?

a. Manually drive CEAs into the core.

b. Emergency borate using the SIS.

c. Open all rod drop test switches.

d. Emergency borate using the CVCS.

ANSWER: 075 RO, 069 SRO (1.00)

d. [+1.0]

REFERENCE:

1. EOP-20, "Functional Recovery Procedure", page 13.
2. 000029G010 (4.5/4.5).

000029G010 ..(KA's)

OPPD RESPONSE TO QUESTION 075 RO, 069 SRO

OPPD requests deletion of this question.

Per the prioritized order of EOP-20, you would perform the steps (actions) in the order they appear in the procedure, i.e. RC-1, CEA Insertion; RC-2, Boration using CVCS; and RC-3, Boration using SI. RC-1 requires use of the Rod Drop Test Switches before boration with CVCS. Also, emergency boration would have been attempted or begun prior to exiting EOP-00. The question asks for the FIRST response per EOP-20 which would be to control temperature and then de-energize the CEDMs. This procedure is not memorized and coupled with not having an entirely correct answer makes it a very confusing question.

REFERENCE:

EOP-20 Resource Tree A, REACTIVITY CONTROL, EOP-20 pages 38-40

QUESTION: 077 RO, 071 SRO (1.00)

The following plant transient has occurred:

- A steam generator tube rupture has occurred.
- The reactor was tripped from 100% power.
- Conditions have stabilized and the affected steam generator has been isolated.
- SI stop and throttle criteria have been met and SI has been terminated.
- RCP restart criteria have been met and two (2) RCPs have been restarted.

Given the following CURRENT plant conditions:

- Pressurizer level is 48%
- Pressurizer pressure is 450 psia.
- T COLD is 435 degrees F.
- Steam generator pressure is 365 psia.

WHICH ONE (1) of the following actions is required by plant procedures?

a. Restart safety injection.

b. Reduce RCS pressure to approximately zero (0) psi differential across affected steam generator.

c. Trip the operating RCPs.

d. Commence feed and bleed of the affected steam generator to cool the steam generator.

ANSWER: 077 RO, 071 SRO (1.00)

c. [+1.0]

REFERENCE:

1. Exam Bank Question I-7-18-04, 1.13, 001.
2. KA 000037K307 (4.2/4.4), 000037K308 (4.1/4.3).

000037K308 000037K307 ..(KA's)

OPPD RESPONSE TO QUESTION 077 RO, 071 SRO

OPPD requests deletion of this question.

The referenced exam bank question should allow the student to use Figure 5-2 of the EOPS. Without the attached figure, the students would have to memorize the RCP NPSH curve. The referenced question should have stated "attachment required" and is presently being revised to indicate this. The question was developed for the Requal Open Reference exam bank where refarences would be available.

REFERENCE:

Exam bank question 7-18-04, 1.13 001

QUESTION: 086 SRO (1.00)

WHICH ONE (1) of the following ...fined areas is suitable for entry per Standing Order SO-45, "Confined Space Entry"?

a. Area "A" is inside cont...ment, has an Oxygen reading of 21% and a combustible gas reading of 5%.

b. Area "B" is in the Auxiliary Building, has an Oxygen reading of 19% and a combustible gas reading of 2%.

c. Area "C" is in the Turbine Building, has chlorine vapors present, has an oxygen reading of 21% and a combustible gas reading of 2%.

d. Area "D" is in the Intake Building, has an Oxygen reading of 20% and a combustible gas reading of 10%.

ANSWER: 086 (1.00)

a. [+1.00]

REFERENCE:

1. Standing Order SO G-45, "Confined Space Entry".
2. KA 194001K113 (3.3/3.6)

OPPD RESPONSE TO QUESTION 086 SRO

OPPD req...s deletion of this question.

The ques...oes not identify the Standing Order (SO-45) correctly and should have ...dentified the procedure as SO G-45 per Reference 1. This procedure would always be available for use in the Control Room. The KA reference requires knowledge of safety procedures not memorization of its limits.

REFERENCE: