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ATLANTA, GA.

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Regional Administrator
Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street
Suite 2900
Atlanta, Georgia 30323

Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
WRITTEN LICENSE EXAMINATION COMMENTS

In accordance with NUREG-1021, Section ES-201, the following comments are submitted concerning the Reactor Operator and Senior Reactor Operator written examinations administered at Surry on October 24, 1988.

REACTOR OPERATOR EXAMINATION

QUESTION 2.06 (a)

With the plant operating at 100% power and assuming no operator action is taken, what RPS actuation signal will cause a reactor trip for the following:

- a) A complete, continued loss of station instrument air. (1.00)

ANSWER:

- a) (Reactor trip due to) low steam generator level (0.5) with a steam flow-feed flow mismatch (0.5) (due to closure of the feed regulating valves).

Reference: Surry ND-92.1-LP-2, OBJ-F

COMMENTS:

On a loss of instrument air, the feed regulating valves will begin to drift closed as the air pressure at the valves slowly decays away. S/G level will begin to decrease. If the low level setpoint of 17% level is reached prior to the steam flow/feed flow mismatch (.709 E-6 LBM/Hr), the reactor will trip on S/G low level signal. If a steam flow/feed flow mismatch does exist, then the trip will be due to low level (20%) with mismatch.

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Recommend accepting either answer as correct:

Low S/G level with steam flow/feed flow mismatch (or) low S/G level.

QUESTION 3.11

List all conditions necessary to annunciate the PRESSURIZER NDT OVER-PRESSURE SYSTEM REQUIRED alarm.

ANSWER:

Pressure < 390 psig (0.50) and either the PORV block valve not open (0.25) or the associated keyswitch in disable. (0.25)

Reference: ND-93-LP-6, OBJ-C

COMMENTS:

A recent design change has changed all of the OPMS setpoints.

Recommend changing "Pressure less than 390 PSIG" to Pressure less than 365 PSIG on (PI-1-403) (345 on PI-1-458)

Reference: Annunciator Response Procedure 1C-49 (G-1)
Setpoint Change Request #88-11

QUESTION 4.18 (b)

The RCP trip criteria from the "foldout page" in EP-1.00, "Reactor Trip/Safety Injection" are as follows:

Trip all RCPs if BOTH conditions listed below occur:

- CHG/SI pumps - AT LEAST ONE RUNNING
- RCS subcooling - LESS THAN 25 [70]

b) Explain the significance of RCS subcooling being less than 25 [70] degrees F. (1.00)

ANSWER:

b) RCS subcooling - LESS THAN 25 [70]F

Adequate RCS subcooling indicates that a significant amount of voiding has not yet occurred in the RCS, therefore excessive inventory has not been lost, so stopping the RCPs would not immediately uncover the break. (1.00)

Reference: Surry ND-95.3-LP-3, OBJ-D

COMMENTS:

Question asks for significance of subcooling being less than 25F. Answer is for subcooling being greater than 25F.

Answer should be:

When instrument uncertainties are considered, subcooling less than 25F indicates the point when the RCS would first reach saturation. Turning off RCPs at this point prevents running them past the time when the break could have been uncovered if the pumps were not running. (This minimizes mass depletion and degree of core uncover.)

Reference: ND-95.2-LP-7, pp. 7.49 - 7.55

SENIOR REACTOR OPERATOR EXAMINATION

QUESTION 6.07 (b)

State the nominal (expected) RCP seal flow rates for each of the following:

- b) #1 Seal Bypass

ANSWER:

- b) 1 gpm (0.4)

Reference: ND-88.3-LP-3, OBJ-H

COMMENTS:

Accept 0 GPM if valve is closed (normal position of valve during power operation). (OR)

Accept 1 to 3 GPM if valve is open. Actual flow is dependent on RCS pressure at the time.

Reference: OP-3.3, pg. 5 of 16, Step 4.6

QUESTION 6.14 (a)

With the plant operating at 100% power and assuming no operator action is taken, what RPS actuation signal will cause a reactor trip for the following:

- a) A complete, continued loss of station instrument air. (1.00)

ANSWER:

- a) (Reactor trip due to) low steam generator level (0.5) with a steam flow-feed flow mismatch (0.5) (due to closure of the feed regulating valves).

Reference: Surry ND-92.1-LP-2, OBJ-F

COMMENTS:

On a loss of instrument air, the feed regulating valves will begin to drift closed as the air pressure at the valves slowly decays away. S/G level will begin to decrease. If the low level setpoint of 17% level is reached prior to the steam flow/feed flow mismatch (.709 E-6 LBM/Hr), the reactor will trip on S/G low level signal. If a steam flow/feed flow mismatch does exist, then the trip will be due to low level (20%) with mismatch.

Recommend accepting either answer as correct:

Low S/G level with steam flow/feed flow mismatch (or) low S/G level.

QUESTION 7.14

Following a prolonged loss of all AC power, "C" RCP seal leakage increases to 100 gpm. Explain why seal leakage has increased.

ANSWER:

(0.50 ea. for 2.0 total)

- Lost seal injection (0.25) and CCW (0.25)
- Primary coolant leaking past the seal package raised temperature of seal components.
- "O" rings deteriorated, melted or failed due to high temperature
- Leakage increased due to "O" ring failure

Reference: ND-95.3-LP-17, OBJ-B

COMMENTS:

Trainees are not taught to the level of knowledge required for this question. The Instructor did not specifically teach about "O" ring degradation in the RCP seals, just the cause and the effects of the degradation, which is all an operator needs to know. Recommend deleting parts about "O" rings from the answer key and making loss of seal injection, loss of CCW and seal degradation worth full point value for the question.

Reference: ND-95.3-LP-17

QUESTION 7.15

You are the shift supervisor during a loss of component cooling accident. Steps 1 through 3 of AP-15.00, "Loss of Component Cooling" are complete. Given the following plant conditions:

PRZR pressure	2235 PSIG
Excess Letdown	Secured
Seal injection flow	less than 6 gpm
PRZR level	21%

and the following procedural excerpt:

STEP ACTION/EXPECTED RESPONSE RESPONSE NOT OBTAINED

- | | | |
|---|--------------------------------------|---------------------------|
| 4 | REDUCE RCP SEAL WATER INJECTION | |
| 5 | PRZR LEVEL GREATER THAN 22% | Restore PRZR level to 22% |
| 6 | RCS TEMPERATURE STABLE OR INCREASING | Return to step 5 |

What action will you direct if efforts to restore PRZR level are not successful?

ANSWER:

Return to STEP 6 ACTION/EXPECTED RESPONSE. (1.0)

Reference: ND-95.3-LP-2

COMMENTS:

For future exams, the wording of this question should be changed to indicate that the question is a procedure usage question and not an operational question.

Recommend adding the following statement to the beginning of the question:

The following question is a procedure usage question. Answer should be limited to procedurally what step is performed next.

QUESTION 8.03 (d)

The electrical circuitry for a pump motor has a circuitry interlock which prevents the pump from starting if a certain valve is OPEN. It is determined that a jumper may be installed to bypass this interlock, while the valve position switch is repaired. Assume there is no approved procedure governing the use of this jumper. (Answer each of the following TRUE or FALSE)

d) A Special Order Tag is required.

ANSWER:

d) True (0.5)

Reference: SUADM-0-13, Sect. 5.2.7

COMMENTS:

Answer would be false if a numbered jumper is used. Answer would be true if a manufactured jumper was used.

Recommend deleting part (d) from the exam.

Reference: SUADM-0-11, pg. 16 of 22

QUESTION 8.09 (b)

b) The shift supervisor is required to complete/review/approve the Containment Entry Checksheet. State the THREE (3) remaining shift supervisor actions required for a containment entry in accordance with SUADM-0-19. (1.5)

ANSWER:

b) (0.5 ea. for 1.5 total)

1. Brief the entry party
2. Maintain Containment Entry Status Board
3. Verify need for supplemental breathing equipment

Reference: ND-100-LP-10, OBJ-C

COMMENTS:

The ADMIN Procedure has been recently rewritten (9/16/88) such that the items the SS is responsible for are on the entry checksheet.

Recommend accepting any three items the SS is responsible for even if it is on the checksheet.

1. Obtain permission to enter from SNSOC.
2. Brief entry party.
3. Initiate a stay time calculation for heat stress.
4. Check with HP for radiological conditions.
5. Coordinate entry from the control room.
6. Order team to exit prior to expiration of stay time or at any time the safety of the team is in doubt.
7. Obtain debrief from the entry team after exit.
8. Check out/in the elevator key to team leader.

Reference: SUADM-0-19

Very truly yours,


D. L. Benson
Station Manager


H. F. McCallum
Supervisor, Training - PSO

Enclosure

cc (w/o enclosure):

Mr. W. E. Holland
NRC Senior Resident Inspector
Surry Power Station

bc (w/o enclosure):

Mr. W. R. Cartwright - IN1E
Mr. J. L. Wilson - IN2SE
Ms. N. E. Hardwick - IN2SE
Mr. G. L. Pannell - IN2SE
Mr. D. A. Sommers - IN2SE
Mr. H. L. Miller - SPS
Dr. T. M. Williams - IN2NE
Superintendent Nuclear Training - Surry
GOV 02-54B
PMS Records Management - IN-GW

ENCLOSURE 4

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Virginia Electric & Power Company

Facility Licensee Docket No.: 50-280 and 50-281

Facility Licensee No.: DPR-32 and DRP-37

Operating Tests administered at: Surry Power Station

Operating Tests Given On: October 25-27, 1988

During the conduct of the simulator portion of the operating tests identified above, the following apparent performance and/or human factors discrepancies were observed:

1. The P-250 CRT screen was not reliable in consistently providing status information.
2. The Vital Bus I Uninterruptable Power Supply (UPS) is not modeled
3. The key for unlocking the crosstie valve for station air to the primary containment was not simulated in the key locker.
4. The Gaitronics phone in the simulator booth needs to be cutout when hung up. Conversation in the booth can be overheard if someone listens to a handset on the simulator control room floor.
5. The PBX telephone system is not simulated properly. (Handsets, pushbuttons, etc. are present but not functional).
6. The Unit 2 purge flow is not modeled for unit shutdown operation.
7. The main generator rpm meter reads about 15 rpm too high when at rated speed.
8. During IC-5 with a reactor startup in progress and the main turbine loaded at 83MwE, secondary water was going away for no apparent reason.
9. For the Reactor Pressure Vessel flange leak malfunction, activity is improperly modeled as going to primary containment.
10. The modeling for rod worth is such that only the first three rods in each group are modeled for individual rod worths. The other rods in a group are modeled with bank worths. As a result, if a rod other than one of the first three is dropped, the examinees will see the significantly greater group worth effects.

The following items are noted as suggestions which could improve the usability of the simulator for training and examination purposes:

1. A pair of good binocular at the instructors console would allow closer monitoring of examinee performance, simulator status and timing of event malfunctions.
2. A complete set of reference material should be available at the instructor's console. Some reference material was present; however, many important references were not available, most notably, a copy of Technical Specifications was missing.
3. A complete set of normally available administrative forms, tags, etc., should be provided for examinee use.
4. The microphone system in the simulator, particularly around the Shift Foreman's desk, should be upgraded for better sensitivity and clarity. Conversations among the crew, overheard by the instructors, will allow the instructors to anticipate the actions of the examinees and ensure the simulator scenario proceeds in an orderly manner.
5. It was noted that the carpet on the simulated control room was old, frayed and turned up in places creating a tripping hazard for the crew and their examiners.