

LICENSEE POST-EXAM COMMENTS

SURRY EXAM 2000-301

SEPTEMBER 14 - 21, 2000

LICENSEE POST-EXAM COMMENTS

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 25, 2000

Regional Administrator
United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street S.W., Suite 23T85
Atlanta, Georgia 30303-8931

Serial No. 00-499
BAG R0
Docket No. 50-280
50-281
License No. DPR-32
DPR-37

Dear Mr. Reyes:

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

In accordance with NUREG-1021, Section ES-402, the following comments are submitted concerning the Reactor Operator and Senior Reactor Operator written initial examinations administered at Surry on September 14, 2000.

QUESTION: #30

Unit 2 is at Hot Shutdown with the steam dump system in Tave Mode. Steam Dump Controller offset has allowed Tave to increase up to 554°F. The Unit 2 semi-vital bus lost power 5 minutes ago.

Which one of the following identifies the status of the Unit 2 PORVs?

- a. All open and being automatically controlled in Local/Auto.
- b. All open and being automatically controlled in Remote/Auto.
- c. All shut and being controlled in Local/Auto.
- d. All shut and being manually controlled in Remote/Auto.

ANSWER: b)

Reference: ND-89.1-LP-2

COMMENTS:

Both (a) and (b) are correct answers. The question requires comprehensive knowledge of the Psat/Tsat relationship and the setpoint of the PORV to determine whether the valve

should be open. Further, it requires the knowledge of whether the valve will operate automatically when it loses power. The candidate has demonstrated knowledge of the appropriate KA by selecting either (a) or (b). The way the stem was constructed leaves the candidate to determine if the question is asking the default position of the controller or from where it would be required to be controlled. If the candidate thought the question was asking the default position of the controller, then (b) is correct. If the candidate thought the question was asking where the PORV would be controlled from on a loss of power then (a) is correct. In addition, "Local" in normal terminology for controllers means control would be in the racks, which would also indicate (a) would be the correct answer.

Four out of ten candidates selected (a).

RECOMMENDATIONS:

Accept both answers (a) and (b) as correct answers.

QUESTION: #74

Vital Bus II was de-energized in Unit 1 while at Hot Shutdown. The RO is performing the actions of ES-0.1.

Which one of the following identifies which RCP must be stopped and how much time is allowed to complete this action (assume all RCP temperatures remain below 200°F)?

- a. RCP 1A, 5 minutes.
- b. RCP 1A, 2 minutes.
- c. RCP 1B, 5 minutes.
- d. RCP 1B, 2 minutes.

ANSWER: d)

Reference: ARP-C-B1, AP-10.02, AP-9.00

COMMENTS:

Both (c) and (d) are correct answers. The Answer (d) was based upon the ARP which states the RCP should be secured within 2 minutes. However, AP-9.00, the higher priority procedure, states the pump should be secured immediately which the procedure states is within 5 minutes. Therefore, we have two conflicting procedures giving different guidance. The KA requirements for this question are meant to determine whether the candidate can align the correct Vital Bus to the correct RCP and also whether the candidate understands the importance of securing the RCP in a timely manner. Either answer (c) or (d) demonstrates this understanding. The question and the procedures will be corrected for future use.

Three out of ten candidates selected (c) as the correct answer.

RECOMMENDATIONS:

Accept both answers (c) and (d) as correct answers.

QUESTION: RO #86

The following unit conditions exist:

- Unit One is shutdown.
- The Unit 1 Main Feed Pump is feeding all three SGs at a rate of 800 gpm each.
- The Unit 1 reactor operator is holding depressed the train "A" and "B" feedwater isolation reset buttons in order to completely fill the steam generators for wet layup.

Which one of the following would trip the Unit 1 Main Feed Pump?

- a. High Water level in the Steam Generators.
- b. "B" Main Feed Pump Recirc Valve fails closed.
- c. Safety Injection Train B.
- d. Load Shed on all Station Service Busses.

ANSWER: b)

Reference: ND-89.3-LP-3

COMMENTS:

There is no correct answer. The initial conditions were changed during the review process but the correct answer was never adjusted.

Five out of six candidates chose answers other than (b).

RECOMMENDATIONS:

Delete the question from the exam.

QUESTION: RO #87

A male radiation worker's total effective dose equivalent for the current quarter is 1837 mrem and for the current year is 3823 mrem.

The worker _____ be authorized access to the RCA _____.

- a. Can; if a dose extension request is prepared and authorized.
- b. Can; with no additional guidance other than an RWP.
- c. Cannot; because his quarterly dose has exceeded the administrative limit.
- d. Cannot; because his quarterly and annual dose have both exceeded the administrative limit.

ANSWER: a)

Reference: VPAP-2101

COMMENTS:

Both (a) or (b) are correct answers. Upon exceeding a buffer limit (200 mrem) for the administrative limit, generally a dose extension request is generated. However, VPAP-2101 states that the buffer limit may be exceeded if authorized by RP supervision (Supervisor Exposure Control). An RWP that has been generated can be assumed to meet this requirement. Upon discussions with RP Management, they concur that the wording in question was misleading in that an RWP is required for RCA entry. The exclusion of this requirement from answer (a) could mislead the candidate into thinking it was incorrect.

Six out of six candidates selected (b).

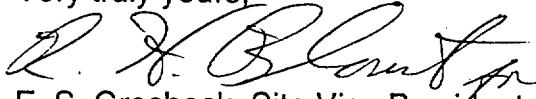
RECOMMENDATIONS:

Accept both (a) and (b) as correct answers. Revise Training material to define specific requirements for exceeding radiation administrative limits. Question will be revised to make distractors more clear.

Please find attached a copy of reference material associated with the above comments that was not included in the original reference material submittal.

If you have any questions or require additional information, please contact us.

Very truly yours,


E. S. Grecheck, Site Vice President
Surry Power Station

Attachment

Commitments contained in this letter:

1. Correct questions and procedures referenced in question #74, delete question #86 from the exam, and revise question #87 to make distractors more clear.

copy:

Mr. Michael E. Ernstes, Chief
Operator Licensing and Human Performance Branch
United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S. W., Suite 23T85
Atlanta, Georgia 30303-8931

Mr. Richard S. Baldwin
United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S. W., Suite 23T85
Atlanta, Georgia 30303-8931

Document Control Desk
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Mr. R. A. Musser
Senior Resident Inspector
Surry Power Station

ATTACHMENT

WRITTEN LICENSE EXAMINATION COMMENTS

REFERENCE MATERIAL TO SUPPORT COMMENTS

Surry Power Station - Units 1 & 2

VIRGINIA ELECTRIC AND POWER COMPANY

Some words used in the emergency response guidelines have unique meanings. These unique meanings are understood based upon the training and experience of the operator or the specific use of the word in the context of the step being performed. Some words with unique meanings are listed below:

manual (manually) - an action performed by the operator in the control room.
(The word is used in contrast to an automatic action, which takes place without operator intervention.)

local (locally) - an action performed by an operator outside the control room.

Example: "Locally close valve" means directly turning a handwheel to close a valve.

as necessary - typically refers to operating a piece of equipment in a certain way to maintain plant conditions

Examples: Start SI pumps as necessary (to maintain pressurizer level), turn on pressurizer heaters as necessary (to maintain pressurizer pressure)

maximum rate - typically refers to cooling down or depressurizing at maximum capability

Example: Dump steam to condenser at maximum rate

order of priority - typically refers to preferred order of starting RCPs to obtain normal spray

Example: RCPs should be run in order of priority

if necessary - typically refers to an action which may be required depending on plant conditions or previous actions taken

Example: Reset SI if necessary

STEAM SYSTEMS
MAIN STEAM SYSTEM

LESSON RESOURCES

Equipment and Facilities

- Classroom
- Chalkboard, chalk, eraser
- Overhead projector

Trainee References

- NCRODP-23, Main Steam System
- Technical Specifications

Bibliography

- NCRODP-23, Main Steam System
- UFSAR Chapter 10
- Design Change 84-64
- Design Change 84-34; MS Safety Valve Position Indication
- DCP 93-062 FC 7; SG PORV Controller Modifications
- EWR #87-063, MSTV Test Ckt Removal
- Technical Specifications
- Steam Flow Channel Checks Memo, dated 3/7/88
- DCP-99-050, S/G PORV Appendix "R" Modification

- (1) The right Bargraph shows demand to the controller in the Relay Room.
 - (2) The center Bargraph shows the demand from the controller in the Relay Room to the valve.
 - (3) When the LED is lit above the right Bargraph, the display will show a 0.0-100 demand to the controller. When the LED is over the center Bargraph, the display will show 0-100% demand to the valve.
 - (4) Similar to the Auto mode, if the LED is not lit above any of the Bargraphs, the operator cannot adjust valve position.
- c. If normal and backup power from the SVB is lost to MBR 8, which supplies the relay rack controllers for the SG PORVs, the indications and controls supplied from this MBR remain functioning for a period of 30 minutes due to a battery supplied UPS in the MBR. This means that the SG PORVs remain operational for this 30 minute period. If SVB breaker #26 (Power supply for the SG PORV controllers in the MCR) trips, the SG PORVs will continue to operate in automatic based on the last setpoint set by the operator. When the breaker is reset, the operator will have to return the controller to Local operation. On a loss of the SVB, control of the SG PORVs will shift to the control unit in the Relay Room, which is powered by the UPS for a period of 30 minutes. During this time the control system will automatically operate the PORV based on the last setpoint set into the benchboard controller (usually 1035). At the end of the 30 minute period, the SG PORV will fail closed.

- d. If power is lost for greater than 30 minutes and the UPS expires, indications and control will be lost. Upon power restoration, first the computer must reboot which takes about ≈ 3.5 minutes. After the computer has rebooted, it will send the data needed to reboot the individual MBR control processors. A total of ≈ 4.5 minutes will elapse before the control board indications are regained and the SG PORVs are operational.
 - e. When SVB power is restored, the benchboard controller will have an "R" backlit signifying Remote (Rack) control. To return to Local (Benchboard) operation, the "AM" key is pressed and the display will change from "R" to "L" signifying a return to Local (Benchboard) control.
 - f. Control signal for the controller comes from the control channel for steam line pressure.
 - g. Valve position indication (red/green lights) is provided directly above the controller.
8. Main Steam Safety Valve Position Indication
- a. Regulatory Guide 1.97 (Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Environs Conditions During and Following an Accident) requires that the main steam safety valve position indication be provided to the control room operator in order to assess plant environs conditions during and following an accident.
 - b. There is a temperature sensing flow probe in the discharge line from each main steam safety valve.
 - c. Each flow sensor has dual setpoints. One setpoint, on the lower end of the sensor range, indicates that the valve is not fully closed or is leaking. The

VIRGINIA POWER
SURRY POWER STATION
ABNORMAL PROCEDURE

ELI: Question 74
See page 4 of 14

NUMBER	PROCEDURE TITLE	REVISION
		PAGE
1-AP-9.00	RCP ABNORMAL CONDITIONS (With 5 Attachments)	13
		1 of 14

PURPOSE

To provide guidance for responding to Reactor Coolant Pump abnormal conditions.

ENTRY CONDITIONS

1. Transition from the following Annunciator Response Procedures:
 - 1C-F2, RCP BEARING HI TEMP
 - 1C-D3, E3, F3, RCP 1() SHAFT SEAL WTR LO INJ FLOW
 - 1C-D4, E4, F4, RCP 1() SEAL LKOFF LO FLOW
 - 1C-A4, B4, C4, RCP 1() SEAL LKOFF HI FLOW
 - 1B-A8, B8, C8, RCP 1() VAPOR SEAL TK HI LVL
 - 1B-D8, E8, F8, RCP 1() VAPOR SEAL TK LO LVL
2. Transition from 1-OP-RC-001, STARTING AND RUNNING ANY REACTOR COOLANT PUMP.
3. Transition from 1-AP-16.00, EXCESSIVE RCS LEAKAGE.
4. Detection through visual observation of an RCP abnormal condition.
5. Detection through visual observation that RCP Seal Leakoff on any RCP is less than 1.0 gpm.

APPROVAL RECOMMENDED	APPROVED CHAIRMAN STATION NUCLEAR SAFETY AND OPERATING COMMITTEE	DATE
REVIEWED		

NUMBER	PROCEDURE TITLE	REVISION
1-AP-9.00	RCP ABNORMAL CONDITIONS	13
		PAGE 4 of 14

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION: • A local check of No.1 Seal Leakoff may be performed to verify the accuracy of the leakoff flow indication.

- If a local check is not performed, Operations Management should be consulted on stopping the RCP within 8 hours if leakoff remains less than 0.8 gpm and no parameters are at action level IAW Attachment 2.
- An RCP should be secured for low seal leakoff (less than 0.8 gpm) using the following time limits: 1) Stop the RCP immediately (within five minutes) after a manual Reactor trip if any Attachment 2 parameter is continuously increasing or at Action level. 2) Stop the RCP within 8 hours if Attachment 2 parameters are stable.

11. ____CONSULT WITH SS TO DETERMINE IF A LOCAL SEAL LEAKOFF CHECK SHOULD BE PERFORMED
- GO TO Step 33.

CONDENSATE AND FEEDWATER SYSTEM
MAIN FEEDWATER SYSTEM

LESSON RESOURCES

Equipment and Facilities

- Standard Classroom
- Chalkboard, chalk, eraser
- Overhead projector

Trainee References

- Surry UFSAR, Chapters 10 and 14
- NCRODP-26, Feedwater System
- AP-21.00, Loss of Main Feedwater Flow

Bibliography

- Surry UFSAR, Sections 10.3.5 and 14.2.11
- NCRODP-26, Feedwater System
- EWR 86-356, FW recirc valve flow setpoints
- AP-21.00, Loss of Main Feedwater Flow

Recommended Time

- 2 Hours

- c. The pump and motor bearings are lubricated by each pumps' lubrication oil system. Radial movement of the pump shaft is restricted by two (2) Journal bearings mounted on opposite sides of the pump. A 6 inch Kingsbury thrust bearing minimizes pump axial motion.
- d. The main feed pumps have a set of pre-start conditions which must be satisfied prior to start. These interlocks are:

Refer to/re-display H/T-3.3, Page 1, Main Feed System Fact Sheet, and use with the following information.

- (1) >10 psig - Lube Oil Pressure
 - (2) >100 psig - Suction Pressure
 - (3) Lockout reset (no overcurrent or ground)
- e. Each main feed pump has ten (10) trips associated with it. They are:
 - (1) Overcurrent or Ground
 - (2) Lube Oil Press. <4 psig.
 - (3) S.I. (Train A or B) (May be bypassed with "Reset" buttons)
 - (4) Low Suction Header Press. <55 psig - 15 SEC. T.D. Both pumps
 - (5) <2800 gpm MFW Flow & Recirc Valve not open, 15 SEC. T.D.
 - (6) Other Motor Overcurrent or Ground.

- (7) Bus Undervoltage - Approximately 70%
- (8) S/G Hi-Hi Level - 2/3 Channels on 1/3 S/G's [>]75% (May Be Bypassed with "RESET" buttons)
- (9) Manual
- (10) Load Shedding 1B & 2A MFPs

Refer to/display H/T-3.3, Page 2, Main Feed System Fact Sheet, and use with the following information.

- 2. Discharge MOVs are provided for each main feed pump. They provide the ability to isolate the high pressure discharge of the pump. They have no automatic opening signal and must be manually opened by a switch on the Main Control Board. Their opening logics allow them to be opened and remain open if both motors for the associated pump are running. They can be closed either MANUALLY or will automatically close if EITHER MOTOR BREAKER OPENED for the associated pump (for backup to auto FRV closure).
- 3. Pump Recirculation Subsystem

Refer to/display H/T-3.4, Recirculation System, and use with the following information.

- a. The purpose of the recirculation subsystem is to provide for minimum flow to be diverted to the main condenser to prevent MFP overheating during low flow conditions and allow pump coastdown upon stop.



VIRGINIA POWER

Station Administrative Procedure

© 2000 by Virginia Power. All Rights Reserved

Title: Radiation Protection Program

Process / Program Owner: Superintendent Radiological Protection

Procedure Number
VPAP-2101

Revision Number
16

Effective Date
On File

Revision Summary

- Revised 6.4.4.a.1 Note to provide information that Portal Monitors (PM-7s) can be used for routine whole body counting of individuals.

Approvals on File

6.3.4 Administrative Dose Controls - General Requirements

NOTE: An integral part of administrative dose controls is the control of access to RCAs. RCA access control is addressed in 6.6.1.

- a. The following control is in place to provide reasonable assurance that a worker will not exceed administrative dose limits.

If a worker has a quarterly or annual dose within 200 mrem of an administrative dose limit, the worker will be denied RCA access unless specifically authorized by the Supervisor Exposure Control and Instrumentation.

EXAMPLE: If a radiation worker has more than 1.8 rem deep-dose equivalent (whole body gamma plus neutron dose) in a calendar quarter or more than 3.8 rem TEDE in a calendar year, then that worker will be denied RCA access unless a dose extension request is approved. System employees will be denied access at 0.30 rem TEDE any time during a calendar year.

- b. Request:

Type	Administrative Dose Limits
Total Effective Dose Equivalent (TEDE)	4.75 rem/year
Lens of Eye (lens dose equivalent)	14.0 rem/year
Skin (shallow dose equivalent)	45.0 rem/year
Extremities (shallow dose equivalent)	45.0 rem/year

- c. An extension request shall be acknowledged by the affected worker and approved by:
- Department Superintendent (or Superintendent cognizant of worker duties)
 - Superintendent Radiological Protection
 - Site Vice President or Manager Station Operations and Maintenance or Manager Station Safety and Licensing

6.6.1 RCA Access Controls and Postings

NOTE: To assure work activities within an RCA are controlled, RCAs are identified and authorized RCA entry and exit locations are established.

To prevent inadvertent release of RMs, all personnel and material exiting an RCA shall be monitored for contamination.

a. RCA Designation and Authorized Entry and Exit Points

NOTE: The presence of sealed or contained radioactive sources or specific radiation levels do not in themselves constitute the criteria for designating an area as an RCA.

1. RP shall determine applicable areas to be designated as RCAs and establish authorized entry and exit points, considering personnel, material, and vehicles.
2. Designated RCA entries are posted (additional information may be provided):
RADIOLOGICAL CONTROL AREA
3. Designated RCA exits are posted (additional information may be provided):
RCA EXIT

b. RCA Entry Requirements for Radiation Workers

1. An RWP is required in accordance with 6.8.
2. Workers shall wear dosimetry required by their RWP.
3. Material should not be taken into an RCA unless needed for work.
4. An individual with an open wound shall obtain RP approval for the entry and ensure the wound is covered to prevent potential contamination.

c. RCA Entry Requirements for Visitors and Non-Radiation Workers

RCA entry requirements for non-Radiation Workers and visitors are addressed in 6.6.2.