U.S. NUCLEAR REGULATORY COMMISSION REGION I
OPERATOR LICENSING EXAMINATION REPORT

EXAMINATION REPORT NO.: 89-27(OL)

FACILITY DOCKET NOS.: 50-277
50-278

FACILITY LICENSE NOS.: DPR-44
DPR-56

LICENSEE: Philadelphia Electric Company

FACILITY: Peach Bottom Atomic Power Station

EXAMINATION DATES: December 12 - 14, 1989

EXAMINERS: Allen G. Howe, Senior Operations Engineer
Herb Williams, Senior Operations Engineer
Nick Conicella, Operations Engineer
Paul Bonnett, Operations Engineer, (Examiner Cert.)

EXAMINER: F. Paul Bonnett, Operations Engineer — 1-24-90 Date

CHIEF EXAMINER: Allen G. Howe, Senior Operations Engineer — 1/24/90 Date

APPROVED BY: Richard Conte, Chief, BWR Section — 1/25/90 Date
Operations Branch, Division of Reactor Safety

SUMMARY: Written examinations and operating tests were administered to two (2) Reactor Operator (RO) candidates (Initial). All candidates passed the written and operating examinations.

During the operating examination communications, team work and procedural entry and use were noted as strengths. The verification of scram actions and general knowledge of technical specifications were noted as weaknesses.

During the review of the examination preparation information, the examiners noted that there was not a procedure for normal power operations. The

licensee management had previously recognized a need for a procedure and committed to complete development by June 30, 1990. This is an unresolved item.

During the review of the examination preparation information, the examiners noted weaknesses in the format and structure of some of the lesson plans. Licensee management agreed that these lesson plans needed upgrading. This is an unresolved item.

DETAILS

1. INTRODUCTION AND OVERVIEW

The NRC examiners conducted this initial examination for two (2) Reactor Operators (RO) candidates. The examinations were administered in accordance with NUREG 1021, Rev. 5, dated January 1, 1989, Examiner Standards (ES). The results are summarized below.

	RO Pass/Fail
Written	2 / 0
Operating	2 / 0
Overall	2 / 0

2.0 PERSONS CONTACTED

Facility Personnel

*R. Andrews, Training Superint
R. Birley, Instructor
*J. Cotton, Superintendent [illegible]as
*J. Lyter, Senior Instructo
R. Watkins, Instructor

NRC Personnel

*P. Bonnett, Operations Engineer
N. Conicella, Operations Engineer
*A. Howe, Sr. Operations Engineer
*J. Lyash, Sr. Resident Inspector
H. Williams, Sr.Operations Engineer

*Denotes those present at the exit meeting conducted on December 14, 1989.

3.0 EXAMINATION RELATED FINDINGS/CONCLUSIONS

The following is a summary of general strengths and deficiencies noted during the administration of the operating tests. This information is being provided to aid the licensee in upgrading license and requalification training programs. No licensee response is required.

STRENGTHS

a. Communications and team work
b. Response to alarms
c. Recognition of entry into ON, OT, and TRIP procedures
d. Use of procedures
e. Performance of training personnel as surrogate operator for exam

DEFICIENCIES

a. Verification of scram actions
b. General knowledge and familiarity of Tech. Specs.

There were no general strengths or deficiencies noted on the written examinations.

4. ADDITIONAL FINDINGS

4.1 Procedures for Power Operations

During a review of the plant procedures, the inspector noted that the licensee did not have a procedure for steady-state power operations or planned load changes. This observation was discussed with the Superintendent of Operations. He stated that the need for procedure guidance in this area was recognized as the result of a review of a Licensee Event Report (LER) from another facility and that a procedure was being developed. The inspector requested the licensee to forward a letter to the NRC to document their commitment to develop a procedure for power operations. The letter is attached to this report. This area is unresolved pending completion of licensee action as noted above and NRC staff review (277, 278/89-27-01).

4.2 License Operator Training Material

During the development of the written and operating examinations, the inspector observed that the training material supplied contained several explanations of system or integrated operations that were cumbersome or difficult to discern. The lesson format is such that it provides the main body of material in a Subject Outline and Support Information, which is not supposed to testable, in the right-hand margin. In trying to formulate an objective-based test, the inspector noted that the objectives were covered to a higher degree in the Support Information column than in the Subject Outline. This was discussed with the training department representatives and management who agreed that the lesson plans needed upgrading. This area is unresolved pending completion of licensee action as noted above and NRC staff review (277, 278/89-27-02).

5. Exit Meeting:

On December 7, 1989, the pre-examination review was conducted at the NRC Regional office. The Facility was informed that, although a post-exam

review was not conducted, comments on the written examination would be accepted. These comments were received at the Regional Office on December 18, 1989.

The Operations staff was cooperative in maintaining a control room environment which was conducive to the administration of the operating test.

The examination security for both the written and operating examinations was excellent.

The results of the examinations were not discussed at the exit meeting. Every effort would be made to provide the applicant's results in approximately 30 working days.

The Additional Findings, (Section 4) and the licensee's corrective actions were discussed during the exit meeting.

Attachment 1	Examination and answer keys
Attachment 2	Facility Comments
Attachment 3	Resolution of facility comments
Attachment 4	Simulator Fidelity report
Attachment 5	Letter from J. Cotton to USNRC, dated December 26, 1989 describing commitment to develop a normal power operations procedure.

U. S. NUCLEAR REGULATORY COMMISSION
REACTOR OPERATOR LICENSE EXAMINATION
REGION 1

FACILITY: Peach Bottom 2 & 3

REACTOR TYPE: BWR-GE4

DATE ADMINSTERED: 89/12/12

INSTRUCTIONS TO CANDIDATE:

Use separate paper for the answers. Write answers on one side only. Staple question sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires at least 70% in each category and a final grade of at least 80%. Examination papers will be picked up ~~six (6)~~ 4 ½ hours after the examination starts.

CATEGORY VALUE	% OF TOTAL	CANDIDATE'S SCORE	% OF CATEGORY VALUE		CATEGORY
28.00	32.18			2.	EMERGENCY AND ABNORMAL PLANT EVOLUTIONS (27%)
59.00	67.82			3.	PLANT SYSTEMS (38%) AND PLANT-WIDE GENERIC RESPONSIBILITIES (10%)
87.00		FINAL GRADE	%		TOTALS

All work done on this examination is my own. I have neither given nor received aid.

Candidate's Signature

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.

2. Restroom trips are to be limited and only one candidate at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.

3. Use black ink or dark pencil only to facilitate legible reproductions.

4. Print your name in the blank provided on the cover sheet of the examination.

5. Fill in the date on the cover sheet of the examination (if necessary).

6. Use only the paper provided for answers.

7. Print your name in the upper right-hand corner of the first page of each section of the answer sheet.

8. Consecutively number each answer sheet, write "End of Category __" as appropriate, start each category on a new page, write only on one side of the paper, and write "Last Page" on the last answer sheet.

9. Number each answer as to category and number, for example, 1.4, 6.3.

10. Skip at least three lines between each answer.

11. Separate answer sheets from pad and place finished answer sheets face down on your desk or table.

12. Use abbreviations only if they are commonly used in facility literature.

13. The point value for each question is indicated in parentheses after the question and can be used as a guide for the depth of answer required.

14. Show all calculations, methods, or assumptions used to obtain an answer to mathematical problems whether indicated in the question or not.

15. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.

16. If parts of the examination are not clear as to intent, ask questions of the examiner only.

17. You must sign the statement on the cover sheet that indicates that the work is your own and you have not received or been given assistance in completing the examination. This must be done after the examination has been completed.

18. When you complete your examination, you shall:

a. Assemble your examination as follows:

(1) Exam questions on top.

(2) Exam aids - figures, tables, etc.

(3) Answer pages including figures which are part of the answer.

b. Turn in your copy of the examination and all pages used to answer the examination questions.

c. Turn in all scrap paper and the balance of the paper that you did not use for answering the questions.

d. Leave the examination area, as defined by the examiner. If after leaving, you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION 2.01 (1.00)

WHICH of the following statements describes WHY all rods are checked to be inserted to or beyond notch 02.

A. To verify if reactor power is less than 3 %.

B. To ensure the reactor will remain shutdown during cooldown.

C. To determine if the SCRAM can be reset.

D. To confirm to the operator that SBLC injection is needed.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.02 (1.00)

WHICH of the following statements is an entry condition into T-104, "Radioactivity Release"?

A. Off-gas stack high high radiation alarm.

B. Ventilation stack high radiation alarm.

C. Unexplained secondary containment ARM alarm.

C. Unexplained reactor bldg. or refuel floor ventilation exhaust high radiation alarm.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.03 (2.00)

For each set of parameters listed in COLUMN A, SELECT from COLUMN B ALL the appropriate emergency procedure(s) that would be entered. Consider each problem separately. More than one COLUMN B response may be required and may be used more than once. The reactor is INITIALLY at 100% power for each problem.

COLUMN A			COLUMN B
A.	Rx Pwr - < 1 % Rods - Full In Rx Level - 23" NR DW Press - .8 psig Torus Level - 14.8"	_____	1. T - 99 2. T - 100 3. T - 101
B.	Rx Pwr - < 1 % Rods - Full In Rx level - 25" NR DW Press - 2.3 psig DW Temp - 125 F	_____	4. T - 102 5. T - 103 6. T - 104
C.	Rx Pwr - 100 % Rods - Full Out Rx Level - 29" DW Press - 1.6 psig Torus Temp - 94 F	_____	7. No entry required
D.	Rx Pwr - 100% Rods - Full Out Rx Level - 45" DW Press - .5 psig Torus Temp - 90 F	_____	

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.04 (1.50)

For the actions listed in COLUMN A, SELECT from COLUMN B the corresponding pressure at which that action would occur. Each selection in Column B may be used once, more than once, or not at all.

COLUMN A		COLUMN B
A. The initial four relief valves have actuated on the Main Steam System.	_____	1. 1030 psig
B. Reactor SCRAM	_____	2. 1040 psig
C. "Reactor High Press" alarm	_____	3. 1055 psig
D. Entry into T-101, "RPV Control"	_____	4. 1060 psig
E. Two safety valves actuate on the Main Steam System.	_____	5. 1105 psig
F. Recirc MG drive motor breaker trips	_____	6. 1115 psig
		7. 1120 psig
		8. 1125 psig
		9. 1230 psig
		10. 1325 psig

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.05 (1.00)

According to ON-107, "Loss of CRD Regulation Function", if the reactor is at 100% power, both CRD pumps are tripped and unable to be immediately restarted, HOW MANY HCU accumulators may be in alarm before the procedure requires the operator to shutdown the reactor?

A. None, immediately scram the reactor

B. 3 accumulators

C. 5 accumulators

D. all accumulators

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.06 (1.00)

The reactor is operating at 100 % power when the "CRD Scram Air Header Hi/Low Pressure" alarm annunciates. SELECT the proper operator action if rods began drifting.

A. Place the standby service air compressor in service and restore system pressure.

B. Place the backup scram air header pressure control valve in service.

C. Scram the reactor and enter procedure T-100.

D. Scram the reactor, close the MSIV's, and enter T-101.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.07 (1.50)

In accordance with OT-101, WHAT are the Immediate Operator Actions for High Drywell Pressure?

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.08 (1.00)

During a transient from a trip of both recirculation pumps, you notice Thermal Hydraulic Instability (THI). SELECT the statement that describes what Thermal Hydraulic Instability is.

A. The APRM's oscillating at greater than 5 % peak-to-peak or periodic LPRM upscale or downscale alarms.

B. The APRM's oscillating at greater than 10 % peak-to-peak or periodic LPRM upscale or downscale alarms.

C. The APRM's oscillating at greater than 5 % peak-to-peak and periodic LPRM upscale and downscale alarms.

D. The APRM's oscillating at greater than 10 % peak-to-peak and periodic LPRM upscale and downscale alarms.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.09 (1.00)

In response to a scram, the operator places the Mode Switch in shutdown. Besides inserting an additional scram signal, WHAT other function is provided by this action?

A. Enables the Low Vacuum Trip.

B. Bypasses the Group II and III isolation signals.

C. Prevents the MSL low pressure closure to the MSIV's.

D. Energizes the back-up scram valves.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.10 (1.00)

Caution #20 in T-101 warns the operator against inhibiting ECCS operation unless "Adequate Core Cooling" is assured. SELECT the statement that describes "Adequate Core Cooling" from the choices below.

A. The Core Spray and RHR Pumps are running with reactor pressure at 500 psig and reactor level -200".

B. Core Spray and RHR Pumps are lined up, not injecting with reactor pressure at 0 psig and reactor water level is -160 ".

C. Systems operating to maintain peak cladding temperatures below 2500 degrees F.

D. The fuel is at or below the Average Planar Linear Heat Generation Rate (APLHGR) as stated in the Technical Specifications.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.11 (2.00)

1. A reactor scram has occurred, but reactor power is still indicating > 3% on the APRM's. According to Trip Procedure T-101, by WHAT Torus temperature is SBLC required to be injected if the reactor is NOT shutdown with rods?

   A. 95 F

   B. 105 F

   C. 110 F

   D. 120 F

2. WHICH of the following statements describes the basis for the above Torus temperature.

   A. It assures the reactor will be shutdown prior to reaching the heat capacity temperature limit of the torus.

   B. It allows sufficient time for the operator to be able to drive the rods into notch 02.

   C. Prevents having to inject borated water into the reactor before it is absolutely necessary.

   D. It ensures the RHR and Core Spray Pumps net positive suction head (NPSH) is maintained in the torus.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.12 (1.00)

FILL IN THE BLANKS

The RPV Power leg of Trip Procedure T-101, "RPV Control", is in progress. If the normal SBLC pumps are not functioning properly, the _____ system or the _____ system can be used to inject boron.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.13 (3.00)

As the Reactor Operator you notice that a SRV is open inadvertently.
WHAT are the Immediate Operator Actions?

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.14 (2.00)

A Loss of Coolant Accident (LOCA) with a Loss of Offsite Power has occurred on Unit 3.

1. SELECT the statement that describes HOW the sequential loading will occur after the D/G output breaker shuts.

   A. After 2 seconds the A & B RHR Pumps start then the C & D Core Spray Pumps start after 8 seconds.

   B. After 2 seconds the A & B RHR Pumps start on Unit 2 and C & D RHR Pumps start on Unit 3 then the Core Spray Pumps start after 8 seconds.

   C. All RHR Pumps start immediately and all Core Spray Pumps start after 6 seconds.

   D. All Core Spray Pumps start immediately and all RHR Pumps start after 6 seconds.

2. With the Diesel Generator running in this event, SELECT which auto Diesel trip signal will NOT trip the Diesel.

   A. Generator Phase Differential

   B. Neutral Overcurrent

   C. Manual Cardox Injection

   D. Lube Oil Low Pressure

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.15 (1.00)

The Control Room is uninhabitable due to heavy smoke and is required to be evacuated. SELECT from below the statement that would NOT be performed as an Immediate Action in SE-1 (Plant Shutdown From The Emergency Shutdown Panel).

A. Runback Recirc flow to minimum.

B. Manually Scram the reactor.

C. Establish Drywell Cooling

D. Close the eight MSIVs.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.16 (1.00)

Step 5.c. in the follow-up section of SE-11 "Station Blackout" states: "FOR E-2, E-3, AND E-4 D/G ONLY. IF any of these diesels failed to start, THEN perform the following for E-2, E-3, and E-4 D/G: ..." . SELECT the statement that describes WHY these diesels are specified.

A. They ensure power to the RPS buses.

B. They ensure sufficient cooling for the diesels.

C. They provide normal control functions for Alternate Shutdown.

D. They provide sufficient cooling to all RHR heat exchangers.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.17 (1.00)

Following a large primary coolant break (LOCA), reactor pressure is 100 psig and the Drywell temperature is at 300 F. WHICH statement describes the response of reactor water level instruments.

A. The Wide Range Instrument will provide an accurate level indication.

B. The Narrow Range Instrument provides an accurate level indication.

C. The Wide Range Instrument will read lower than actual due to density effects.

D. The Narrow Range Instrument will read higher than the actual level.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.18 (1.00)

A jet pump failure has occurred. WHICH of the following statements describes how the indications will respond to a jet pump failure.

A. Reactor power decreases and recirc drive flow increases.

B. Reactor power increases and recirc drive flow increases.

C. Reactor power increases and recirc drive flow decreases.

D. Reactor power decreases and recirc drive flow decreases.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.19 (1.00)

A Caution in T-100 states, "Do not depressurize below 100 psig unless motor driven pumps sufficient to maintain RPV level are ready to inject". What is the basis for the 100 psig limitation?

A. The RHR system isolates at 75 psig.

B. The ADS valves shut at 100 psig.

C. The HPCI system isolates at < 100 psig.

D. The RCIC exhaust check valve will chatter.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.20 (1.00)

The Unit 2 reactor is operating at 100 % power when annunciators "Main Steam Hi Radiation" 218 D-2 and "Channel A Group I Isolation Relays Not Reset" 211 H-1 alarms. You observe MSL radiation is slowly increasing. In accordance with OT-103 (Main Steam Line High Radiation) WHAT operator actions should you take?

A. Scram the reactor and enter Procedure T-100.

B. Try to reset the alarm and determine the if an isolation has occurred.

C. Reduce reactor power in accordance with GP 9-2 to maintain the rad levels below the "Main Steam Hi Radiation" alarm setpoint.

D. Investigate the possibility of a resin injection by determining if a condensate or RWCU demin was placed in service when the Alarms came in.

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

QUESTION 2.21 (2.00)

For each of the parameters listed in COLUMN A, MATCH the Primary Containment Isolation Group parameter that would activate or should have activated from COLUMN B. Each group in COLUMN B may be used more than once or not at all.

COLUMN A

A. Off-Gas Stack Hi Hi Rad levels _____

B. Reactor Pressure 75 psig _____

C. Drywell Pressure 1.6 psig _____

D. Reactor Pressure 600 psig _____

E. Reactor Level at -160" _____

COLUMN B

1. Group I - MSIV and MSL drains.
2. Group IIa - RWCU
3. Group IIb - Head Spray and SD Cooling.
4. Group IIc - Long Path Recirc
5. Group III - DW Vent and Purge Valves
6. Group V - RCIC
7. None

(***** END OF CATEGORY 2 *****)

3. PLANT SYSTEMS (38%) AND PLANT-WIDE GENERIC RESPONSIBILITIES (10%)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.01 (1.50)

FILL IN THE BLANKS

1. The recirculation pumps shall not be started unless the coolant temperatures between the RPV dome and bottom head drain are within _____ F.

2. The recirculation pump in an idle loop shall not be started unless the temperatures of the coolant within the idle and operating loops are within _____ F of each other.

3. During one recirculation pump operation, the discharge valve of the idle pump may not be opened unless the speed of the running pump is less than _____ % of its rated speed.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.02 (1.00)

WHAT is the device that ensures adequate flow to the high power bundles?

A. Fuel Support Piece

B. Core Plate

C. Orifice

D. Fuel Channel

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.03 (1.00)

The Caution in ON-113 "Loss Of RBCCW", states that the Recirc Pump should be tripped within 10 minutes. The primary reason for doing this is to:

A. prevent overheating the pump casing.

B. prevent damage to the pump seals.

C. prevent damage to the motor windings.

D. prevent warping the pump shaft.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.04 (2.00)

The reactor is operating at 90% of rated core thermal power, 100% rod pattern, with the main generator on the line. The "A" stator water cooling pump is "tagged" out of service.

1. SELECT the statement that describes how the recirculation system will respond if the "B" stator water cooling pump trips. ASSUME no operator action.

   A. The "A" and "B" Recirc Pumps runback to minimum speed.

   B. The "A" and "B" Recirc Pumps trip after a 1 sec time delay.

   C. The "A" Recirc Pump trips and the "B" Recirc Pump runs-back to minimum speed after a 1 sec time delay.

   D. The "A" Recirc Pump trips in 1 sec. and the "B" Recirc Pump trips after a 10 sec time delay.

2. For the same conditions, SELECT the statement that describes how the Turbine-generator will respond. ASSUME no operator action.

   A. The EHC system will trip the turbine immediately.

   B. The EHC system will reduce generator load to < 23% and then trip the turbine.

   C. The EHC system will reduce generator load to < 23% within 2.5 minutes.

   D. The EHC system will reduce generator load to < 23% within 3.5 minutes.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.05 (1.00)

Concerning the CRD system, WHAT effect could throttling closed the Drive Water Pressure Control Valve (MO-20) produce?

A. Decreases the control rods insertion time on a SCRAM.

B. Increase the control rod withdrawal speed.

C. Increase the cooling water flow to each CRDM.

D. Decreases the seal flow to the Recirc Pumps.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.06 (1.00)

CHOOSE the statement that completes the following statement.

The Backup Scram Valves are...

A. normally energized and will de-energize upon a RPS scram signal.

B. aligned such that two valves in series, one from each RPS trip channel, must actuate to vent the scram air header.

C. designed such that both RPS channels must trip in order for any one of the valves to actuate.

D. powered from the RPS Buses A and B.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.07 (1.00)

Which statement describes what will cause a Withdrawal Block for the Rod Worth Minimizer.

A. One withdrawal error exists.

B. Two Insert errors exists.

C. The selected rod is a peripheral rod.

D. The selected rod is at its group notch limit.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.08 (1.00)

Reactor power is 85 % and total core flow is 70 %. Neither rod block monitor (RBM) is bypassed and control rod 18-31 is selected. SELECT the statement that describes HOW the RBM will respond when the operator bypasses APRM Channel "E" for a surveillance.

A. The A RBM would be inoperable.

B. The A RBM would enforce a rod block.

C. The A RBM would be automatically bypassed.

D. The A RBM reference APRM will shift to the C APRM.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.09 (1.00)

Which of the statements concerning the Reactor Feedwater Pump Turbines Motor Speed Changer (MSC) is correct.

A. The MSC receives power from the uninterruptable power supply.

B. The MSC is tied to the Feedwater Control System via a function generator.

C. The MSC is the automatic device which can be used in the event that the Feedwater Control System fails.

D. The MSC can regulate the turbine speed between 0 RPM and full speed.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.10 (1.00)

The plant is operating at 100% power with the Feedwater Control System in Three Element Control. Level is stable and feed flow is matched with steam flow. Assume the "A" Steam Flow Detector fails low. SELECT the statement that describes how the plant will respond. Assume no operator action.

A. Level stabilizes at a lower than normal level.

B. Level stabilizes at a higher than normal level.

C. Reactor scrams due to low level.

D. Reactor scrams due to high level turbine trip.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.11 (1.00)

The reactor is operating at 100% feedwater flow and 100 % reactor power. The "A" condensate pump trips. SELECT the statement that describes the automatic component reponse. Assume no operator action.

A. Reactor recirc pumps runback to 30 % speed.

B. The reactor feed pumps runback to 90 % max speed.

C. EHC will runback generator load to < 23 %.

D. Main Turbine trips due to high level.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.12 (1.00)

WHICH of the following conditions will actuate the Unit 2 Standby Gas Treatment System.

A. Drywell Temperature - 135 F

B. Off-gas Stack Exhaust - 16 mR/hr

C. Refuel Floor Exhaust - 16 mR/hr

D. Unit 3 initiation signal starts fans A & B.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.13 (1.00)

You are performing SO 2.7.A-2 "Recirculation System Runback Reset" to recover from a 60 % Recirc System runback. Before pushing the reset pushbuttons you decrease the speed demand signal until both Recirc MG sets speed decreases slightly. SELECT the statement that describes the reason for this action.

A. To ensure the speed limiter will reset.

B. To ensure the speed limiter signal is at 60 %.

C. To ensure recirc pump speeds are matched as per Tech Specs.

D. To ensure set speed demand is less than actual speed demand.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.14 (1.00)

In accordance with GP-2, Normal Plant Start-up, when a control rod is moved to position 48, an attempt to withdraw the rod one more notch is made before proceeding to the next rod. WHICH statement describes WHY this withdrawal is made.

A. To ensure the Control Rod Drive Mechanism is vented.

B. To ensure the control rod is coupled to its CRDM.

C. To ensure the cooling water flow path through the spud slots is open.

D. To ensure the CRDM seals are not leaking or failed.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.15 (2.00)

Determine for each of the following conditions in COLUMN A, what protective function(s) will occur in COLUMN B. More than one answer may apply and may be used more than once.

COLUMN A		COLUMN B
A. SRM detector not fully inserted with SRM's @ 1000 cps	_____	1. Rod Block
B. SRM's @ 100,000 cps and shorting links removed	_____	2. Scram
C. SRM's @ 2 cps with associated IRM on range 5	_____	3. No response
D. SRM drawer selector switch in standby.	_____	

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.16 (3.00)

MATCH for the permissive in COLUMN A, ALL of the Mode Switch positions in COLUMN B. Consider each situation as stated. The Mode Switch positions in COLUMN B may be used more than once or not at all and more than one answer may apply.

COLUMN A		COLUMN B
A. MSIV's shut when RPV pressure is < 850 psig.	_____	1. Shutdown
B. No control rod movement possible.	_____	2. Refuel
C. APRM 15% Scram in service	_____	3. Startup/Hot Standby
D. Scram Discharge Volume high water level bypass.	_____	4. Run
E. IRM rod blocks bypassed.	_____	
F. One rod free movement interlock in service.	_____	

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.17 (1.00)

WHICH of the following is a signal from the Turbine Stop Valves is an input to the Reactor Protection System.

A. Main Steam pressure decreases to 850 psig.

B. RETS pressure decreases to < 850 psig.

C. There is a 40 % mismatch between cross-around piping and generator current.

D. The valves position is < 90 % open.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.18 (3.00)

Match the major load listed in COLUMN A with the appropriate 4160 VAC switchboard listed in COLUMN B. Each bus listed in COLUMN B may be used more than once or not at all.

	COLUMN A		COLUMN B
A.	A RHR Pump (U2)	_____	1. E-12
B.	B ESW Pump (U2)	_____	2. E-13
C.	D Core Spray Pump (U3)	_____	3. E-22
D.	A Control Rod Drive Pump (U3)	_____	4. E-23
E.	Emergency Cooling Tower Load Center A	_____	5. E-32
F.	B HP Service Water Pump (U2)	_____	6. E-33
			7. E-42
			8. E-43

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.19 (1.00)

The Mechanical Vacuum Pump is not to be operated above 5% thermal power. SELECT the statement that describes the reason why.

A. The pump is not designed to handle the additional load.

B. The stack radiation release rate limit is not monitored.

C. An explosion could occur inside the pump.

D. The pump is no longer required.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.20 (1.00)

The parameters for automatic initiation of the Automatic Depressurization System are present and the Blowdown timer is timing out. SELECT the action that will NOT reset the Blowdown timer.

A. Drywell pressure drops below 2 psig.

B. Interruption of power to the ADS logic channels.

C. Reactor level is restored above -48 inches.

D. Operation of the ADS timer reset pushbutton.

(-***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.21 (1.00)

Consider the following conditions:

Reactor water level	-	-175 inches
Reactor Pressure	-	920 psig
Drywell pressure	-	1.2 psig
All ECCS pumps	-	running
MSIV's	-	closed

For the above condition, the ADS system will actuate after a certain time delay. SELECT the proper time delay.

A. 105 seconds

B. 160 seconds

C. 500 seconds

D. 645 seconds

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.22 (2.50)

STATE FIVE (5) independent parameters available in the control room that would indicate that SBLC had been initiated.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.23 (1.00)

SELECT the statement that describes the sequence of SBLC solution being injected into the reactor plant.

A. Both SBLC pumps are started manually, taking suction on the SBLC tank and discharging the solution into the lower plenum area.

B. Both squib valves fire when one SBLC pump is started manually, aligning the flow path from the SBLC tank to the Reactor lower head.

C. The A SBLC pump is started locally and valves aligned by the plant operator to inject to the reactor.

D. When one SBLC pump is started manually, the associated squib valves fires to allow SBLC solution to be injected through the RWCU system.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.24 (1.00)

SELECT the statement that describes RWCU system operation during plant start-up.

A. Dump flow automatically increases during a normal plant heat-up.

B. Increased dump flow can cause the RWCU system to isolate on NRHX high discharge temperature.

C. The Bypass around the Restricting Orifice may be opened anytime reactor pressure is greater than 200 psig.

D. As reactor level decreases dump flow has to be increased to maintain reactor level constant.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.25 (1.00)

FILL IN THE BLANK

Upon the loss of power to two Drywell Cooling System chillers, the motor operator transfer valves and air operated blocking valves will open to allow the _____ system to supply the drywell loads.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.26 (1.00)

SELECT from below the statement that describes WHAT will cause the Rod Drift alarm to annunciate.

A. Closure of an odd and even numbered reed switch simultaneously as the rod is moved.

B. Closure of an odd numbered reed switch as the rod is moved from one latched position to another.

C. Closure of an odd numbered reed switch with no motion command.

D. Closure of an even numbered reed switch with no motion command.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.27 (1.00)

SELECT the statement that describes the function of the Rod Out Notch Override Switch for the Reactor Manual Control System (RMCS).

A. Overrides the settle function when continuously withdrawing a control rod.

B. Allows for continuous withdrawal when in the Notch Override Position.

C. Forces the operator to use two hands to withdraw a control rod one notch.

D. Bypasses all RWM blocks and interlocks when withdrawing a control rod.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.28 (1.00)

The Reactor Core Isolation Cooling (RCIC) system has initiated on a valid -48" and is raising reactor level. WHICH of the following statements describes what occurs as RCIC continues to inject. (Assume no operator action and RCIC is the only system injecting).

A. At +45" the RCIC turbine trips allowing level to decrease to -48" where the turbine must be manually reset to allow it to restart and raise level.

B. At +45" the Steam Supply Valve MO-131 to the RCIC turbine will close allowing reactor level to decrease to -48" where the turbine must be manually reset to allow the MO-131 valve to reopen and restart the turbine.

C. At +45" the RCIC turbine governor valve goes shut to allow reactor level to decrease to -48" where the governor valve reopens to restart the turbine.

D. At +45" the Steam Supply Valve MO-131 to the RCIC turbine will close to allow reactor level to decrease to -48" where the MO-131 valve reopens to restart the turbine.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.29 (1.50)

For each set of HPCI conditions in Column A, SELECT from Column B all the the HPCI valve operations (actual movement) that will automatically occur. Consider each HPCI condition separately. More than one Column B valve operation may be required and may be used more than once or not at all.

COLUMN A HPCI Condition		COLUMN B HPCI Valve operation
A. HPCI system high steamline flow isolation signal is received during a HPCI system CST-CST full flow test.	_____	1. MO-15 Steam supply valve OPENS.
B. HPCI turbine trip occurs while HPCI is injecting into the vessel.	_____	2. MO-16 Steam supply valve CLOSES.
C. Automatic system start signal is generated with HPCI in a normal "AUTO STANDBY" lineup at power.	_____	3. MO-4244A Turbine Exhaust line vacuum breaker isolation valve CLOSES.
		4. Turbine stop valve CLOSES.
		5. MO-19 Motor operated inboard injection valve OPENS.
		6. MO-20 Motor operated outboard injection valve OPENS.
		7. MO-20 Motor operated outboard injection valve CLOSES.
		8. MO-17 CST suction valve OPENS.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.30 (1.00)

Residual Heat Removal (RHR) Pump 2A is running with a valid initiation signal present. The operator is directed to stop the pump. SELECT the condition that will cause/allow the pump to restart.

A. A second initiation signal comes in before the initial signal clears.

B. The LPCI "A" Lockout Reset pushbutton (10A-S1A) is depressed with a valid initiating signal present.

C. The RHR Pump 2A Logic Reset pushbutton (10A-S31A) is depressed with a valid injection signal present.

D. The pump will restart immediately after the operator releases the switch when he stops the pump.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.31 (1.50)

MATCH the RHR conditions in Column A with the RHR pump(s) in Column B. The RHR pumps in Column B may be used more than once or not at all.

COLUMN A RHR condition		COLUMN B RHR pumps
A. Unit 3 Alternate shutdown RHR pump(s).	_____	1. RHR pump A
		2. RHR pump B
B. If LOCA occurs on both Units with loss of offsite power Unit 2 pump(s) will start.	_____	3. RHR pump C
		4. RHR pump D
C. Unit 2 Pump(s) that start if RHR loop A manual start pushbutton (10A-S70A) is armed and depressed.	_____	

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.32 (1.00)

Concerning the Core Spray System. The Core Spray to Top of Core Plate differential pressure indication is reading 9 psid. SELECT the statement that describes WHAT this is an indication of.

A. A Normal reading.

B. A Core Spray piping break between the RPV and Drywell.

C. A Core Spray piping break between the RPV and Shroud.

D. A Core Spray piping break between the Core Spray system and to core plate.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.33 (3.00)

Match the Off-Gas System components in COLUMN A with their purpose in COLUMN B. (NOTE: More than one response in Column B may apply to each item in in COLUMN A).

COLUMN A

A. Jet Compressors _____

B. Recombiner _____

C. Main Absorber Bed _____

D. Preheater _____

E. Guard Bed _____

COLUMN B

1. Uses main steam to increase efficiency of the reaction occurring in the Recombiner.
2. Provides a delay time for Krypton and Xenon isotopes to decay.
3. Removes any moisture left in the off-gas stream.
4. Reduces total volume of gases in the off-gas stream.
5. Provides delay time for N-16 decay.
6. Uses steam to dilute hydrogen levels in the off-gas stream.
7. Reduces hydrogen concentration in the off-gas stream.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.34 (2.00)

For each description in COLUMN A, SELECT from COLUMN B the individual that would meet that description. Column B choices may be used more than once.

COLUMN A		COLUMN B
A. Permission required prior to start-up.	_____	1. Chief Operator
B. Manipulates common and electrical controls.	_____	2. Auxiliary Operator
C. Serves as a member of the fire brigade.	_____	3. Plant Manager
D. Manipulates the controls affecting reactivity.	_____	4. Plant Operator
E. Maintains an overall perspective of the station.	_____	5. Shift Manager
		6. Unit Rx. Operator
		7. Floor Foreman

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.35 (1.00)

SELECT the statement that is CORRECT concerning Independent Verification.

A. Individuals assigned to perform independent verifications must be qualified licensed operators.

B. Throttled valves that were set during flow balancing are not to be manipulated, but visually verified.

C. Interaction between the individuals performing the verification is allowed as long as each person does his own work.

D. If a discrepancy is discovered while performing the verification the individual will stop, notify Shift Management and not continue until the discrepancy is corrected.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.36 (1.00)

What type of blocking tag would be used on equipment that would allow the permit holder to test or to operate that equipment that is so tagged.

A. Equipment Trouble Tag

B. Red Danger Tag

C. Special Condition Tag

D. Information Tag

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.37 (3.00)

MATCH to the Annunciator Window description in COLUMN A, the correct color that window should be from COLUMN B. Each response in COLUMN B may be used more than once or not at all.

COLUMN A		COLUMN B
A. Alarms that are associated with Secondary Containment.	_____	1. Red
B. Alarms associated with Tech Spec instrumentation.	_____	2. Yellow
C. Alarms associated with primary system trips.	_____	3. Green
D. Alarms associated with equipment operating outside of its acceptable operating limit.	_____	4. Blue
E. Alarms that are normally lighted during power operation.	_____	
F. Alarms associated with entry conditions into T-103 and T-104.	_____	

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.38 (1.00)

A 24 year old contractor has a job in an area with a radiation field of 175 mR/hr. He has received a whole body dose of 600 mRem at another facility this quarter. His lifetime whole body exposure is 29.10 Rems and he has a NRC Form 4 on file. In accordance with PBAPS Radiation Procedures, which ONE of the following describes the allowable work time for this individual?

A. 26 minutes

B. 59 minutes

C. 86 minutes

D. 102 minutes

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.39 (2.00)

MATCH the exposure descriptions listed in COLUMN A with the dose limits listed in COLUMN B. Doses may be used more than once or not at all.

	COLUMN A		COLUMN B
A.	Federal limit per calendar quarter for skin of whole body - quarterly exposure is known.	_____	1. 500 mRem 2. 1000 mRem 3. 1250 mRem 4. 1500 mRem 5. 2500 mRem 6. 3000 mRem 7. 5000 mRem 8. 7500 mRem 9. 12000 mRem 10. 18750 mRem
B.	Federal limit per calendar quarter exposure to the extremities - quarterly exposure is known.	_____	
C.	Federal limit to whole body per calendar quarter if lifetime exposure history is known via form NRC-4.	_____	
D.	PBAPS limit to whole body exposure per calendar quarter with documented exposure history (NRC-4).	_____	

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.40 (1.00)

What controlled area is defined as any accessible area in which a major portion of the whole body would receive greater than or equal 100 mr/hr in any one hour.

A. Protected Area

B. Radiation Area

C. Contaminated Area

D. High Radiation Area

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.41 (1.00)

In accordance with Technical Specifications, WHICH TERM describes an assessment of a channel's behavior during operation by observation, including the comparison of the channels indication with other indications from independent instruments measuring the same parameter.

A. Channel Functional Test

B. Channel Verification

C. Channel Calibration

D. Channel Check

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.42 (1.00)

In accordance with Technical Specifications, WHICH statement describes the Fraction of Limiting Power Density.

A. The sum of the heat generation rate per length of fuel rod, for all the fuel rods in a specific bundle at a specific height, divided by the number of fuel rods in the fuel bundle at that height.

B. That assembly power which causes some point in the assembly to experience transition boiling divided by the actual assembly power.

C. The ratio of the linear heat generation rate existing at a given location divided by the design LHGR for that bundle type.

D. The minimum in-core Critical Power Ratio corresponding to the most limiting fuel assembly in the core.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.43 (1.00)

Technical Specifications sets maximum limits on chlorides in the reactor coolant system. SELECT the statement that describes the basis for this limit.

A. Chlorides catalyze the oxidation of carbon steel.

B. Chlorides cause stress cracking of the stainless steel.

C. Chlorides increase galvanic corrosion at dissimilar metal junctions.

D. Chlorides increase the formation of insoluble metallic corrosion products.

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

QUESTION 3.44 (1.00)

In GP-2 "Normal Plant Start-up", when the reactor is taken critical, data is taken. WHICH one of the following is NOT a Critical Data point?

A. Reactor Water Level

B. RWM group

C. SRM Period

D. Rod Position

(***** END OF CATEGORY 3 *****)
(********** END OF EXAMINATION **********)

ANSWER 2.01 (1.00)

B. [1.00]

REFERENCE

Peach Bottom: LOT-1560 obj. 3
Peach Bottom: T-99/T-101 Basis
295015K102 295015A202 ..(KA's)

ANSWER 2.02 (1.00)

A [1.00]

REFERENCE

Peach Bottom: T-104/T-103
Peach Bottom: LOT-1560 obj. 2
295017G011 ..(KA's)

ANSWER 2.03 (2.00)

A.(1) 2 (0.5)
B. (2), 3, 4 (0.25 each)
C. 7 (0.5)
D(2) 3 (0.5)

No credit will be deducted for adding T-99

No credit will be deducted for adding T-100

REFERENCE

Peach Bottom: LOT-1560 obj. 2
295006G011 295010G011 295037G011 ..(KA's)

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

ANSWER 2.04 (1.50)

A. 5
B. 3
C. 2
D. 3
E. 9
F. 7 [0.25 each = 1.5]

REFERENCE

Peach Bottom: LOT-120 obj 12 pg 7,12
Peach Bottom: LOT-0050 obj 5 pg 18
295025K205 295025A103 ..(KA's)

ANSWER 2.05 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-1550 obj. 2
Peach Bottom: ON-107 step 5
295022G011 ..(KA's)

ANSWER 2.06 (1.00)

C. [1.00]

REFERENCE

Peach Bottom: ON-108 step 3.
Peach Bottom:
295019K201 ..(KA's)

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

ANSWER 2.07 (1.50)

1. Maximize drywell cooling
2. Terminate drywell inerting
3. If a scram condition occurs, enter procedure T-100

[0.50 each]

REFERENCE

Peach Bottom: OT-101
Peach Bottom: LOT-1540 obj.2
295024G010 ..(KA's)

ANSWER 2.08 (1.00)

B [1.00]

REFERENCE

Peach Bottom: OT-112 bases
Peach Bottom: LOT-1540 obj.2
295001K206 ..(KA's)

ANSWER 2.09 (1.00)

C [1.00]

REFERENCE

Peach Bottom: T-100 Bases page 1/4
Peach Bottom: LOT-1560 obj.3
295006K201 ..(KA's)

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

ANSWER 2.10 (1.00)

B [1.00]

REFERENCE

Peach Bottom: T-101 Bases
Peach Bottom: LOT-1560 obj.6
Peach Bottom: T-114 basis page 1
295031A204 295031K101 ..(KA's)

ANSWER 2.11 (2.00)

1. C [1.00]

2. A [1.00]

REFERENCE

Peach Bottom: Bases T-101 page 12 of 20
Peach Bottom: LOT-1560 obj. 2
295037K306 295037A204 ..(KA's)

ANSWER 2.12 (1.00)

CRDH [0.5]
RWCU [0.5]

REFERENCE

Peach Bottom: T-101
Peach Bottom: LOT-1560 obj 3
295037A110 295037K213 ..(KA's)

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

ANSWER 2.13 (3.00)

1. Place both loops of torus cooling in service (0.5)
2. If torus reaches 95 F (0.33), then enter T-102 (0.33)
3. if torus reaches 110 F (0.34), then
   a. runback recirc (0.5)
   b. transfer house loads (0.5)
   c. Scram and enter T-100 (0.5)

REFERENCE

Peach Bottom: LOT-1540 obj.2
Peach Bottom: OT-114 Immed. Actions.
295013A102 2950i3G010 293013G011 ..(KA's)

ANSWER 2.14 (2.00)

1. C [1.00]
2. D [1.00]

REFERENCE

Peach Bottom: LOT-670 obj.4 page 33, 39
Peach Bottom: LOT-660 obj.2 page 9-10
264000K402 264000K405 295003A103 ..(KA's)

ANSWER 2.15 (1.00)

C [1.00]

REFERENCE

Peach Bottom: SE-1 immediate actions
Peach Bottom: SE-1 Basis
295016G010 ..(KA's)

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

ANSWER 2.16 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-1555 obj 4
Peach Bottom: SE-11 Basis
295010A101 . (KA's)

ANSWER 2.17 (1.00)

D. [1.00]

REFERENCE

Peach Bottom: LOT-0050 obj. 6 pg 19
216000K324 295028K203 295028A203 ..(KA's)

ANSWER 2.18 (1.00)

A [1.00]

REFERENCE

Peach Bottom: ON-100
Peach Bottom: LOT-0010 obj. 5.c pg 33
Peach Bottom: LOT-0030 obj. 9.a pg 48
202001K106 202001K601 295001A205 ..(KA's)

ANSWER 2.19 (1.00)

C [1.00]

(***** CATEGORY 2 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: T-100 Cautions bases
Peach Bottom: LOT-1560 obj. 3
206000K402 ..(KA's)

ANSWER 2.20 (1.00)

A [1.00]

REFERENCE

Peach Bottom: OT-103 Immediate actions and basis
Peach Bottom: LOT-1540 obj. 1, 2
239001A205 239001G014 ..(KA's)

ANSWER 2.21 (2.00)

A. 5
B. 3, 6
C. 7
D. 4
E. 1, 2, 5, 3, 4, 6 [0.25 each]
[.125 ea] except for E

Comment Accepted

REFERENCE

Peach Bottom: LOT-180 obj. 2 page 8-11
Peach Bottom:
223001K403 ..(KA's)

(***** END OF CATEGORY 2 *****)

ANSWER 3.01 (1.50)

1. 145 F [1.00]
2. 50 F [1.00]
3. 50 % [1.00]

REFERENCE

Peach Bottom: TECH SPECS 3.6
Peach Bottom: LOT-0030 obj. 1.q, 4.n
202001K117 202001K415 ..(KA's)

ANSWER 3.02 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-0010 obj. 3.c. pg 54
Peach Bottom:
290002K403 ..(KA's)

ANSWER 3.03 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-0030 obj. 1.g, 4.e pg 13
Peach Bottom: ON-113 Bases
202001K107 202001K405 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.04 (2.00)

D [1.00]

D [1.00]

REFERENCE

Peach Bottom: LOT-0630 obj. 5 & 6 pg 14
Peach Bottom: LOT-0030 obj. 1.x, pg 38
Peach Bottom: OT-113
241000K125 245000K605 ..(KA's)

ANSWER 3.05 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-0070 obj.9 pg 26
Peach Bottom:
201001G007 ..(KA's)

ANSWER 3.06 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-0070 obj. 3.d page 19
Peach Bottom:
212000K305 201001K404 ..(KA's)

ANSWER 3.07 (1.00)

A. [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-0090 obj. 3 pg12
Peach Bottom:
201006K402 ..(KA's)

ANSWER 3.08 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-280 obj. 4, 5 pg 6
Peach Bottom:
215002K604 ..(KA's)

ANSWER 3.09 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-550 obj 2,3, & 6, pg 13
Peach Bottom:
259001K105 ..(KA's)

ANSWER 3.10 (1.00)

A [1.00]

REFERENCE

Peach Bottom: LOT-550 obj. 16 page 17
Peach Bottom: LOT-550-3-1 No.3
259001A207 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.11 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-520 obj. 11 page 19
Peach Bottom: LOT-550 obj. 14, 15 page 14
259001A203 ..(KA's)

ANSWER 3.12 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-0180 obj 2 pg 19
Peach Bottom: LOT-0210 obj 2 pg 6
261000K401 ..(KA's)

ANSWER 3.13 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-0040 obj.14 page 10
Peach Bottom: SO 2.7.A-2 precaution
202002K402 ..(KA's)

ANSWER 3.14 (1.00)

B [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-0060 obj 3.e. pg 31
Peach Bottom: GP-2 step 5.12.6
Peach Bottom: T.S. 3.3.B.
201003K405 ..(KA's)

ANSWER 3.15 (2.00)

A. 3
B. 1
C. 3
D. 1 [0.5 each = 2.00]

REFERENCE

Peach Bottom: LOT-240 obj. 4, page 10
Peach Bottom:
215004K401 215004K402 ..(KA's)

ANSWER 3.16 (3.00)

A. 4
B. 1
C. 3,2,(1 CAF)
D. 1,2 [0.33 each]
E. 4
F. 2

REFERENCE

Peach Bottom: LOT-300 obj. 8
Peach Bottom: LOT-1810 obj 3. pages 3-6
212000A216 212000K412 ..(KA's)

ANSWER 3.17 (1.00)

D [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-300 obj. 4,5 page 12
Peach Bottom:
245000K307 ..(KA's)

ANSWER 3.18 (3.00)

A. 1
B. 5
C. 8
D. 4
E. 2
F. 3 [0.5 each = 3.00]

REFERENCE

Peach Bottom: LOT-660 obj.7 page 5, 6
Peach Bottom: LOT-0410 page 7
262001G007 262001G004 262001K301 ..(KA's)

ANSWER 3.19 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-500 obj.2 page 12
Peach Bottom: OT-106 bases page 2
256000K409 ..(KA's)

ANSWER 3.20 (1.00)

A [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-330 obj. 5 page 12
Peach Bottom:
218000K403 218000K501 ..(KA's)

ANSWER 3.21 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-330 obj.5 page 11,12
Peach Bottom:
218000K501 218000A402 ..(KA's)

ANSWER 3.22 (2.50)

Pump Indicator Light "ON"
Increased discharge pressure
Decreasing SLC Tank Level
Reactor Power Decreasing
RWCU System isolated
(CAF) [0.5 each]

REFERENCE

Peach Bottom: SO 11.1.B-2
211000A408 ..(KA's)

ANSWER 3.23 (1.00)

B [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-310 obj 4 page 5,13
Peach Bottom:
211000K408 ..(KA's)

ANSWER 3.24 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-006 obj. 3, 6 page 8,9
Peach Bottom: SO 12.1.A-2
204000A107 ..(KA's)

ANSWER 3.25 (1.00)

RBCCW [1.00]

REFERENCE

Peach Bottom: LOT-150 obj. 3,4 page 12
Peach Bottom:
223001K601 ..(KA's)

ANSWER 3.26 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-0080 obj. 4, 5 page 7
Peach Bottom:
201002K403 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.27 (1.00)

B [1.00]

REFERENCE

Peach Bottom: LOT-0080 obj. 3 page 13, 14
Peach Bottom:
201002K405 ..(KA's)

ANSWER 3.28 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-380 obj. 8, 11 page
Peach Bottom: SO 13.1.C-2
217000A305 217000K402 ..(KA's)

ANSWER 3.29 (1.50)

A. 2,4; B. 4; C. 5;
(0.5 each letter)
*Reference
LOT-0340 HPCI pgs 19-22 Learning objectives 3, 5, and 8.
KA 206000 A2.01 (4.0/4.0) 206000 A2.10 (4.0/4.1)
206000 A1.08 (4.1/4.0)
REFERENCE
206000A201 206000A210 206000A108 ..(KA's)

Comment Not Accepted. HPCI LOT-340 pg 9 & 20 refer to water as "SDM Supply NPSH". This should have been corrected during pre-exam review.

ANSWER 3.30 (1.00)

C [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: LOT-370 obj. 8a, page 17-18
203000A401 ..(KA's)

ANSWER 3.31 (1.50)

A. 4
B. 1,2
C. 1,2,3,4 (0.5 each letter)

REFERENCE

Peach Bottom LOT-0370 pgs 11 and 20, SO-10.7.A-2 pg 2
Peach Bottom Learning Objective 5, 8A
203000K401 203000K414 ..(KA's)

ANSWER 3.32 (1.00)

C [1.00]

REFERENCE

Peach Bottom: LOT-350 obj. 6 page 9-10
209001A306 209001K404 ..(KA's)

ANSWER 3.33 (3.00)

A. 6
B. 4,7
C. 2
D. 1
E. 3 [0.50 each]

REFERENCE

Peach Bottom: LOT-510 obj.1, 2 page 6-10
271000K401 271000G007 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.34 (2.00)

A. 3, 5
B. 1, 6
C. 2, (7), 4
D. 6, 1
E. 5 (3) [0.25 each for 2.00]

REFERENCE

Peach Bottom: Operations Manual Chapt. 2
Peach Bottom:
294001A103 ..(KA's)

ANSWER 3.35 (1.00)

B [1.00]

REFERENCE

Peach Bottom: OM-11.A.6.a. page 5 of 18
Peach Bottom:
294001K101 ..(KA's)

ANSWER 3.36 (1.00)

C [1.00]

REFERENCE

Peach Bottom: OM-10.C.2
Peach Bottom:
294001K102 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.37 (3.00)

A. 4
B. 2
C. 1
D. 2 [0.5 each = 3.00]
E. 3
F. 4

REFERENCE

Peach Bottom: OM-7 A.7.2 page 9
Peach Bottom:
212000A407 294001A108 294001A113 ..(KA's)

ANSWER 3.38 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-1740 obj.2
Peach Bottom:
294001K103 ..(KA's)

ANSWER 3.39 (2.00)

A. 8
B. 10
C. 6
D. 5 [0.5 each = 2.00]

REFERENCE

Peach Bottom: LOT-1730 obj. 2,3 page 9
Peach Bottom: 10CFR20
294001K103 ..(KA's)

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

ANSWER 3.40 (1.00)

D [1.00]

REFERENCE

Peach Bottom: LOT-1730 obj. 1.b page 5
Peach Bottom: 10CFR20
294001K104 ..(KA's)

ANSWER 3.41 (1.00)

D [1.00]

REFERENCE

Peach Bottom: T.S. Definitions
Peach Bottom: LOT-1810 obj 2 pg 11
294001A108 ..(KA's)

ANSWER 3.42 (1.00)

C [1.0]

REFERENCE

Peach Bottom: LOT-1810 obj 2 pg 9
Peach Bottom: T.S. Definitions
294001A108 ..(KA's)

ANSWER 3.43 (1.00)

B [1.00]

(***** CATEGORY 3 CONTINUED ON NEXT PAGE *****)

REFERENCE

Peach Bottom: Tech Specs 3.6.B bases
Peach Bottom: LOT-1025 obj. 2 page 8
294001A114 204000A302 ..(KA's)

ANSWER 3.44 (1.00)

A [1.00]

REFERENCE

Peach Bottom: GP-2 Critical Data Sheet
Peach Bottom: LOT-1530 obj. 3
294001A106 ..(KA's)

(***** END OF CATEGORY 3 *****)
(********** END OF EXAMINATION **********)

QUESTION	VALUE	REFERENCE
2.01	1.00	9000092
2.02	1.00	9000093
2.03	2.00	9000094
2.04	1.50	9000095
2.05	1.00	9000096
2.06	1.00	9000097
2.07	1.50	9000098
2.08	1.00	9000099
2.09	1.00	9000101
2.10	1.00	9000102
2.11	2.00	9000103
2.12	1.00	9000104
2.13	3.00	9000105
2.14	2.00	9000106
2.15	1.00	9000107
2.16	1.00	9000110
2.17	1.00	9000111
2.18	1.00	9000112
2.19	1.00	9000100
2.20	1.00	9000108
2.21	2.00	9000109
	28.00	
3.01	1.50	9000113
3.02	1.00	9000114
3.03	1.00	9000115
3.04	2.00	9000116
3.05	1.00	9000117
3.06	1.00	9000118
3.07	1.00	9000119
3.08	1.00	9000120
3.09	1.00	9000121
3.10	1.00	9000122
3.11	1.00	9000123
3.12	1.00	9000124
3.13	1.00	9000128
3.14	1.00	9000136
3.15	2.00	9000138
3.16	3.00	9000139
3.17	1.00	9000140
3.18	3.00	9000141
3.19	1.00	9000142
3.20	1.00	9000143
3.21	1.00	9000144
3.22	2.50	9000145
3.23	1.00	9000146
3.24	1.00	9000147
3.25	1.00	9000148
3.26	1.00	9000149
3.27	1.00	9000150
3.28	1.00	9000151
3.29	1.50	9000152
3.30	1.00	9000153
3.31	1.50	9000154

QUESTION	VALUE	REFERENCE
3.32	1.00	9000155
3.33	3.00	9000156
3.34	2.00	9000125
3.35	1.00	9000126
3.36	1.00	9000127
3.37	3.00	9000129
3.38	1.00	9000130
3.39	2.00	9000131
3.40	1.00	9000132
3.41	1.00	9000133
3.42	1.00	9000134
3.43	1.00	9000135
3.44	1.00	9000137
	59.00	
	87.00	

ATTACHMENT 2

FACILITY COMMENTS

QUESTION 2.03.A: FACILITY COMMENT

Candidate may list item 1. T-99 in addition to the item 2. T-100 since the plant parameters listed in the question constitute normal post-scram recovery conditions, T-99, as well as post-scram conditions, T-100.

QUESTION 2.03.D: FACILITY COMMENT

Candidates may list item 2. T-100 in addition to item 3. T-101, since T-100 "Scram Condition" procedure may be entered briefly if the operator has not first detected an entry condition for T-101.

QUESTION 2.21.E: FACILITY COMMENT

Candidates may list items 3, 4 and 6 in addition to 1, 2 and 5 since Group IIb, IIc would be actuated at 0 inches and Group V at -48" as level decreases from normal to -160". Candidates assumption of normal plant conditions as initial conditions was based on discussion with exam proctor.

QUESTION 3.29: FACILITY COMMENT

Noun names for answers 1, MO-15 "Steam Supply Valve" and 2 MO-16 "Steam Supply Valve" are incorrect. Control room panel labels and procedures refer to these valves as "Steam Isolation" valves. Incorrect noun names may have mislead the candidates in their response to this question.

QUESTION 3.34.A: FACILITY COMMENT

Answer 5, Shift Manager, should not be a required answer since GP-2 Rev. 54, page 25, step 5.7 states that Plant Manager (Answer 3) or Superintendent Operations (not an answer option) permission is required prior to startup.

QUESTION 3.34.B: FACILITY COMMENT

Answer 6, Unit Rx Operator, should not be a required answer since primarily the Chief Operator manipulates common and electrical controls.

QUESTION 3.34.C: FACILITY COMMENT

Answer 4, Plant Operator, may also serve as a fire brigade member.

QUESTION 3.34.D: FACILITY COMMENT

Answer 1, Chief Operator, should not be a required answer since primarily the Unit Reactor Operator manipulates the controls affecting reactivity.

QUESTION 3.34.E: FACILITY COMMENT

Candidates may list all individuals (except 2 and 4) as responsible for maintaining an overall perspective of the station.

ATTACHMENT 3

NRC RESPONSE TO FACILITY COMMENTS

The following represents the NRC resolution to the facility comments (listed in Attachment 2) made as a result of the current examination review policy. Comments made that were insignificant in nature and resolved to the satisfaction of both the examiner and the licensee during the pre-examination review are not listed (i.e.: typographical errors, relative acceptable terms, minor set point changes).

REACTOR OPERATOR EXAMINATION

Question 2.03.A: Comment accepted. No credit will be given or deducted for adding T-99.

Question 2.03.D: Comment accepted. No credit will be given or deducted for adding T-100.

Question 2.21.E: Comment accepted. The answer key was changed to reflect facility comment.

Question 3.29: Comment not incorporated. The HPCI lesson plan, LOT-340 pages 9 and 20 of 29, refer to these valves as Steam Supply Valves. The lesson plan was used as the reference to write the exam since the Check Off List (COL) was not part of the exam materials package. This discrepancy should have been detected during the pre-exam review.

Question 3.34.A: Comment accepted. The answer key was changed to reflect facility comment.

Question 3.34.B: Comment not incorporated. The licensee originally changed the answer to this during pre-exam review. Due to the license conditions for the Chief and Unit Operators and observation of normal plant operations both operators could perform this function.

Question 3.34.C: Comment accepted. The answer key was changed to reflect facility comment.

Question 3.34.D: Comment not incorporated. The licensee originally changed the answer to this during the pre-exam review. Due to the license conditions for the Unit and Chief Operators and observation of normal plant operations both operators could perform this function.

Question 3.34.E: Comment not incorporated. Although all plant operators are to be alert and attentive to plant conditions, they can not maintain an overall plant perspective which is specifically the job of management.

ATTACHMENT 4

SIMULATION FIDELITY REPORT

Facility: Peach Bottom Atomic Power Station, Units 2 and 3

Facility Docket No.: 50-277/278

Operating Test Administered on: 12/12,13/89

This attachment reports examiner observations for information only. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of non-compliance with 10 CFR 55.45(b). The observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required in response to these observations.

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

ITEM	DESCRIPTION
PT-404B	Pressure transmitter above the SRV's on panel 20C03 has the inoperable blue channel functioning and the normal green channel inoperable.
Fire Panel	Fire Panel on 20C006B has an operator aid that is not registered in accordance with the licensee's system for control of operator aids.
Feedwater Temperature Monitor	The Feedwater Temperature Monitor located on panel 20C06A has an operator aid that is not registered and the index code contains inaccurate selection codes for the desired parameters.

Attachment 5

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
R. D. 1, Box 208
Delta, Pennsylvania 17314
(717) 456-7014

PEACH BOTTOM--THE POWER OF EXCELLENCE

D. M. Smith
Vice President

December 26, 1989
Docket Nos. 50-277
50-278

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: Commitment to Develop a Reactor Power Maneuvering Procedure

Dear Sir:

During a recent NRC examination concerning Operator Licensing, a concern was raised by an NRC inspector concerning the need for a procedure to be used for routine power operation maneuverings (e.g. load drops, rod swaps). This letter is to inform you that such a procedure had already been in development and will be in place by 6/30/90. If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

for D. M. Smith

cc: R. A. Burricelli, Public Service Electric & Gas
T. M. Gerusky, Commonwealth of Pennsylvania
J. J. Lyash, USNRC Senior Resident Inspector
T. E. Magette, State of Maryland
W. T. Russell, Administrator, Region I, USNRC
H. C. Schwemm, Atlantic Electric
J. Urban, Delmarva Power