UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT - 50-413/OL-89-03

Facility License: Duke Power Company
Catawba Nuclear Station
P. O. Box 256
Clover, SC 29710

Facility Docket Nos.: 50-413 and 50-414

Facility License Nos.: NPF-35 and NPF-52

Examinations were administered at the Catawba Nuclear Station near Charlotte, North Carolina.

Chief Examiner: Richard S. Baldwin — Date Signed: 1-22-90
Richard S. Baldwin

Approved By: for Charles A. Casto — Date Signed: 1/23/90
Charles A. Casto, Chief
Operator Licensing Section 2
Division of Reactor Safety

Summary:

Examinations were administered on October 30 - November 3, 1989.

Written examinations and operating tests were administered to seven SRO and five RO applicants. Seven SROs and five ROs passed these examinations.

REPORT DETAILS

1. Examiners:

*R. Baldwin, NRC, Region II
G. Salyers, NRC, Region II
N. Mcguire-Moffitt, PNL
J. Nickolaus, PNL

*Chief Examiner

2. Facility Personnel at Exit Meeting

R. Casler, Superintendent of Operations
W. Barron, Director of Operations Training
G. Spurlin, Senior Instructor
M. Brady, Assistant Operating Engineer

3. Exit Meeting

At the conclusion of the site visit the Chief Examiner met with representatives of the plant staff to discuss the results of the examination.

It was pointed out that procedures sent for the examination in two instances were not the same that were used as controlled copies in the simulator. It is very important to freeze the procedure changes in the simulator prior to examination administration in order to afford proper evaluation tools.

The facility staff pre-reviewed the written examination. Several changes were made to the examination as a result of this review. None of the modifications resulted in an intent change for any of the questions.

As discussed with the facility staff, all simulator groups proceeded in a slow and deliberate manner, causing long simulator sets. It was also noted that the communications in the SRO group were not concise and clear on many occasions.

The cooperation given to the examination team was noted and greatly appreciated.

The licensee did not identify as proprietary any of the material provided to or reviewed by the reviewer.

MASTER

U. S. NUCLEAR REGULATORY COMMISSION
REACTOR OPERATOR LICENSE EXAMINATION
REGION 2

FACILITY: Catawba 1 & 2

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 89/10/30

CANDIDATE: _____

INSTRUCTIONS TO CANDIDATE:

Use answer sheet for the answers and write on one side only. Use paper provided for continuation of answers. 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%. The examination will have a time limit of four (4) hours after the examination starts.

CATEGORY VALUE	% OF TOTAL	CANDIDATE'S SCORE	% OF CATEGORY VALUE	CATEGORY
~~35.00~~ 34.00	~~38.89~~ 37.1	_____	_____	2. EMERGENCY AND ABNORMAL PLANT EVOLUTIONS (40%)
~~55.00~~ 53.00	~~61.11~~ 60.9	_____	_____	3. PLANT SYSTEMS AND PLANT-WIDE GENERIC RESPONSIBILITIES (60%)
~~90.00~~ 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. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done AFTER you complete the examination.

3. 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.

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

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet.

6. If you need additional space to answer a specific question, use a separate sheet of the paper provided and insert it directly after the specific question. DO NOT WRITE ON THE BACK OF THE EXAMINATION ANSWER SHEET.

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

8. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on additional paper.

9. Use abbreviations only if they are commonly used in facility literature. DO NOT use symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer.

10. The point value for each question is indicated in parentheses after the question. The amount of blank space on the examination answer sheet is NOT an indication of the depth of answer required.

11. Show all calculations, methods, or assumptions used to obtain an answer.

12. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK. NOTE: partial credit will NOT be given on multiple choice questions.

13. Proportional grading will be applied. Any additional wrong information that is provided will count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you have four correct answers.

14. If the intent of a question is unclear, ask questions of the proctor ONLY.

15. When you have completed your examination, assemble the examination answer sheets and any additional paper used to answer a question along with all scrap paper. You may keep your copy of the examination.

16. To pass the examination, you must achieve an overall grade of 80% or greater and at least 70% in each category.

17. There is a time limit of four (4) hours for completion of the examination.

18. When you have turned in your examination, leave the examination area as defined by the examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

2.01 _____

2.02 _____

2.03 _____

2.04 _____

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CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

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

ANSWER SHEET

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

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

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CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

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

Nuclear Regulatory Commission
Operator Licensing
Examination

This document is removed from
Official Use Only category on
date of examination.

QUESTION 2.01 (1.00)

Which one of the following reactivity coefficients will INITIALLY insert negative reactivity in the event of a control rod ejection accident?

a) Moderator temperature

b) Pressure

c) Void

d) Doppler

QUESTION 2.02 (1.00)

Which ONE of the following is NOT an interlock between the GTA breaker and the FTA incoming feeder from ETA?

a) If GTA is closed, FTA cannot be closed.

b) If GTA remains closed with power available, the blackout sequencer will close FTA then close the ETA feeder breaker.

c) If GTA is closed, FTA can be closed only if the diesel generator output breaker is closed.

d) If FTA is closed and GTA is then closed, FTA will trip.

DELETED

QUESTION 2.03 (1.00)

EP/1/5000/2C1, Loss of Secondary Heat Sink, cautions any NC pump running in a loop with a DRY S/G should be stopped.

Which ONE of the following is the basis for this caution?

a) Ensure the steam generator will refill

b) Minimize NC system inventory loss

c) Prevent addition of unnecessary heat to NC system

d) Prevent excessive thermal stress on steam generator tubes

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

QUESTION 2.04 (1.00)

Given the following conditions:

- Unit 2 in Mode 3
- NC pressure is 1940 psig
- CF isolation and both CFPTs trip on S/G HI-HI level
- CA pumps DO NOT automatically start
- CF isolation and CFPTs are reset
- NC pressure increases to 1955 psig
- CA pumps automatically start

Which ONE of the following correctly explains why the CA pumps automatically started when NC pressure increased to 1955 psig?

a) The turbine is reset.

b) An Ss signal was generated.

c) CA pumps were in Auto-Start Defeat.

d) AMSAC initiation on all CFPTs tripped was reset.

QUESTION 2.05 (1.00)

Which ONE of the following correctly describes why a small steamline break could result in a PTS condition compared to a large steamline break?

a) SI injection flow is greater

b) Cooldown is more rapid

c) SG will boil dry faster

d) NC pressure is higher

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

QUESTION 2.06 (1.00)

Which ONE of the following is the reason for the height correction factor, K(z), used in the heat flux hot channel factor calculation?

a) Compensates for increased coolant temperatures that occur higher in the coolant channels.

b) Takes into account the time delay in core reflood following a large break LOCA.

c) An uncertainty factor for conservatism since core flow cannot be measured accurately.

d) Allows for greater power production in the upper regions of the core near EOL due to axial flux shifting.

QUESTION 2.07 (1.00)

Assuming core level remains constant, which ONE of the following correctly describes the effect on source range detector countrate as downcomer level decreases?

a) Continually increase

b) Continually decrease

c) Initially increase then decrease

d) Initially decrease then increase

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

QUESTION 2.08 (1.00)

Given the following conditions:

- Core thermocouples are GREATER THAN 1200 F
- Subcooling is LESS THAN 0 F

Which ONE of the following is also a RED path for core cooling?

	At Least One NC Pump Running	Core Exit Temperature	RVLIS Level
a)	NO	GREATER THAN 700 F	GREATER THAN 43%
b)	YES	LESS THAN 700 F	GREATER THAN 43%
c)	NO	GREATER THAN 700 F	LESS THAN 43%
d)	YES	LESS THAN 700 F	LESS THAN 43%

QUESTION 2.09 (1.00)

Given the following conditions:

- A Loss of Off-site Power is in progress
- Tavg is 557 F
- Steam dumps are placed in Steam Pressure mode
- Steam dump demand is manually increased to begin cooldown
- The steam dumps will NOT open

Which ONE of the following correctly explains why the steam dumps will NOT open?

a) P-12, LO-LO Tavg, has disarmed the steam dumps

b) P-4, Reactor Trip, has locked out the steam header pressure controller

c) C-9, Condenser Available, interlock is not met

d) The trip controller has not been reset

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

QUESTION 2.10 (1.00)

Given the following conditions:

- Valid Ss signal which has NOT been reset
- LO-LO FWST LEVEL alarm lit

Which ONE of the following correctly describes the operation of the containment sump isolation valves, NI-185A and NI-184B, for the given conditions?

a) The valves will automatically open.

b) The valves will automatically open only if the FWST suction valves to the ND pumps are open.

c) The valves will NOT open unless the containment sump reaches HI-HI level.

d) The valves will NOT open unless the FWST suction valves to the ND pumps are closed.

QUESTION 2.11 (1.00)

Assuming a constant power, which ONE of the following would NOT be a unique indication of a steam generator tube leak?

a) Decreasing pressurizer level

b) Boron in steam generator water sample

c) EMF-33, Condenser Air Ejector Exhaust, high alarm

d) Constant steam generator level with decreasing main feed regulating valve position.

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

QUESTION 2.12 (1.00)

Given the following conditions:

- Normal 100% power plant lineup
- Decreasing pressurizer level
- Increasing VCT level
- NC PUMP SEAL WTR LO FLOW alarm lit
- REGEN HX LETDN HI TEMP alarm lit
- LETDN HX OUTLET HI TEMP alarm lit
- CHARGING FLOW H /LO alarm lit
- All other plant parameters are normal

Which ONE of the following correctly explains the given conditions?

a) Pressurizer PORV failed open

b) Small break LOCA

c) Letdown isolation

d) Loss of charging

QUESTION 2.13 (1.00)

Which ONE of the following must the diesel generator be capable of maintaining during automatic sequencing of loads?

a) voltage and frequency

b) voltage and phase

c) frequency and speed

d) frequency and phase

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

QUESTION 2.14 (1.00)

Given the following conditions:

- Normal 100% power lineup
- Pressurizer Level channel I instantly fails LOW
- No operator action is taken

Which ONE of the following correctly describes plant response for the given conditions?

a) Charging flow decreases, pressurizer level decreases, letdown isolates on actual low pressurizer level, pressurizer level increases and stabilizes at setpoint.

b) Letdown isolates, charging flow remains constant, pressurizer level increases, backup heaters energize on high level deviation, pressurizer level stabilizes above setpoint.

c) Letdown isolates, backup heaters trip, charging flow increases, actual level increases, a reactor trip on high pressurizer level occurs.

d) All heaters trip, pressurizer level and charging flow remain constant, pressurizer pressure decreases, a reactor trip on low pressurizer pressure occurs.

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

QUESTION 2.15 (1.00)

Given the following conditions:

- Mode 5 with boron concentration at 1250 ppm
- BDMS indicates 40 cps
- Electrical noise causes BDMS to increase to 350 cps

Which ONE of the following correctly describes plant response for the given conditions?

a) Charging pump suction swaps to the FWST

b) Containment Isolation Phase 'A' actuates

c) Containment purge supply and exhaust dampers close

d) A reactor trip signal is generated

QUESTION 2.16 (1.00)

Given the following conditions:

- A plant cooldown and depressurization with forced circulation in progress
- Erratic NC loop flow indication is observed

Which ONE of the following is the most likely cause of the erratic flow indication?

a) NC pump runout

b) NC pump cavitation

c) NC system loop water hammer

d) NC system hot leg saturation

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

QUESTION 2.17 (1.00)

Which ONE of the following correctly describes Adverse Containment Conditions?

a) Containment humidity is greater than 5.0%.

b) Containment pressure is greater than or equal to 3.0 psig.

c) Containment hydrogen concentration is greater than 4%.

d) Containment temperature is greater than or equal to 120 F.

QUESTION 2.18 (1.00)

Given the following conditions:

- A Blackout is in progress
- Diesel generator is tied to the buss
- Blackout loads are being sequenced
- The sequencer reset button is depressed

Which ONE of the following correctly describes sequencer response for the given conditions?

a) Continue to sequence loads because the sequencer reset is locked until sequencing is complete.

b) Initiate a load shed then the sequencer will begin to sequence loads.

c) Begin loading the next sequencing group.

d) Stop sequencing any further loads.

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

QUESTION 2.19 (1.00)

Given the following conditions:

- 100% RTP normal plant lineup
- Pressurizer spray valve fails OPEN
- Controller placed in MANUAL and open demand reduced to 0%
- Pressurize spray valve remains OPEN
- All heaters are manually energized
- NC pressure is approaching 1945 psig and decreasing

In accordance with AP/1/A/5500/11 CASE II, PZR Spray Control Valve Failure, which ONE of the following actions should be taken for the given conditions?

a) Reduce power to less than 48 % RTP, stop NCP for affected spray valve, shut spray line isolation valve

b) Place rod control in MANUAL, maintain Tave approximately five (5) F greater than Tref, deenergize power to affected spray valve

c) Manually trip the reactor, stop NCP for affected spray valve, enter EP/1/A/5000/01, Reactor Trip or Safety Injection

d) Manually initiate safety injection, stop all NCPs, enter EP/1/A/5000/01, Reactor Trip or Safety Injection

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

QUESTION 2.20 (1.00)

Given the following conditions:

- Power Range channel N-42 indicates ~110% RTP
- Intermediate Range channel N-35 indicates ~5E-4 amps
- Intermediated Range channel N-36 indicates ~4E-4 amp
- All other Power Range channels average ~101.6% RTP

Which ONE of the following is the correct response for the given conditions?

a) Verify reactor trip NOT required, reduce power to ~100.0 RTP, continue operations, conduct QPTR.

b) Note Intermediate Range channels equal to ~110% RTP, note 1/2 coincidence met, manually trip the reactor.

c) Note other Power Range channels indication CORRECT for ~101.6% RTP, maintain current power level, commence corrective actions for channel N-42 in accordance with AP/1/A/5500/16, Power Range Malfunction.

d) Note Intermediate Range channels INCORRECT, note channel N-42 CORRECT, check for possible dropped rod, commence corrective actions for Intermediate Range channels in accordance with AP/1/A/5500/16 CASE III, Intermediate Range Malfunction.

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

QUESTION 2.21 (1.00)

Given the following conditions:

- Normal reactor start up in progress
- Power is 3% RTP
- Intermediate Range channel N-36 has been determined INOPERABLE
- IAE has determined it will take about two hours to correct.

Which ONE of the following is the correct action for the given conditions?

a) Place the reactor in HOT STANDBY until N-36 is corrected.

b) Maintain less than 5% RTP until N-36 is corrected.

c) Power increase may continue without restriction.

d) Power increase may continue to 10% RTP.

QUESTION 2.22 (1.00)

Given the following conditions:

- CAPT panel in LOCAL control
- VI is NOT available
- SM PORVs are placed in MANUAL and demand increased
- SM PORVs will NOT open

Which ONE of the following correctly explains why the SM PORVs will NOT open?

a) N2 must be manually aligned.

b) N2 is the only source available.

c) VI is the only source available.

d) VI pressure must be less than N2 pressure.

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

QUESTION 2.23 (1.00)

Given the following conditions:

- A LOCA is in progress
- MSIVs have shut on HI-HI Containment Pressure

Which ONE of the following would allow reopening of the MSIVs for the given conditions?

a) Reset the MSL isolation

b) Reset the MSL isolation and low steam line pressure signal

c) Reset the MSL isolation and HI-HI Containment Pressure signals

d) Bypass the HI-HI Containment Pressure and the MSL isolation signals

QUESTION 2.24 (1.00)

Which ONE of the following is NOT an input to Unit 2 AMSAC actuation logic?

a) CFPT control oil pressure

b) CF Regulating value position

c) CF Bypass valve position

d) CF Isolation valve position

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

QUESTION 2.25 (1.00)

Given the following conditions:

- 45% RTP
- Control rods are in MANUAL
- One control rod bank is withdrawn 10 steps

Which ONE of the following statements is correct for steady-state conditions?

a) Rod insertion limits remain the same, Shutdown Margin increases

b) Rod insertion limits increase, Shutdown Margin remains the same

c) Rod insertion limits remain the same, Shutdown Margin remains the same

d) Rod insertion limits decreases, Shutdown Margin decreases

QUESTION 2.26 (1.00)

Given the following conditions:

- Unit 1 at 30% RTP
- AMSAC RESET is depressed and released

Which ONE of the following correctly describes the response of AMSAC for the given conditions?

a) AMSAC will remain blocked because resetting is disabled below 40% power.

b) AMSAC will be functional, AMSAC will be blocked after the two minuted timer has timed out.

c) AMSAC will be functional when the RESET is depress then blocked when the RESET switch is released.

d) AMSAC will be functional because resetting takes priority over blocking.

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

QUESTION 2.27 (1.00)

In accordance with EP/1/A/5000/2C1, Loss of Secondary Heat Sink, which ONE of the following is NOT used to determine if normal charging can be established following termination of feed and bleed?

a) NC subcooling greater than 50 F

b) Pressurizer level greater than 5%

c) At least one NC pump running

d) Both NI pumps stopped

QUESTION 2.28 (1.00)

Given the following conditions:

- Unit 1 is at 29% RTP
- 1A NCP inadvertently trips
- All 1A NCP parameters are within acceptable limits

Which ONE of the following is correct regarding 1A NCP restart for the given conditions?

a) The pump can be restarted without restrictions.

b) The pump must be idle for at least 20 minutes before it can be restarted.

c) The pump cannot be restarted unless the OPdT and OTdT trip setpoints are reduced to less than 50% RTP.

d) The pump cannot be restarted unless reactor power is reduced less than 25%.

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

QUESTION 2.29 (1.00)

Which ONE of the following does an emergency containment entrance or exit cause a loss of?

a) Reactor building integrity

b) Containment ice condenser

c) Containment separation

d) Containment integrity

QUESTION 2.30 (1.00)

Referring to Attachment 2-30, state the maximum drag permitted during fuel handling before special inspection of the affected fuel assembly is required.

QUESTION 2.31 (1.00)

Which ONE of the following is NOT used to verify reactor trip in accordance with EP/1/A/5000/01?

a) Reactor trip breakers open

b) Intermediate range amps decreasing

c) Rod bottom lights lit

d) Turbine stop valves shut

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

QUESTION 2.32 (1.00)

Which ONE of the following is the required action if one control rod will not fully insert on a Unit 1 reactor trip?

a) Emergency borate until power is less than 5% RTP

b) Emergency borate 170 ppm

c) Deenergize the control rod drive MG sets

d) Locally trip the control rod

QUESTION 2.33 (1.00)

Which ONE of the following conditions does NOT require emergency boration?

a) Control rod misaligned by greater than twelve (12) steps

b) A control rod fails to insert on a reactor trip

c) Boron concentration is 1200 ppm during refueling

d) Control rod bank lo-lo limit

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

QUESTION 2.34 (1.00)

Given the following conditions:

- Both CFPTs tripped
- CA automatically started
- CA valves reset to control steam generator water level
- CA suction pressure decreases to five (5) psig

Which ONE of the following correctly describes CA pump response for the given conditions?

a) Suction will automatically shift to RN

b) Suction will automatically shift to UST

c) Trip when suction pressure decreases to three (3) psig

d) Trip after a six (6) second time delay

QUESTION 2.35 (1.00)

Which ONE of the following is the reason for requiring CA-6, CA CST Suction to CA Pumps, remain open in Modes 1, 2, and 3?

a) Ensure a redundant suction source is available

b) Ensure hotwell level maintained for plant cooldown

c) Prevent inadvertent RN swapover

d) Prevent draining of the UST

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

QUESTION 3.01 (1.00)

Given the following conditions:

- Reactor startup in progress
- No rod motion or dilution in progress
- Constant startup rate indicated on source range instrumentation

Which ONE of the following correctly describes the condition of the reactor for the given conditions?

a) Prompt Critical

b) Supercritical

c) Critical

d) Subcritical

QUESTION 3.02 (1.00)

Which ONE of the following correctly gives the two parameters a synchroscope is indicating?

a) Current and voltage

b) Voltage and frequency

c) Frequency and phase

d) Phase and resistance

QUESTION 3.03 (1.00)

Which ONE of the following is NOT an IMMEDIATE trip of the emergency diesel generators during manual operation?

a) Generator differential

b) Engine overspeed

c) 51V voltage controlled over current

d) Low lube oil pressure

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

QUESTION 3.04 (1.00)

Which ONE of the following is the bases for using caution when equalizing and opening MSIVs with the reactor critical and S/G pressure > 725 psig?

a) Prevent uncontrolled cooldown of the NC system which could cause a rapid increase in reactor power.

b) Prevent damage to the turbine in the event the steamlines are not completely drained.

c) Prevent a rapid decrease in steamline pressure which would cause a safety injection.

d) Prevent a possible PTS condition from occurring.

QUESTION 3.05 (1.00)

Which ONE of the following correctly explains why the pressurizer heaters are manually energized during borations and dilutions?

a) Ensure boron is maintained in solution.

b) Ensure pressurizer pressure does not decrease and cause a reactor trip.

c) Ensure pressurizer level does not decrease and cause letdown to isolate.

d) Ensure pressurizer spray valves open to provide mixing of pressurizer and NC system inventories.

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

QUESTION 3.06 (1.00)

Which ONE of the following is NOT reset by the Rod Position Startup push button?

a) Demand position counters

b) Bank overlap unit

c) P/A converter

d) Urgent Failure Alarm

QUESTION 3.07 (1.00)

Match the Pressurizer pressure control or protection action in Column A with the associated setpoint in Column B. Responses in Column B may be used more than once.

COLUMN A	COLUMN B
a. Backup Heaters on	1. 2385 psig
b. PORVs open	2. 2335 psig
c. Safety Injection Block permissive	3. 2315 psig
d. Reactor trip	4. 2210 psig
	5. 1955 psig

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

QUESTION 3.08 (1.00)

Given the following conditions:

- 75% power
- Channel N-41 is the highest reading Power Range channel
- Rod control is in AUTOMATIC
- Channel N-42 instantaneously fails LOW

Which one of the following correctly describes control rod system response for the given conditions?

a) Control rods will drive in at maximum rate until C-5, Automatic Rod Control permissive, blocks control rod motion or a reactor trip on Low Pressurizer pressure occurs.

b) Control rods will drive in until the temperature mismatch equals the power mismatch. Reactor power will not change and Tavg will stabilize at a lower value.

c) Control rods will drive out until the power mismatch circuit has timed out. The temperature mismatch circuit will cause control rods to drive in until the power mismatch circuit develops an error. Reactor power will stabilize at a higher value but Tavg will remain constant.

d) Control rods will not move because the auctioneered high nuclear power is used to determine power mismatch.

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

QUESTION 3.09 (1.00)

Given the following conditions:

- Pressurizer Level Control selector switch in position 1-2
- Charging flow reduced to minimum
- Pressurizer level decreases
- Letdown automatically isolates and heaters trip
- Level increases until high level reactor trip

Assuming no operator action is taken, which ONE of the following correctly describes the pressurizer level channel that failed and direction the channel failed?

a) Level channel I failed HIGH

b) Level channel II failed LOW

c) Level channel I failed LOW

d) Level channel II failed HIGH

QUESTION 3.10 (1.00)

Which ONE of the following conditions would cause a P-4, Reactor Trip, signal to be generated?

a) RTA and BYB open

b) RTA and RTB open

c) RTA and BYA open

d) RTB and BYA open

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

QUESTION 3.11 (1.00)

Which ONE of the following is the minimum allowable #1 seal differential pressure before a NC pump can be started?

a) 100

b) 200

c) 300

d) 400

QUESTION 3.12 (1.00)

Which ONE of the following valves will NOT shut on a Unit 2 CF Isolation?

a) S/G Tampering flow to CA Nozzle

b) S/G Feedwater Control Bypass

c) CF Bypass to CA Nozzle

d) CF Pump Discharge

QUESTION 3.13 (1.00)

Which ONE of the following will NOT cause Unit 1 CF pump discharge valves to shut?

a) CF Isolation

b) Loss of Power

c) ASP in LOCAL

d) Doghouse HI-HI level

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

QUESTION 3.14 (1.00)

Which ONE of the following does P-11, PZR Pressure < 1955, permit bypassing?

a) steam dump cooldown interlock

b) feedwater isolation

c) low steamline pressure safety injection

d) at power reactor trips

deleted

QUESTION 3.15 (1.00)

Which ONE of the following operating limits is based on minimizing the probability of brittle fracture of the reactor vessel?

a) Steam generator temperature limits

b) Cooldown rate limit

c) Minimum temperature for criticality

d) Low Tave limit

QUESTION 3.16 (1.00)

Which ONE of the following is used as a direct indication of reactor power to determine Rod Insertion Limits?

a) Auctioneered high Tavg

b) Auctioneered high Tref

c) Auctioneered high nuclear power

d) Auctioneered high delta-T

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

QUESTION 3.17 (1.00)

DP/1/A/6450/15, Containment Purge System, Limits and Precautions states to ensure the purge mode selector is returned to "NORM" prior to putting the missile shield in place following refueling.

Which ONE of the following is the reason for this precaution?

a) Prevent overpressurization of lower containment and opening of ice condenser doors.

b) Prevent overpressurization of upper containment

c) Prevent negative pressurization of lower containment

d) Prevent negative pressurization of upper containment

QUESTION 3.18 (1.00)

Match the appropriate plant or VX system condition in Column A with the correct hydrogen concentration in Column B. Responses in Column B may be used more than once.

	Column A	Column B
a.	The hydrogen skimmer system assures a hydrogen concentration of less than _____.	1. 0.35%
		2. 0.4%
b.	Hydrogen recombiners are not placed into service above _____.	3. 3.0%
		4. 3.5%
c.	Hydrogen concentration in containment is never allowed to reach _____.	5. 4%
d.	The high hydrogen concentration annunciator setpoint is _____.	6. 6%

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

QUESTION 3.19 (1.00)

Given the following conditions:

- Normal 100% RTP plant line up
- Tavg/Tref deviation is 8 F
- Turbine impulse pressure channel II instantly fails low
- No operator action is taken

Which ONE of the following correctly describes steam dump system response for the given conditions?

a) C-7A will trip but the steam dumps will not open because C-7B did not trip.

b) C-7A and C-7B will trip and the condenser dump valves will open but the atmospheric dump valves will NOT open because the temperature error is less than 11.5 F.

c) C-7A and C-7B will trip and the condenser and atmospheric dump valves will open until P-12, Lo-Lo Tave, is reached.

d) C-7A and C-7B will trip and the condenser and atmospheric dump valves will open until Tavg/Tref temperature deviation is less than 3 F.

QUESTION 3.20 (1.00)

Which ONE of the following will NOT cause an automatic start of the motor driven CA pumps?

a) Loss of power to any 4160V essential buss

b) Both main feed water pumps tripped

c) Reactor trip with low Tavg

d) 2/4 low-low levels any one SG

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

QUESTION 3.21 (1.00)

Given the following conditions:

- Unit 2 startup in progress
- All steam generator water levels normal
- Power Range channel N-41 instantly fails HIGH

Which ONE of the following correctly describes steam generator water level response for the given conditions?

a) SGs 'A' and 'D' program levels increase to 66%

b) SGs 'A' and 'D' actual levels increase until a CF isolation occurs on HI-HI level

c) SGs 'A' and 'D' program levels will NOT increase because the level error will override the setpoint error

d) SGs 'A' and 'D' actual levels will NOT increase because level is not programmed

QUESTION 3.22 (1.00)

Which ONE of the following is NOT an interlock to open the ND Train A inlet isolation valves, ND-1B or ND-2A?

a) NC pressure less than 385 psig

b) ND to NI pump suction valve, ND-28, shut

c) FWST suction isolation valve, FW-27, shut

d) ND pump crossconnect to hot legs, NI-183, shut

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

QUESTION 3.23 (1.00)

In accordance with OP/O/A/6100/06, Reactivity Balance Calculation, which ONE of the following is required if criticality is achieved below the Rod Insertion Limit?

a) Continue withdrawing control rods until at least 10 steps above the Rod Insertion Limit.

b) Immediately insert control rods until at least 500 pcm below the point of criticality.

c) Emergency borate at greater than 70 gpm until the reactor is at least 1.5% shutdown with control rods remaining at the current position.

d) Borate at greater than 30 gpm while withdrawing control rods to maintain criticality until the control rods are above the Rod Insertion Limit.

QUESTION 3.24 (1.00)

Which ONE of the following statements is correct concerning paralleling of electrical systems?

a) If resistances are not matched when the synchronizing switch is closed, heavy currents will flow and speed up the incoming machine to synchronous speed.

b) If voltages are not matched when the synchronizing switch is closed, there will be VAR flow from the lower voltage source to the higher one.

c) If the incoming machine is in phase but slightly faster than synchronous speed when paralleled, the system will tend to speed up to synchronous speed.

d) If the incoming machine is at synchronous speed but out of phase with the running bus when the breaker is closed, heavy currents will flow to either accelerate or retard the incoming machine.

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

QUESTION 3.25 (1.00)

Which ONE of the following is correct concerning the Inverter Manual Bypass Switch in the 125 VDC/120 VAC system.

a) Interlocked with the alternate source VRD breaker which must be closed in order to switch to Alternate Source to Load.

b) Interlocked with the sync light in such a way that you can not transfer to the alternate source unless the sync light is out.

c) Interlocked with the sync light in such a way that you can not transfer to the alternate source unless the sync light is lit.

d) No interlocks to prevent manual transfer if the electrical sources are not in synchronous with each other.

QUESTION 3.26 (1.00)

Given the following conditions:

- The CA system automatically started on S/G 'B' LO-LO level
- Trains A and B CA were reset to manual control
- The valves were repositioned to control level for S/G A, C, and D
- S/G 'A' level decreases to LO-LO level

Which ONE of the following correctly describes CA system response for the given conditions?

a) The turbine CA pump starts but the discharge valves do not open.

b) CA train A discharge valves go to the fully open position.

c) CA train B discharge valves go to the fully open position.

d) System alignment is not affected.

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

QUESTION 3.27 (1.00)

Given the following conditions:

- A reactor start-up in progress
- Power at 5 E-11 amps
- The Operation Selector switch on Intermediate Range channel N-35 is placed in the 1 E-3 position

Which ONE of the following correctly describes the plant response to the given conditions?

a) The reactor will trip on Intermediate Range High Flux.

b) The Intermediate Range channel N-35 HIGH LEVEL TRIP bistable will trip but no reactor trip will occur.

c) There will be no effect because the LEVEL TRIP has not been bypassed.

d) The Intermediate Range channel N-35 HIGH LEVEL ROD STOP bistable will trip.

QUESTION 3.28 (1.00)

Which ONE of the following DOES NOT correctly describe automatic operation of the KC system on a Sp signal?

a) Reactor building non-essential header supply and return isolation valves shut.

b) Auxiliary building non-essential header supply and return isolation valves shut.

c) Both KC train surge tank isolation valves shut.

d) Both trains of ND heat exchanger isolation valves fully open.

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

QUESTION 3.29 (1.00)

Which ONE of the following containment conditions DO NOT cause isolation of the VP system?

a) Hi pressure

b) Hi temperature

c) Hi humidity

d) Hi radiation

QUESTION 3.30 (1.00)

Which ONE of the following correctly describes the effect of an UNDERcompensated Intermediate Range channel following a reactor trip?

a) Indicate high preventing P-6 from automatically energizing the source range due to the 2 of 2 coincidence.

b) Indicate low prematurely energizing the source range due to the 1 of 2 coincidence.

c) Indicate high but the source range will be energized by P-6 from the other IR channel due to the 1 of 2 coincidence.

d) Indicate low but source range will not be energize until P-6 is supplied from the other IR channel due to the 2 of 2 coincidence.

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

QUESTION 3.31 (1.00)

Which ONE of the following will NOT cause an automatic closure of the letdown orifice isolation valves?

a) Letdown heat exchanger outlet high temperature

b) Low pressurizer level

c) Phase 'A' Containment isolation

d) Letdown containment isolation valves (NV1A and NV2A) shut

QUESTION 3.32 (1.00)

Which ONE of the following correctly describes Steam Generator Level Control system response to a steam pressure compensator failing HIGH?

a) Sensed steam flow increases causing feed flow/steam flow mismatch, feed flow increases, SG level increases causing level error, feed flow decreases, level stabilizes at setpoint.

b) Sensed steam flow increases causing feed flow/steam flow mismatch, feed flow increases, SG level increases causing level error, feed flow increases, level stabilizes below setpoint.

c) Sensed steam flow increases causing feed flow/steam flow mismatch, feed flow increases, SG level increases causing level error, feed flow decreases, level stabilizes above setpoint.

d) Sensed steam flow increases causing feed flow/steam flow mismatch, feed flow increases, SG level increases until the HI-HI level trip occurs.

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

QUESTION 3.33 (1.00)

Which ONE of the following will NOT cause an urgent alarm in the Rod Control System?

a) Phase failure

b) A DC power supply failure

c) Multiplexing error

d) Regulation failure

QUESTION 3.34 (1.00)

Which ONE of the following would cause a pressurizer level indication of 0%?

a) DP cell diaphragm rupture

b) Reference leg rupture

c) Impulse line rupture

d) Equalizing valve leakage

QUESTION 3.35 (1.00)

DP/1/A/6100/01 cautions NC system pressure is not to exceed 385 psig when operating in the LOW PRESSURE mode.

Which ONE of the following is the basis for this caution?

a) Prevent closure of the pressurizer block valves

b) Prevent isolation of the ND system

c) Prevent overpressurization of the NC pump seals

d) Prevent opening of the pressurizer PORVs

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

QUESTION 3.36 (1.00)

Which ONE of the following correctly describes the effect a loss of RL discharge flow will have on a Liquid Waste system discharge?

a) The liquid waste system discharge valve will close.

b) A control room alarm will alert the operator to manually stop the discharge.

c) The discharge will continue unless EMF-49, Waste Liquid Discharge Monitor, also alarms.

d) The discharge will shift to the Standby Nuclear Service Water pond.

QUESTION 3.37 (1.00)

Given the following conditions:

- DRPI indication for control rod H-8 is initially 198 steps
- General Warning and control rod H-8 rod bottom lights lit
- Urgent alarm 1, 2, and 3 lit
- RPI Urgent alarm lit

Which ONE of the following correctly describes the position of control rod H-8?

a) At 186 steps

b) At 210 steps

c) Fully inserted

d) Cannot be determined

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

QUESTION 3.38 (1.00)

Which ONE of the following is the reason for closing the NI pump recirculation valves before swapping NI pump suction from the FWST to the ND heat exchanger discharge?

a) Raise NI pump discharge pressure

b) Prevent pumping water from the containment sump to the FWST

c) Allow pump suction and discharge pressures to stabilize

d) Prevent pumping NC system inventory to the containment sump

QUESTION 3.39 (1.00)

Given the following conditions:

- 35% RTP
- No power changes for last 40 minutes
- Turbine impulse channel II fails HIGH

Which ONE of the following is correct concerning blocking of AMSAC for the given conditions?

a) AMSAC CANNOT be blocked since turbine impulse pressure channel II is greater than 40%.

b) Depress the BYPASS pushbutton to block AMSAC.

c) Depress the RESET pushbutton to block AMSAC.

d) AMSAC is automatically blocked below 40% RTP.

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

QUESTION 3.40 (1.00)

Given the following conditions:

- Unit 1 startup in accordance with OP/1/A/6100/01
- MSBIVs are open
- Transferring from MSBIVs to MSIVs
- S/G pressure is decreasing
- MSIV 'A' is opened
- CF isolation occurs on HI-HI level

Which ONE of the following correctly explains the reason for the CF isolation?

a) Additional steam flow caused water level to swell greater than 78%.

b) Additional steam flow caused MFRV to open and water level increased greater than 78%.

c) S/G pressure decrease caused S/G level to indicate greater than 78%.

d) S/G pressure decreased at greater than 100 psi/sec.

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

QUESTION 3.41 (1.00)

Given the following conditions:

- NS systems has automatically started on a valid Sp signal
- FWST level is less than 8%
- NS suction swapover to containment sump has been completed

Which ONE of the following correctly describes the operation of the NS pumps for the given conditions?

a) The Ss signal must be manually reinitiated to allow resequencing of the NS pumps.

b) The Sp signal must first be bypassed to allow manual starting of the NS pumps.

c) The NS pumps will start automatically.

d) The NS pumps will continue operation during the swapover and will not require restarting.

QUESTION 3.42 (1.00)

Which ONE of the following limit interlocks is in effect during MANUAL operation of the ENA system?

a) Top of core

b) Bottom of core

c) Withdraw

d) Safety

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

QUESTION 3.43 (1.00)

Given the following conditions:

- Unit 2 in Mode 3
- Reactor trip breakers are open
- Steam generator water level is at setpoint
- No-load temperature and pressure maintained using steam dumps
- Tave increases to 570 F
- Steam dump demand is increased
- Tave decreases to 560 F
- CF isolation occurs

Which ONE of the following correctly explains why the CF isolation occurred?

a) The increased steam dump demand caused water level to swell greater than 78%.

b) The decrease in Tave caused pressurizer pressure to decrease less than 1955 which resulted in a Ss signal and CF isolation.

c) The increase in Tave reset the CF isolation logic and the CF isolation occurred when Tave decreased less than 564 F.

d) The increase in Tave greater than 564 F and both CFPTs tripped caused a CA automatic start and CF isolation.

QUESTION 3.44 (1.00)

Which ONE of the following is the purpose of the CLAs?

a) Provide passive injection of coolant during a Loss of All AC

b) Provide core reflood during intermediate and large break LOCAs

c) Prevent inadequate core cooling during small break LOCAs

d) Prevent loss of pressurizer level during a MSLB

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

QUESTION 3.45 (1.00)

Which ONE of the following correctly describes the flowpath when operating the NV system in ALTERNATE DILUTE?

a) Inlet of VCT

b) Outlet of VCT

c) Inlet and outlet of VCT

d) Directly to suction of NV pumps

QUESTION 3.46 (1.00)

Which ONE of the following will NOT cause a direct trip of the VF supply fans?

a) Low inlet temperature

b) Exhaust fans deenergized

c) Smoke detector alarm

d) EMF-35 in alarm

QUESTION 3.47 (1.00)

Which ONE of the following is the cooling water source for the Lower Containment Cooling System during a Station Blackout?

a) YV

b) YN

c) RN

d) KC

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

QUESTION 3.48 (1.00)

Which ONE of the following correctly describes Lower Containment AHUs response during a Blackout?

a) Start in low speed then shift to high speed after nine (9) minutes.

b) Start in high speed then shift to low speed after nine (9) minutes.

c) Start in low speed then shift to selected speed after sequencer is reset.

d) Start in high speed then trip after sequencer is reset.

QUESTION 3.49 (1.00)

Given the following conditions:

- Turbine is RESET
- One generator breaker indicates closed

Which ONE of the following correctly describes the response of the turbine for the given conditions?

a) Will not roll because it has tripped on reverse power

b) Will not roll because "All Valves Closed" is selected.

c) Will roll to 1800 rpm.

d) Will roll and trip on overspeed.

QUESTION 3.50 (1.00)

State the two (2) conditions which will cause the CLA discharge isolation valves to automatically open.

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

QUESTION 3.51 (1.00)

Given the following conditions:

- A RED path for Heat Sink
- An ORANGE path for Criticality

Which one of the following correctly describes the order of procedure execution?

a) Criticality until a GREEN path is established then Heat Sink

b) Criticality and Heat Sink concurrently until a GREEN path is established

c) Heat Sink until an ORANGE path is established then Criticality

d) Heat Sink until a GREEN path is established then Criticality

QUESTION 3.52 (1.00)

Which ONE of the following correctly describes the required action if the background radiation level on the closest frisker is greater than 240 cpm when leaving a contaminated area?

a) Contact HP and remain in the area until an HP technician arrives.

b) Place the frisker on the X10 scale before frisking.

c) Notify the control room and immediately exit the RCA.

d) Proceed to the next frisker in the RCA.

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

QUESTION 3.53 (1.00)

Which ONE of the following portable radiation monitoring instruments is used primarily for determining contamination on equipment or personnel?

a) RD-2A

b) PNR-4

c) PRM-6

d) RM-14

QUESTION 3.54 (1.00)

Given the following conditions:

- Power increase to 100% in progress
- Preparing to start second hotwell and condensate booster pumps
- LOSS OF DC CONTROL POWER alarm occurs
- The power increase is discontinued

Which ONE of the following correctly explains the reason for discontinuing the power increase?

a) The hotwell and condensate pumps will trip after a 60 second time delay.

b) The hotwell and condensate booster pumps cannot be started.

c) The operating CFPT will automatically lock until DC control power is restored.

d) The operating CFPT will trip immediately.

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

QUESTION 3.55 (1.00)

Which ONE of the following correctly describes conduct of independent verification for valves that are throttled?

a) Check stem travel or valve travel gauge

b) Directly observe the valve being throttled

c) Close the valve then return throttled position

d) Open or close the valve 1/4 turn then return to throttled position

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

MASTER

U. S. NUCLEAR REGULATORY COMMISSION
SENIOR REACTOR OPERATOR LICENSE EXAMINATION
REGION 2

FACILITY: Catawba 1 & 2

REACTOR TYPE: PWR-WEC4

DATE ADMINSTERED: 89/10/30

CANDIDATE: _____

INSTRUCTIONS TO CANDIDATE:

Use answer sheet for the answers and write on one side only. Use paper provided for continuatio of answers. 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%. The examination will have a time limit of four (4) hours after the examination starts.

CATEGORY VALUE	% OF TOTAL	CANDIDATE'S SCORE	% OF CATEGORY VALUE		CATEGORY
~~53.00~~ 52.50	~~59.55~~ 60.46	_____	_____	5.	EMERGENCY AND ABNORMAL PLANT EVOLUTIONS (60%)
~~36.00~~ 37.00	~~40.45~~ 39.53	_____	_____	6.	PLANT SYSTEMS AND PLANT-WIDE GENERIC RESPONSIBILITIES (40%)
~~89.00~~ 89.50		_____ 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. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done AFTER you complete the examination.

3. 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.

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

5. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet.

6. If you need additional space to answer a specific question, use a separate sheet of the paper provided and insert it directly after the specific question. DO NOT WRITE ON THE BACK OF THE EXAMINATION ANSWER SHEET.

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

8. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on additional paper.

9. Use abbreviations only if they are commonly used in facility literature. DO NOT use symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer.

10. The point value for each question is indicated in parentheses after the question. The amount of blank space on the examination answer sheet is NOT an indication of the depth of answer required.

11. Show all calculations, methods, or assumptions used to obtain an answer.

12. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK. NOTE: partial credit will NOT be given on multiple choice questions.

13. Proportional grading will be applied. Any additional wrong information that is provided will count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you have four correct answers.

14. If the intent of a question is unclear, ask questions of the proctor ONLY.

15. When you have completed your examination, assemble the examination answer sheets and any additional paper used to answer a question along with all scrap paper. You may keep your copy of the examination.

16. To pass the examination, you must achieve an overall grade of 80% or greater and at least 70% in each category.

17. There is a time limit of four (4) hours for completion of the examination.

18. When you have turned in your examination, leave the examination area as defined by the examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

5.01 _____

5.02 _____

5.03 _____

5.04 _____

5.05 _____

5.06 _____

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(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

5.23 _____

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(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

5.41 _____

5.42 _____

5.43 _____ _____

5.44 _____

5.45 _____

5.46 _____

5.47 _____

5.48 _____

5.49 _____

5.50 a). _____

b). _____

c). _____

d). _____

5.51 a).

b).

5.52 a).

b).

c).

5.53 _____

(***** END OF CATEGORY 5 *****)

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

6.01 _____

6.02 a).

b).

c).

d).

6.03 _____

6.04 _____

6.05 _____

6.06 _____

6.07 _____

6.08 _____

6.09 _____

6.10 a).

b).

c).

d).

6.11 _____

6.12 _____

6.13 _____

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

CATAWBA 1 & 2 10/30/89 EXAMINATION

ANSWER SHEET

NAME:

6.14 _____

6.15 _____

6.16 _____

6.17 _____

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6.36 _____

(***** END OF CATEGORY 6 *****)
(********** END OF EXAMINATION **********)

Nuclear Regulatory Commission
Operator Licensing
Examination

This document is removed from
Official Use Only category on
date of examination.

QUESTION 5.01 (1.00)

Which one of the following reactivity coefficients will INITIALLY insert negative reactivity in the event of a control rod ejection accident?

a) Moderator temperature

b) Pressure

c) Void

d) Doppler

QUESTION 5.02 (1.00)

Which ONE of the following is NOT an interlock between the GTA breaker and the FTA incoming feeder from ETA?

a) If GTA is closed, FTA cannot be closed.

b) If GTA remains closed with power available, the blackout sequencer will close FTA then close the ETA feeder breaker.

c) If GTA is closed, FTA can be closed only if the diesel genertor output breaker is closed.

d) If FTA is closed and GTA is then closed, FTA will trip.

QUESTION 5.03 (1.00)

EP/1/5000/2C1, Loss of Secondary Heat Sink, cautions any NC pump running in a loop with a DRY S/G should be stopped.

Which ONE of the following is the basis for this caution?

a) Ensure the steam generator will refill

b) Minimize NC system inventory loss

c) Prevent addition of unnecessary heat to NC system

d) Prevent excessive thermal stress on steam generator tubes

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.04 (1.00)

Which ONE of the following correctly describes why a small steamline break could result in a PTS condition compared to a large steamline break?

a) SI injection flow is greater

b) Cooldown is more rapid

c) SG will boil dry faster

d) NC pressure is higher

QUESTION 5.05 (1.00)

Which ONE of the following is the reason for the height correction factor, K(z), used in the heat flux hot channel factor calculation?

a) Compensates for increased coolant temperatures that occur higher in the coolant channels.

b) Takes into account the time delay in core reflood following a large break LOCA.

c) An uncertainty factor for conservatism since core flow cannot be measured accurately.

d) Allows for greater power production in the upper regions of the core near EOL due to axial flux shifting.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.06 (1.00)

Assuming core level remains constant, which ONE of the following correctly describes the effect on source range detector countrate as downcomer level decreases?

a) Continually increase

b) Continually decrease

c) Initially increase then decrease

d) Initially decrease then increase

QUESTION 5.07 (1.00)

Given the following conditions:

- Core thermocouples are GREATER THAN 1200 F
- Subcooling is LESS THAN 0 F

Which ONE of the following is also a RED path for core cooling?

	At Least One NC Pump Running	Core Exit Temperature	RVLIS Level
a)	NO	GREATER THAN 700 F	GREATER THAN 43%
b)	YES	LESS THAN 700 F	GREATER THAN 43%
c)	NO	GREATER THAN 700 F	LESS THAN 43%
d)	YES	LESS THAN 700 F	LESS THAN 43%

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.08 (1.00)

Given the following conditions:

- A Loss of Off-site Power is in progress
- Tavg is 557 F
- Steam dumps are placed in Steam Pressure mode
- Steam dump demand is manually increased to begin cooldown
- The steam dumps will NOT open

Which ONE of the following correctly explains why the steam dumps will NOT open?

a) P-12, LO-LO Tavg, has disarmed the steam dumps

b) P-4, Reactor Trip, has locked out the steam header pressure controller

c) C-9, Condenser Available, interlock is not met

d) The trip controller has not been reset

QUESTION 5.09 (1.00)

Given the following conditions:

- Valid Ss signal which has NOT been reset
- LO-LO FWST LEVEL alarm lit

Which ONE of the following correctly describes the operation of the containment sump isolation valves, NI-185A and NI-184B, for the given conditions?

a) The valves will automatically open reguardless of ND valve position.

b) The valves will automatically open only if the FWST suction valves to the ND pumps are open.

c) The valves will NOT open unless the containment sump reaches HI-HI level.

d) The valves will NOT open unless the FWST suction valves to the ND pumps are closed.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.10 (1.00)

Assuming a constant power, which ONE of the following would NOT be a unique indication of a steam generator tube leak?

a) Decreasing pressurizer level

b) Boron in steam generator water sample

c) EMF-33, Condenser Air Ejector Exhaust, high alarm

d) Constant steam generator level with decreasing main feed regulating valve position.

QUESTION 5.11 (1.00)

Given the following conditions:

- Normal 100% power plant lineup
- Decreasing pressurizer level
- Increasing VCT level
- NC PUMP SEAL WTR LO FLOW alarm lit
- REGEN HX LETDN HI TEMP alarm lit
- LETDN HX OUTLET HI TEMP alarm lit
- CHARGING FLOW HI/LO alarm lit
- All other plant parameters are normal

Which ONE of the following correctly explains the given conditions?

a) Pressurizer PORV failed open

b) Small break LOCA

c) Letdown isolation

d) Loss of charging

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.12 (1.00)

Which ONE of the following must the diesel generator be capable of maintaining during automatic sequencing of loads?

a) voltage and frequency

b) voltage and current

c) frequency and current

d) KW and frequency

QUESTION 5.13 (1.00)

Given the following conditions:

- Normal 100% power lineup
- Pressurizer Level channel I instantly fails LOW
- No operator action is taken

Which ONE of the following correctly describes plant response for the given conditions?

a) Charging flow decreases, pressurizer level decreases, letdown isolates on actual low pressurizer level, pressurizer level increases and stabilizes at setpoint.

b) Letdown isolates, charging flow remains constant, pressurizer level increases, backup heaters energize on high level deviation, pressurizer level stabilizes above setpoint.

c) Letdown isolates, backup heaters trip, charging flow increases, actual level increases, a reactor trip on high pressurizer level occurs.

d) All heaters trip, pressurizer level and charging flow remain constant, pressurizer pressure decreases, a reactor trip on low pressurizer pressure occurs.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.14 (1.00)

Given the following conditions:

- Mode 5 with boron concentration at 1250 ppm
- BDMS indicates 40 cps
- Electrical noise causes BDMS to increase to 350 cps

Which ONE of the following correctly describes plant response for the given conditions?

a) Charging pump suction swaps to the FWST

b) Containment Isolation Phase 'A' actuates

c) Containment purge supply and exhaust dampers close

d) A reactor trip signal is generated

QUESTION 5.15 (1.00)

Which ONE of the following correctly describes Adverse Containment Conditions?

a) Containment humidity is greater than 75.0%.

b) Containment pressure is greater than or equal to 3.0 psig.

c) Containment hydrogen concentration is greater than 8%.

d) Containment temperature is greater than or equal to 125 F.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.16 (1.00)

Given the following conditions:

- A Blackout is in progress
- Diesel generator is tied to the buss
- Blackout loads are being sequenced
- The sequencer reset button is depressed

Which ONE of the following correctly describes sequencer response for the given conditions?

a) Continue to sequence loads because the sequencer reset is locked until sequencing is complete.

b) Initiate a load shed then the sequencer will begin to sequence loads.

c) Begin loading the next sequencing group.

d) Stop sequencing any further loads.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.17 (1.00)

Given the following conditions:

- 100% RTP normal plant lineup
- Pressurizer spray valve fails OPEN
- Controller placed in MANUAL and open demand reduced to 0%
- Pressurize spray valve remains OPEN
- All heaters are manually energized
- NC pressure is approaching 1945 psig and decreasing

In accordance with AP/1/A/5500/11 CASE II, PZR Spray Control Valve Failure, which ONE of the following actions should be taken for the given conditions?

a) Reduce power to less than 48 % RTP, stop NCP for affected spray valve, shut spray line isolation valve

b) Place rod control in MANUAL, maintain Tave approximately five (5) F greater than Tref, deenergize power to affected spray valve

c) Manually trip the reactor, stop NCP for affected spray valve, enter EP/1/A/5000/01, Reactor Trip or Safety Injection

d) Manually initiate safety injection, stop all NCPs, enter EP/1/A/5000/01, Reactor Trip or Safety Injection

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.18 (1.00)

Given the following conditions:

- Power Range channel N-42 indicates ~110% RTP
- Intermediate Range channel N-35 indicates ~5E-4 amps

- Intermediated Range channel N-36 indicates ~4E-4 amp
- All other Power Range channels average ~101.6% RTP

Which ONE of the following is the correct response for the given conditions?

a) Verify reactor trip NOT required, reduce power to ~100.0 RTP, continue operations, conduct QPTR.

b) Note Intermediate Range channels equal to ~110% RTP, note 1/2 coincidence met, manually trip the reactor.

c) Note other Power Range channels indication CORRECT for ~101.6% RTP, maintain current power level, commence corrective actions for channel N-42 in accordance with AP/1/A/5500/16, Power Range Malfunction.

d) Note Intermediate Range channels INCORRECT, note channel N-42 CORRECT, check for possible dropped rod, commence corrective actions for Intermediate Range channels in accordance with AP/1/A/5500/16 CASE III, Intermediate Range Malfunction.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.19 (1.00)

Given the following conditions:

- Normal reactor start up in progress
- Power is 3% RTP
- Intermediate Range channel N-36 has been determined INOPERABLE
- IAE has determined it will take about two hours to correct.

Which ONE of the following is the correct action for the given conditions?

a) Place the reactor in HOT STANDBY until N-36 is corrected.

b) Maintain less than 5% RTP until N-36 is corrected.

c) Power increase may continue without restriction.

d) Power increase may continue to 10% RTP.

QUESTION 5.20 (1.00)

Given the following conditions:

- CAPT panel in LOCAL control
- VI is NOT available
- SM PORVs are placed in MANUAL and demand increased
- SM PORVs will NOT oper

Which ONE of the following correctly explains why the SM PORVs will NOT open?

a) N2 must be manually aligned.

b) N2 is the only source available.

c) VI is the only source available.

d) VI pressure must be less than N2 pressure.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.21 (1.00)

Given the following conditions:

- A LOCA is in progress
- MSIVs have shut on HI-HI Containment Pressure

Which ONE of the following would allow reopening of the MSIVs for the given conditions?

a) Reset the MSI signal

b) Reset the MSI signal and low steam line pressure signal

c) Reset the MSI signal and HI-HI Containment Pressure signal

d) Reset the MSI signal, low Steam line Pressure signal and HI-HI Containment Pressure signal

QUESTION 5.22 (1.00)

Which ONE of the following is NOT an input to Unit 2 AMSAC actuation logic?

a) CFPT control oil pressure

b) CF Regulating value position

c) CF Bypass valve position

d) CF Isolation valve position

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.23 (1.00)

Given the following conditions:

- 45% RTP
- Control rods are in MANUAL
- One control rod bank is withdrawn 10 steps

Which ONE of the following statements is correct for steady-state conditions?

a) Rod insertion limits remain the same, Shutdown Margin increases

b) Rod insertion limits increase, Shutdown Margin remains the same

c) Rod insertion limits remain the same, Shutdown Margin remains the same

d) Rod insertion limits decreases, Shutdown Margin decreases

QUESTION 5.24 (1.00)

Given the following conditions:

- Unit 1 at 30% RTP
- AMSAC RESET is depressed and released

Which ONE of the following correctly describes the response of AMSAC for the given conditions?

a) AMSAC will remain blocked because resetting is disabled below 40% power.

b) AMSAC will be functional, AMSAC will be blocked after the two minuted timer has timed out.

c) AMSAC will be functional when the RESET is depress then blocked when the RESET switch is released.

d) AMSAC will be functional because resetting takes priority over blocking.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.25 (1.00)

In accordance with EP/1/A/5000/2C1, Loss of Secondary Heat Sink, which ONE of the following is NOT used to determine if normal charging can be established following termination of feed and bleed?

a) NC subcooling greater than 50 F

b) Pressurizer level greater than 5%

c) At least one NC pump running

d) Both NI pumps stopped

QUESTION 5.26 (1.00)

Given the following conditions:

- Unit 1 is at 29% RTP
- 1A NCP inadvertently trips
- All 1A NCP parameters are within acceptable limits

Which ONE of the following is correct regarding 1A NCP restart for the given conditions?

a) The pump can be restarted without restrictions.

b) The pump must be idle for at least 20 minutes before it can be restarted.

c) The pump cannot be restarted unless the OPdT and OTdT trip setpoints are reduced to less than 50% RTP.

d) The pump cannot be restarted unless reactor power is reduced less than 25%.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.27 (1.00)

Which ONE of the following does an emergency containment entrance or exit cause a loss of?

a) Reactor building integrity

b) Containment ice condenser

c) Containment separation

d) Containment integrity

QUESTION 5.28 (1.00)

Referring to Attachment 2-30, state the maximum drag permitted during fuel handling before special inspection of the affected fuel assembly is required.

QUESTION 5.29 (1.00)

Which ONE of the following is the required action if one control rod will not fully insert on a Unit 1 reactor trip?

a) Emergency borate until power is less than 5% RTP

b) Emergency borate 170 ppm

c) Deenergize the control rod drive MG sets

d) Locally trip the control rod

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.30 (1.00)

Which ONE of the following conditions does NOT require emergency boration?

a) Control rod misaligned by greater than twelve (12) steps

b) A control rod fails to insert on a reactor trip

c) Boron concentration is 1200 ppm during refueling

d) Control rod bank lo-lo limit

QUESTION 5.31 (1.00)

Given the following conditions:

- Both CFPTs tripped
- CA automatically started
- CA valves reset to control steam generator water level
- CA suction pressure decreases to five (5) psig

Which ONE of the following correctly describes CA pump response for the given conditions?

a) Suction will automatically shift to RN

b) Suction will automatically shift to UST

c) Trip when suction pressure decreases to three (3) psig

d) Trip after a six (6) second time delay

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.32 (1.00)

Which ONE of the following is the reason for requiring CA-6, CA CST Suction to CA Pumps, remain open in Modes 1, 2, and 3?

a) Ensure a redundant suction source is available

b) Ensure hotwell level maintained for plant cooldown

c) Prevent inadvertent RN swapover

d) Prevent draining of the UST

QUESTION 5.33 (1.00)

A reactor start up is scheduled today Oct, 30th. Just prior to going critical it was brought to your attention that the monthly surveillance requirement for the Boron Injection Flow Path had been missed. The last surveillance test completion dates were July 23, August 26, and September 29.

Which ONE of the following describes the allowances and limitations imposed by Technical Specifications.

July has 31 days, Aug. 31, Sept. 30, and Oct. 31

NOTE: Applicable T.S. are provided

a) Hold present condition, do not make a mode change or power increase until the surveillance is completed.

b) Continue the reactor Start up. Conditions are not outside the bounds of Technical Specifications.

c) Complete a Test Exception Report, explaining the circumstances and continue with the reactor start up.

d) Go to Hot Standby and complete the Surveillance test then continue with the Reactor start up.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.34 (1.00)

The plant has stabilized following a major tube rupture in "A" S/G. ECCS flow has been terminated and normal charging and letdown established. A recovery procedure has not yet been selected. Aux feed flow to the ruptured S/G is isolated. The ruptured S/G level is 75% NR and the condenser is not available.

What is the preferred cooldown method for the ruptured S/G?

Choose the correct answer:

a) Cooldown using the remaining intact S/Gs.

b) Cooldown using all S/Gs including "A" S/G.

c) Cooldown using backfill.

d) Cooldown using SI flow into the NC system and out of the PORV.

QUESTION 5.35 (1.00)

During the performance of EP/1E4 (SGTR with continuous NCS leakage: saturated recovery), when is NCS depressurization stopped?

NOTE: REACTOR VESSEL U/R LEVEL (ICCS) >72%

Choose the correct answer.

a) Any NCP on

b) Pressurizer level >25%

c) Subcooling <5 deg. F

d) Ruptured S/G level <5%

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.36 (1.00)

The Nuclear Service Water System (RN) received an automatic swapover to SNSWP on a Emergency-LO RN Pit level on Train A. The operator immediately (within one minute) went to AP/0/A/5500/20 CASE II. LOSS OF RN PIT LEVEL. Step two (2) of the immediate action instructs the operator to stop the RN pumps in the Affected Train. The operator attempted to stop the pumps from the control board and they would not stop.

WHY did the running RN pumps NOT stop?

QUESTION 5.37 (1.00)

You are the Shift Supervisor, the plant is in AP/0/A/5500/22 LOSS OF INSTRUMENT AIR.

When would you trip the reactors per the LOSS IN INSTRUMENT AIR procedure and go to EP/1(2)/A/5000/01, REACTOR TRIP OR SAFETY INJECTION.

Choose the correct answer.

a) 84 psig (decreasing) with STBY 1 and STBY 2 (100% loaded)

b) 80 psig with IVI-500 (VI Comp D to VS Hdr Backpressure Control) Closed.

c) 76 psig (decreasing) IVS-78 (Station Air Auto Backup To Inst Air) OPEN

d) Whenever you decide the pressure decay is uncontrolled.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.38 (1.00)

EP/1/A/5000/2A1 NUCLEAR POWER GENERATION/ATWS
Step 10 has you "Verify Reactor shutdown" By:

* P/R channels <5%
* I/R startup rate NEGATIVE

The Response not Obtained has you to Borate, IF you can not Borate WHICH ONE of the following actions would you take?

a) Perform ALL of the actions of any other Critical Safety function procedure in effect.

b) Continue on in the NUCLEAR POWER GENERATION/ATWS procedure until directed out.

c) Allow the Reactor Coolant system to heat up.

d) Depressurize using spray of the PORV to a pressure below discharge head of the Safety Injection pumps.

QUESTION 5.39 (1.00)

While performing the actions in EP/1/A/5000/2B2 "Degraded Core Cooling" (orange path). A loss of all AC Power occurs, followed by A red path on Heat sink. Which ONE of the following actions would you perform?

a) Continue with the procedure addressing "Core Cooling orange path".

b) Go to the procedure addressing "Heat sink red path".

c) Go to EP-01 Reactor Trip or Safety Injection.

d) Go to EP-03 Loss of All AC Power.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.40 (1.00)

2D1 'Imminent Pressurized Thermal Shock Condition', Step 18 has the operator to "Check at least two NC pumps On". Why is the procedure concerned with ensuring an NC Pump is running if SI is initiated? Select the most correct answer.

a) To mix the cold leg/downcomer low temperature water due to SI injection.

b) To establish heat transfer through the S/G

c) To aid in establishing pressure control.

d) To mix the coolant in the reactor vessel head to prevent voiding.

QUESTION 5.41 (1.00)

A medium break LOCA has occurred with a failure of ECCS causing Inadequate Core Cooling. To allow injection of lower head pumps a rapid secondary depression is done. Before the depressurization is done the operator is warned to stop S/G depressurization when NCP cavitation occurs or CLA pressure decreases to <150 psig.

Assuming the NCS is saturated what will the S/G presure be when CLA presure is 150 psig?

a) approximately 700 PSIG

b) approximately 350 PSIG

c) approximately 150 PSIG

d) approximately atmospheric

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.42 (0.50)

Fill in the blank

1A1 Natural Circulation Cooldown: Voiding is not predicted to occur if all CRDM fans are running, the cooldown rate is limited to _____ deg F/hr, and at least _____ deg.F subcooling is maintained.

QUESTION 5.43 (1.00)

While transferring fuel with the Fuel Transfer System the "Chain(s) broke". Fuel Transfer System Operation procedure Enclosure 4.5 instructs the operator in how to position the transfer car and container in the desired position. Which ONE statement best describes the procedural method:

a) Contract divers to repair at least one of the broken chains.

b) Use the auxiliary hoist on the Spent Fuel Manipulator Crane to snare the loop on the end of the emergency pull-out cable.

c) Completely remove the broken chains from the drive stand, sprockets and the push arm assembly. Install the stub shaft into the input bore of the gear box. Return the transfer car and container to the spent fuel building.

d) Snare the lifting eye on the fuel container with a hook or loop. Attach the hook or loop to a hoist or winch and pull the fuel container to the vertical position.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.44 (1.00)

Westinghouse Emergency Response Guidelines require a 20 deg.F subcooling margin in the NC Pump Trip Criteria. CNS 1/C High Energy Line Break Inside Containment Enclosure 1 states less than or equal to 0 deg.F subcooling.

Given: NC pressure was 700 psig, CV pressure is 3.4 psig and RVLIS was out of service, as SRO in charge, what method are you to use to determine NC Pump trip criteria? Choose the correct answer.

a) 0 deg.F subcooling using the steam tables.

b) Plus 20 deg.F subcooling using the steam tables.

c) Plus 35 deg.F subcooling using the Steam tables.

d) Use the NC Saturation Accident Conditions Curves.

QUESTION 5.45 (1.00)

2B1 "Inadequate Core Cooling" contains four (4) main mitigation action sequences.

1. SI systems are checked to insure all SI sources are delivering flow.
2. S/G's are depressurized so that if there is circulation , NC will be cooled and depressurized.
3. Pzr PORV's are opened to depressurize NCS and allow more flow into the core.

State the fourth (4th) main mitigation action.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.46 (1.00)

1E1 "Post-SGTR Cooldown and Depressurization" takes the unit to cold shutdown following a tube rupture for which primary-to-secondary leakage has been stopped.

Which one of the following statements describes the method used to cooldown and depressurize the ruptured S/G.

a) Simultaneously depressurize the ruptured S/G and the NC system via the MSIV bypass to the condenser.

b) Alternately filling and draining the ruptured S/G thru the ruptured tube as NC and S/G pressure decreases.

c) Trickle feeding the ruptured S/G approximately 25 gpm, allowing the S/G to back fill to the NC system as it is depressurized.

d) Allowing the ruptured S/G to become a heat source on the NC system and the heat to be removed by the good S/Gs.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.47 (1.00)

Given: T.S. 3.0.3 When a limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 1 hour action shall be initiated to place the unit in a MODE in which the specification does not apply by placing it, as applicable, in:

a. At least HOT STANDBY within the next 6 hours
b. At least HOT SHUTDOWN within the following 6 hours, and
c. At least COLD SHUTDOWN within the subsequent 24 hours.

Containment Spray (NS) Pump 1A is out of service for maintenance and will not be available for 48 hours (within the 72 hour action statement).

The SS was informed at 10:00 A.M. That the NS Pump 1B suction valve was found closed by rounds NEO at 8:00 A.M. the same morning. A shutdown was started immediately, and the unit was in HOT STANDBY at 3:00 p.m.

What time is the unit required to be in HOT SHUTDOWN? Choose the correct answer.

a) 8:00 P.M.
b) 9:00 P.M.
c) 10:00 P.M.
d) 11:00 P.M.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.48 (1.00)

Charging pump 1A tripped for no apparent reason. An assessment for cause showed no maintenance was required and shows no obvious inoperable condition. Based on OPERABILITY DETERMINATION DIRECTIVE 3.1.14 Which ONE of the following statements is correct.

a) The pump must be mechanically and electrically inspected by the appropriate shops before it can be declared operable.

b) The Charging pump Surveillance test must be performed before the pump can be declared operable.

c) Based on the initial assessment of nothing wrong, no further actions are required for the pump to be considered operable.

d) If it can be restarted in one hour, it can again be considered operable.

QUESTION 5.49 (1.00)

Upon assuming the shift, the SS noticed the sealed box containing the high radiation area master keys had been opened. Which ONE of the following is the correct response per DMP 2-9?

a) The Shift Supervisor must inventory keys and reseal the box.

b) The Shift Operating Engineer or his designee must inventory and reseal the box.

c) Health Physics must inventory and reseal the box.

d) Health Physics must inventory the keys and the Shift Supervisor reseal the box.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.50 (1.00)

There are FOUR (4) activity limits that an item must meet to be considered "clean" or "unconditionally released" from a Restricted Control Area according to the Health Physics (Radiation Protection) Manual - SD3.8.8

FILL IN THE BLANKS
(Value below based upon "DPM per 100 square cm" of sample)

a) Loose surface contamination shall not exceed _____ DPM Beta/Gamma.

b) Total surface contamination (fixed & loose) shall not exceed _____ DPM Beta/Gamma.

c) Alpha radioactive contamination shall not exceed _____ DPM (loose).

d) Alpha radioactive contamination shall not exceed _____ DPM (fixed).

QUESTION 5.51 (1.00)

a) WHAT is the MINIMUM rate of power reduction per CNS Directive 3.1.19 "Actions to take in case of Exceeding limits" while complying with a 3.0.3 shutdown.

b) WHAT is the MINIMUM rate of cooldown to be used per CNS Directive 3.1.19 "Actions to take in case of Exceeding limits", while complying with a 3.0.3 shutdown.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

QUESTION 5.52 (1.50)

State the emergency action levels that require the following actions to be taken: NOTE: Answer each separately.

a) TSC activation.

b) CMC activation.

c) Site assembly.

QUESTION 5.53 (1.00)

Which ONE of the following is the size (radius) of the Emergency Planning Zone?

a) 3 mile

b) 5 mile

c) 7 mile

d) 10 mile

(***** END OF CATEGORY 5 *****)

QUESTION 6.01 (1.00)

Which ONE of the following is NOT an IMMEDIATE trip of the emergency diesel generators during manual operation?

a) Generator differential

b) Engine overspeed

c) 51V voltage controlled over current

d) Low lube oil pressure

QUESTION 6.02 (1.00)

Match the Pressurizer pressure control or protection action in Column A with the associated setpoint in Column B. Responses in Column B may be used more than once.

COLUMN A	COLUMN B
a. Backup Heaters on	1. 2385 psig
b. PORVs open	2. 2335 psig
c. Safety Injection Block permissive	3. 2315 psig
d. Reactor trip	4. 2210 psig
	5. 1955 psig

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.03 (1.00)

Given the following conditions:

- 75% power
- Channel N-41 is the highest reading Power Range channel
- Rod control is in AUTOMATIC
- Channel N-42 instantaneously fails LOW

Which one of the following correctly describes control rod system response for the given conditions?

a) Control rods will drive in at maximum rate until C-5, Automatic Rod Control permissive, blocks control rod motion or a reactor trip on Low Pressurizer pressure occurs.

b) Control rods will drive in until the temperature mismatch equals the power mismatch. Reactor power will not change and Tavg will stabilize at a lower value.

c) Control rods will drive out unitl the power mismatch circuit has timed out. The temperature mismatch circuit will cause control rods to drive in until the power mismatch circuit develops an error. Reactor power will stabilize at a higher value but Tavg will remain constant.

d) Control rods will not move because the auctioneered high nuclear power is used to determine power mismatch.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.04 (1.00)

Given the following conditions:

- Pressurizer Level Control selector switch in position 1-2
- Charging flow reduced to minimum
- Pressurizer level decreases
- Letdown automatically isolates and heaters trip
- Level increases until high level reactor trip

Assuming no operator action is taken, which ONE of the following correctly describes the pressurizer level channel that failed and direction the channel failed?

a) Level channel I failed HIGH

b) Level channel II failed LOW

c) Level channel I failed LOW

d) Level channel II failed HIGH

QUESTION 6.05 (1.00)

Which ONE of the following conditions would cause a P-4, Reactor Trip, signal to be generated?

a) RTA and BYB open

b) RTA and RTB open

c) RTA and BYA open

d) RTB and BYA open

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.06 (1.00)

Which ONE of the following is the minimum allowable #1 seal differential pressure before a NC pump can be started?

a) 100

b) 200

c) 300

d) 400

deleted

QUESTION 6.07 (1.00)

Which ONE of the following operating limits is based on minimizing the probability of brittle fracture of the reactor vessel?

a) Steam generator temperature limits

b) Cooldown rate limit

c) Minimum temperature for criticality

d) Low Tave limit

QUESTION 6.08 (1.00)

Which ONE of the following is used as a direct indication of reactor power to determine control rod Rod Insertion Limits?

a) Auctioneered high Tavg

b) Auctioneered high Tref

c) Auctioneered high nuclear power

d) Auctioneered high delta-T

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.09 (1.00)

DP/1/A/6450/15, Containment Purge System, Limits and Precautions states to ensure the purge mode selector is returned to "NORM" prior to putting the missile shield in place following refueling.

Which ONE of the following is the reason for this precaution?

a) Prevent overpressurization of lower containment and opening of ice condenser doors.

b) Prevent overpressurization of upper containment

c) Prevent negative pressurization of lower containment

d) Prevent negative pressurization of upper containment

QUESTION 6.10 (1.00)

Match the appropriate plant or VX system condition in Column A with the correct hydrogen concentration in Column B. Responses in Colmun B may be used more than once.

	Column A	Column B
a.	The hydrogen skimmer system assures a hydrogen concentration of less than _____.	1. 0.35%
		2. 0.4%
b.	Hydrogen recombiners are not placed into service above _____.	3. 3.0%
		4. 3.5%
c.	Hydrogen concentration in containment is never allowed to reach _____.	5. 4%
d.	The high hydrogen concentration annunciator setpoint is _____.	6. 6%

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.11 (1.00)

Given the following conditions:

- Normal 100% RTP plant line up
- Tavg/Tref deviation is 8 F
- Turbine impulse pressure channel II instantly fails low
- No operator action is taken

Which ONE of the following correctly describes steam dump system response for the given conditions?

a) C-7A will trip but the steam dumps will not open because C-7B did not trip.

b) C-7A and C-7B will trip and the condenser dump valves will open but the atmospheric dump valves will NOT open because the temperature error is less than 11.5 F.

c) C-7A and C-7B will trip and the condenser and atmospheric dump valves will open until P-12, Lo-Lo Tave, is reached.

d) C-7A and C-7B will trip and the condenser and atmospheric dump valves will open until Tavg/Tref temperature deviation is less than 3 F.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.12 (1.00)

Given the following conditions:

- Unit 2 startup in progress
- All steam generator water levels normal
- Power Range channel N-41 instantly fails HIGH

Which ONE of the following correctly describes steam generator water level response for the given conditions?

a) SGs 'A' and 'D' program levels increase to 66%

b) SGs 'A' and 'D' actual levels increase until a CF isolation occurs on HI-HI level

c) SGs 'A' and 'D' program levels will NOT increase because the level error will override the setpoint error

d) SGs 'A' and 'D' actual levels will NOT increase because level is not programmed

QUESTION 6.13 (1.00)

Which ONE of the following is NOT an interlock to open the ND Train A inlet isolation valves, ND-1B or ND-2A?

a) NC pressure less than 385 psig

b) ND to NI pump suction valve, ND-28, shut

c) FWST suction isolation valve, FW-27, shut

d) ND pump crossconnect to hot legs, NI-183, shut

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.14 (1.00)

In accordance with OP/O/A/6100/06, Reactivity Balance Calculation, which ONE of the following is required if criticality is achieved below the Rod Insertion Limit?

a) Continue withdrawing control rods until at least 10 steps above the Rod Insertion Limit.

b) Immediately insert control rods until at least 500 pcm below the point of criticality.

c) Emergency borate at greater than 70 gpm until the reactor is at least 1.5% shutdown with control rods remaining at the current position.

d) Borate at greater than 30 gpm while withdrawing control rods to maintain criticality until the control rods are above the Rod Insertion Limit.

QUESTION 6.15 (1.00)

Which ONE of the following statements is correct concerning paralleling of electrical systems?

a) If resistances are not matched when the synchronizing switch is closed, heavy currents will flow and speed up the incoming machine to synchronous speed.

b) If voltages are not matched when the synchronizing switch is closed, there will be VAR flow from the lower voltage source to the higher one.

c) If the incoming machine is in phase but slightly faster than synchronous speed when paralleled, the system will tend to speed up to synchronous speed.

d) If the incoming machine is at synchronous speed but out of phase with the running bus when the breaker is closed, heavy currents will flow to either accelerate or retard the incoming machine.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.16 (1.00)

Which ONE of the following is correct concerning the Inverter Manual Bypass Switch in the 125 VDC/120 VAC system.

a) Interlocked with the alternate source VRD breaker which must be closed in order to switch to Alternate Source to Load.

b) Interlocked with the sync light in such a way that you can not transfer to the alternate source unless the sync light is out.

c) Interlocked with the sync light in such a way that you can not transfer to the alternate source unless the sync light is lit.

d) No interlocks to prevent manual transfer if the electrical sources are not in synchronous with each other.

QUESTION 6.17 (1.00)

Given the following conditions:

- The CA system automatically started on S/G 'B' LO-LO level
- Trains A and B CA were reset to manual control
- The valves were repositioned to control level for S/G A, C, and D
- S/G 'A' level decreases to LO-LO level

Which ONE of the following correctly describes CA system response for the given conditions?

a) The turbine CA pump starts but the discharge valves do not open.

b) CA train A discharge valves go to the fully open position.

c) CA train B discharge valves go to the fully open position.

d) System alignment is not affected.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.18 (1.00)

Given the following conditions:

- A reactor start-up in progress
- Power at 5 E-11 amps
- The Operation Selector switch on Intermediate Range channel N-35 is placed in the 1 E-3 position

Which ONE of the following correctly describes the plant response to the given conditions?

a) The reactor will trip on Intermediate Range High Flux.

b) The Intermediate Range channel N-35 HIGH LEVEL TRIP bistable will trip but no reactor trip will occur.

c) There will be no effect because the LEVEL TRIP has not been bypassed.

d) The Intermediate Range channel N-35 HIGH LEVEL ROD STOP bistable will trip.

QUESTION 6.19 (1.00)

Which ONE of the following containment conditions DO NOT cause isolation of the VP system?

a) Hi pressure

b) Hi temperature

c) Hi humidity

d) Hi radiation

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.20 (1.00)

Which ONE of the following correctly describes the effect of an UNDERcompensated Intermediate Range channel following a reactor trip?

a) Indicate high preventing P-6 from automatically energizing the source range due to the 2 of 2 coincidence.

b) Indicate low prematurely energizing the source range due to the 1 of 2 coincidence.

c) Indicate high but the source range will be energized by P-6 from the other IR channel due to the 1 of 2 coincidence.

d) Indicate low but source range will not be energize until P-6 is supplied from the other IR channel due to the 2 of 2 coincidence.

QUESTION 6.21 (1.00)

Which ONE of the following will NOT cause an urgent alarm in the Rod Control System?

a) Phase failure

b) A DC power supply failure

c) Multiplexing error

d) Regulation failure

QUESTION 6.22 (1.00)

Which ONE of the following would cause a pressurizer level indication of 0%?

a) DP cell diaphragm rupture

b) Reference leg rupture

c) Impulse line rupture

d) Equalizing valve leakage

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.23 (1.00)

OP/1/A/6100/01 cautions NC system pressure is not to exceed 385 psig when operating in the LOW PRESSURE mode.

Which ONE of the following is the basis for this caution?

a) Prevent closure of the pressurizer block valves

b) Prevent isolation of the ND system

c) Prevent overpressurization of the NC pump seals

d) Prevent opening of the pressurizer PORVs

QUESTION 6.24 (1.00)

Which ONE of the following correctly describes the effect a loss of RL discharge flow will have on a Liquid Waste system discharge?

a) The liquid waste system discharge valve will close.

b) A control room alarm will alert the operator to manually stop the discharge.

c) The discharge will continue unless EMF-49, Waste Liquid Discharge Monitor, also alarms.

d) The discharge will shift to the Standby Nuclear Service Water pond.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.25 (1.00)

Which ONE of the following is the reason for closing the NI pump recirculation valves before swapping NI pump suction from the FWST to the ND heat exchanger discharge?

a) Increase NI pump discharge flow.

b) Prevent pumping water from the containment sump to the FWST.

c) Allow pump suction and discharge pressures to stabilize.

d) Prevent pump runout at lower system pressure.

QUESTION 6.26 (1.00)

Given the following conditions:

- 35% RTP
- No power changes for last 40 minutes
- Turbine impulse channel II fails HIGH

Which ONE of the following is correct concerning blocking of AMSAC for the given conditions?

a) AMSAC CANNOT be blocked since turbine impulse pressure channel II is greater than 40%.

b) Depress the BYPASS pushbutton to block AMSAC.

c) Depress the RESET pushbutton to block AMSAC.

d) AMSAC is automatically blocked below 40% RTP.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.27 (1.00)

Which ONE of the following limit interlocks is in effect during MANUAL operation of the ENA system?

a) Top of core

b) Bottom of core

c) Withdraw

d) Safety

QUESTION 6.28 (1.00)

Given the following conditions:

- Unit 2 in Mode 3
- Reactor trip breakers are open
- Steam generator water level is at setpoint
- No-load temperature and pressure maintained using steam dumps
- Tave increases to 570 F
- Steam dump demand is increased
- Tave decreases to 560 F
- CF isolation occurs

Which ONE of the following correctly explains why the CF isolation occurred?

a) The increased steam dump demand caused water level to swell greater than 78%.

b) The decrease in Tave caused pressurizer pressure to decrease less than 1955 which resulted in a Ss signal and CF isolation.

c) The increase in Tave reset the CF isolation logic and the CF isolation occurred when Tave decreased less than 564 F.

d) The increase in Tave greater than 564 F and both CFPTs tripped caused a CA automatic start and CF isolation.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.29 (1.00)

Which ONE of the following is the purpose of the CLAs?

a) Provide passive injection of coolant during a Loss of All AC

b) Provide core reflood during intermediate and large break LOCAs

c) Prevent inadequate core cooling during small break LOCAs

d) Prevent loss of pressurizer level during a MSLB

QUESTION 6.30 (1.00)

Which ONE of the following correctly describes the flowpath when operating the NV system in ALTERNATE DILUTE?

a) Inlet of VCT

b) Outlet of VCT

c) Inlet and outlet of VCT

d) Directly to suction of NV pumps

QUESTION 6.31 (1.00)

Which ONE of the following will NOT cause a direct trip of the VF supply fans?

a) Low inlet temperature

b) Exhaust fans deenergized

c) Smoke detector alarm

d) EMF-35 in alarm

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.32 (1.00)

Which ONE of the following is the cooling water source for the Lower Containment Cooling System during a Station Blackout?

a) YV

b) YN

c) RN

d) KC

QUESTION 6.33 (1.00)

Which ONE of the following correctly describes Lower Containment AHUs response during a Blackout?

a) Start in low speed then shift to high speed after nine (9) minutes.

b) Start in high speed then shift to low speed after nine (9) minutes.

c) Start in low speed then shift to selected speed after sequencer is reset.

d) Start in high speed then trip after sequencer is reset.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.34 (1.00)

Given the following conditions:

- A RED path for Heat Sink
- An ORANGE path for Criticality

Which one of the following correctly describes the order of procedure execution?

a) Criticality until a GREEN path is established then Heat Sink

b) Criticality and Heat Sink concurrently until a GREEN path is established

c) Heat Sink until an ORANGE path is established then Criticality

d) Heat Sink until a GREEN path is established then Criticality

QUESTION 6.35 (1.00)

Given the following conditions:

- Power increase to 100% in progress
- Preparing to start second hotwell and condensate booster pumps
- LOSS OF DC CONTROL POWER alarm occurs
- The power increase is discontinued

Which ONE of the following correctly explains the reason for discontinuing the power increase?

a) The hotwell and condensate pumps will trip after a 60 second time delay.

b) The hotwell and condensate booster pumps cannot be started.

c) The operating CFPT will automatically lock until DC control power is restored.

d) The operating CFPT will trip immediately.

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

QUESTION 6.36 (1.00)

Which ONE of the following correctly describes conduct of independent verification for valves that are throttled?

a) Check stem travel or valve travel gauge

b) Directly observe the valve being throttled

c) Close the valve then return throttled position

d) Open or close the valve 1/4 turn then return to throttled position

(***** END OF CATEGORY 6 *****)
(********** END OF EXAMINATION **********)

ANSWER 5.01 (1.00)

a) D

REFERENCE

OP-CN-RT-RCD Objective 3

026020G006 000001K118 ..(KA's)

ANSWER 5.02 (1.00)

b)

REFERENCE

OP-CN-HO-EP Objective 14

000056A245 ..(KA's)

ANSWER 5.03 (1.00)

c)

REFERENCE

EP/1/A/5000/2C1
OP-CN-HO-CSF Objective 4

000054K304 ..(KA's)

ANSWER 5.04 (1.00)

d)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

REFERENCE

DP-CN-HO-PTS Objective 13

000040K101 ..(KA's)

ANSWER 5.05 (1.00)

b)

REFERENCE

DP-CN-HO-AM-1 Objective 15

000011G004 ..(KA's)

ANSWER 5.06 (1.00)

a)

REFERENCE

DP-CN-HO-AM-2 Objective 7

000074A101 ..(KA's)

ANSWER 5.07 (1.00)

c)

REFERENCE

DP-CN-HO-CSF Objective 3

000074G011 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.08 (1.00)

c)

REFERENCE

DP-CN-HD-IDE Objective 6.D.

000051K301 ..(KA's)

ANSWER 5.09 (1.00)

a)

REFERENCE

DP-CN-HD-ISE Objective 2

000011K308 006000K409 ..(KA's)

ANSWER 5.10 (1.00)

a)

REFERENCE

AP/1/A/5500/10

000037G011 ..(KA's)

ANSWER 5.11 (1.00)

d)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

REFERENCE

AP/1/A/5500/12

000022K103 ..(KA's)

ANSWER 5.12 (1.00)

a)

REFERENCE

OP-CN-HO-DG3 Objective 1

000056A104 ..(KA's)

ANSWER 5.13 (1.00)

c)

REFERENCE

OP-CN-HO-ILE Objective 6b.,6c

000028A201 ..(KA's)

ANSWER 5.14 (1.00)

a)

REFERENCE

OP-CN-HO-ENC Objective 3,4,5

000036K301 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.15 (1.00)

b)

REFERENCE

OP-CN-HD-EP1 Objective 8.
EP/1/A/5000/D1
EP/1/A/5000/1C

000009A211 ..(KA's)

ANSWER 5.16 (1.00)

d)

REFERENCE

OP-CN-HD-EQB Objective 8,9

000055G007 064000K410 ..(KA's)

ANSWER 5.17 (1.00)

c)

REFERENCE

T&Q CO-R0003, Elements #5 and 6
OP-CN-PS-IPE Objective 9
AP/1/A/5500/11

000027K303 ..(KA's)

ANSWER 5.18 (1.00)

a)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

REFERENCE

T&Q CO-R0008 Elements #1 and 3
T&Q CO-S0034 Elements #1 and 3
OP-CN-HO-ENB Objective 9,11,12
AP/1/A/5500/16
EP/1/A/5000/02

000033A201 000033A202 000033K302 ..(KA's)

ANSWER 5.19 (1.00)

d)

REFERENCE

Technical Specification Table 3.3-1

000033K301 000033G008 ..(KA's)

ANSWER 5.20 (1.00)

c)

REFERENCE

OP-CN-HO-SM Objective 6A

000065A101 000065A207 ..(KA's)

ANSWER 5.21 (1.00)

a)

REFERENCE

OP-CN-HO-SM Objective 8.A
039000K408 000040A205 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.22 (1.00)

d)

REFERENCE

Requal AMSAC handout
OP-CN-HO-CA Objective 4.

061000K402 000029A115 ..(KA's)

ANSWER 5.23 (1.00)

c)

REFERENCE

Exam Bank

000001K106 000001K104 000003K103 000001K302 ..(KA's)

ANSWER 5.24 (1.00)

a)

REFERENCE

AMSAC Requal Handout
OP-CN-HO-CA Objective 4

061000K402 000029A115 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.25 (1.00)

c)

REFERENCE

Exam Bank

000074G012 000040G012 ..(KA's)

ANSWER 5.26 (1.00)

d)

REFERENCE

Exam Bank

000017K103 ..(KA's)

ANSWER 5.27 (1.00)

d)

REFERENCE

OP-CN-HO-CNT Objective 4

000069A201 ..(KA's)

ANSWER 5.28 (1.00)

250 lbs.

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

REFERENCE

000036A202 ..(KA's)

ANSWER 5.29 (1.00)

b)

REFERENCE

EP/1/A/5000/1A

000005A203 ..(KA's)

ANSWER 5.30 (1.00)

a)

REFERENCE

AP/1/A/5500/13
AP/1/A/5500/14
EP/1/A/5000/1A
OP-CN-HO-NV Objective 16.0

000024K301 ..(KA's)

ANSWER 5.31 (1.00)

d)

REFERENCE

OP-CN-HO-CA Objective 2

000054A101 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.32 (1.00)

c)

REFERENCE

DP-CN-HD-CA Objective 2

000054A101 000054A203 ..(KA's)

ANSWER 5.33 (1.00)

b)

REFERENCE

T.S. 4.0.2 and 4.0.5
k/a 3.5 / 4.2

006000G005 ..(KA's)

ANSWER 5.34 (1.00)

c)

REFERENCE

Brigdon; Vogtle
CNS Exam Bank EP-EP4-1
k/a 3.7 / 4.0

000037K305 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.35 (1.00)

C)

REFERENCE

EP/1/A/5000/1E4 step 7
EP-EP4-11
k/a 4.2 / 4.4

000037K307 ..(KA's)

ANSWER 5.36 (1.00)

Must wait for the (two minute) delay to run out. (associated with the pumps and valves on the Emergency-LO RN Pit level actuation.) (1.0 pt.)

REFERENCE

AP/0/A/5500/20 Case II LOSS OF RN PIT LEVEL Note page 8
OP-CN-HO-RN rev 8 2.5.E.6 page 37
k/a 3.6 / 3.9

000062K302 ..(KA's)

ANSWER 5.37 (1.00)

d)

REFERENCE

AP/0/A/5500/22 LOSS OF INSTRUMENT AIR Retype #3 page 2 CAUTION prior to C.
k/a 3.6 / 4.2

000065A206 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.38 (1.00)

c)

REFERENCE

EP/1/A/5000/2A1 Step 10 c. RNO
k/a 4.3 / 4.6 4.1 / 4.2

000029G012 000007A202 ..(KA's)

ANSWER 5.39 (1.00)

d)

REFERENCE

EP/1/A/5000/03 Loss of All AC Power Caution top of page 2 of 66

OP-CN-HO-EP5 SEC 2.1.B. page 8 of 18
k/a 3.9 / 4.0

000050G012 ..(KA's)

ANSWER 5.40 (1.00)

a)

REFERENCE

ERG background document FR-P.1 step 5
k/a 4.0 / 4.2

013000A101 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.41 (1.00)

c)

REFERENCE

ERG background document FR-C.1 step 11
k/a 3.4 / 3.6

013000A104 ..(KA's)

ANSWER 5.42 (1.00)

50 (0.25 pt) , 50 (0.25 pt)

REFERENCE

OP-CN-HO-EP1 sec 2.3.C.2.h page 34 of 42
k/a 4.4 / 4.6

000017K101 ..(KA's)

ANSWER 5.43 (1.00)

b)

REFERENCE

Fuel Transfer System Operation OP/1/A/6550/08 Emergency Operation Enclosure 4.5 sec 2.4 page 3 of 5
k/a 3.1 / 3.6

000036A104 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.44 (1.00)

d)

REFERENCE

OP-CN-HO-EP1 sec.2.A NOTE bottom of page 16
LPSO - Training Objective 8
k/a 4.3 / 4.7

000074K101 ..(KA's)

ANSWER 5.45 (1.00)

NCP's are started (1.0 pt) (to provide 2 phase forced circulation).

REFERENCE

OP-CN-HO-CSF sec. C.2.a page 11 of 26
LPSO - Training Objective 4
k/a 4.5 / 4.9 4.0 / 4.4

000074K103 000074K311 ..(KA's)

ANSWER 5.46 (1.00)

a)

REFERENCE

OP-CN-EP-EP4 sec. 2.2.A
LPSO Training Objective 2
k/a 4.2 / 4.5

000038K306 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.47 (1.00)

d)

REFERENCE

CATAWBA NUCLEAR STATION TECHNICAL SPECIFICATION INTERPRETATION 3.03
CATAWBA NUCLEAR STATION TECHNICAL SPECIFICATION 3.0.3
k/a 2.5 / 3.8

026020G006 ..(KA's)

ANSWER 5.48 (1.00)

d)

REFERENCE

OPERABILITY DETERMINATION CNS Directive 3.1.14 sec. 5.1.2
k/a 2.5 / 3.4

194001A103 ..(KA's)

ANSWER 5.49 (1.00)

c)

REFERENCE

OMP 2-9 Sec. 10.2.B
k/a 2.5 / 3.4

194001A103 ..(KA's)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

ANSWER 5.50 (1.00)

a) 1000
b) 5000
c) 20
d) ~~100~~ 0 (4 parts @ 0.25 ea.)

REFERENCE

T&Q CO-S0010, Element #8; Catawba HP Manual; SD 3.8.8 and 3.8.10
k/a 2.8 / 3.4

194001K103 ..(KA's)

ANSWER 5.51 (1.00)

a) 10% per hour (0.5 pt)
b) 10 deg. her hour (0.5 pt)

REFERENCE

Catawba Nuclear Station Directive 3.1.19 Action to take in case of "Exceeding limits"
k/a 2.5 / 3.4

194001A103 ..(KA's)

ANSWER 5.52 (1.50)

a) alert (0.5 pt)
b) Site Area Emergency (0.5 pt)
c) Alert (0.5 pt)

(***** CATEGORY 5 CONTINUED ON NEXT PAGE *****)

5. EMERGENCY AND ABNORMAL PLANT EVOLUTIONS
(60%)

REFERENCE

OP-CN-HO-SEP sec. 2.D & E page 11 & 12
LPSO Training Objective 3
k/a 3.1 / 4.4

194001A116 ..(KA's)

ANSWER 5.53 (1.00)

d)

REFERENCE

OP-CN-HO-SEP sec 2.F.1 page 12
ISS/RO/SRO/ #7
k/a 3.1 / 4.4

194001A116 ..(KA's)

(***** END OF CATEGORY 5 *****)

ANSWER 6.01 (1.00)

d)

REFERENCE

OP-CN-HO-DG3 Objective 4,5.

064000K402 ..(KA's)

ANSWER 6.02 (1.00)

[0.25] each:
a. 4
b. 2
c. 5
d. 1

REFERENCE

OP-CN-IPE-HO Objective 4.

011000K103 ..(KA's)

ANSWER 6.03 (1.00)

d)

REFERENCE

OP-CN-HO-IRX Objective 7.

015000A202 ..(KA's)

ANSWER 6.04 (1.00)

a)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

REFERENCE

CN-OP-ILE-HO Objective 6b

011000A210 ..(KA's)

ANSWER 6.05 (1.00)

a) c no

REFERENCE

OP-CN-HO-IPX Objective 7.

012000A307 ..(KA's)

ANSWER 6.06 (1.00)

b)

REFERENCE

OP/1/A/6100/01, Enclosure 4.1, 2.17

003000K103 ..(KA's)

ANSWER 6.07 (1.00)

b) deleted

REFERENCE

OP-CN-HO-PTS Objective 11

002000G005 ..(KA's)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

ANSWER 6.08 (1.00)

d)

REFERENCE

PLS
OP-CN-HO-IPX Objective 8

001000A302 001000K504 ..(KA's)

ANSWER 6.09 (1.00)

b)

REFERENCE

OP/1/A/6450/15
OP-CN-HO-VP, Objective 5

029000A203 029000A103 ..(KA's)

ANSWER 6.10 (1.00)

a. 5.
b. 6.

c. 5
d. 4

REFERENCE

OP-CN-HO-VX Objective 4
OP/1/A/6450/10

0280000004 ..(KA's)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

6. PLANT SYSTEMS AND PLANT-WIDE GENERIC RESPONSIBILITIES (13%)

ANSWER 6.11 (1.00)

b)

REFERENCE

OP-CN-HO-IDE Objective 4.B.,5.

0410000G004 ..(KA's)

ANSWER 6.12 (1.00)

d)

REFERENCE

OP-CN-HO-IFE Objective 2.b,2.d

059000K103 059000K104 ..(KA's)

ANSWER 6.13 (1.00)

d)

REFERENCE

OP-CN-HO-ND Objective 4.A.

005000K402 005000K203 005000K401 ..(KA's)

ANSWER 6.14 (1.00)

d)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

REFERENCE

OP/O/A/6100/06 Enclosure 4.2

001010A207 001000G001 ..(KA's)

ANSWER 6.15 (1.00)

d)

REFERENCE

T&Q CO-RO170
OP-CN-HO-DG3 Objective 8

062000A215 ..(KA's)

ANSWER 6.16 (1.00)

d)

REFERENCE

OP-CN-HO-EPL Objective 2.E

062000K403 ..(KA's)

ANSWER 6.17 (1.00)

d)

REFERENCE

OP-CN-HO-CA Objective 4

061000K406 ..(KA's)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

6. PLANT SYSTEMS AND PLANT-WIDE GENERIC RESPONSIBILITIES (13%)

ANSWER 6.18 (1.00)

c)

REFERENCE

OP-CN-HO-ENB Objective 6

015000K604 ..(KA's)

ANSWER 6.19 (1.00)

b.

REFERENCE

OP-CN-HO-VP Objective 14.

013000K113 ..(KA's)

ANSWER 6.20 (1.00)

a)

REFERENCE

OP-CN-HO-ENB Objective 8

015000K502 015000K407 ..(KA's)

ANSWER 6.21 (1.00)

b)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

REFERENCE

OP-CN-HO-IRE Objective 10

014000K405 ..(KA's)

ANSWER 6.22 (1.00)

c)

REFERENCE

OP-CN-SS-IG Objective 6c

011000A211 ..(KA's)

ANSWER 6.23 (1.00)

d)

REFERENCE

OP/1/A/6100/01

010000K403 ..(KA's)

ANSWER 6.24 (1.00)

a)

REFERENCE

OP-CN-SS-RL
OP-CN-HO-EMF Objective 3.

068000A302 ..(KA's)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

6. PLANT SYSTEMS AND PLANT-WIDE GENERIC RESPONSIBILITIES (13%)

ANSWER 6.25 (1.00)

b)

REFERENCE

OP-CN-HO-NI Objective 12.b

061000G0 .. (KA's)

ANSWER 6.26 (1.00)

d)

REFERENCE

OP-CN-HO-CA Objective 4.
AMSAC Requal Handout

000029A115 061000K402 .. (KA's)

ANSWER 6.27 (1.00)

d)

REFERENCE

OP-CN-HO-ENA Objective 6

015000G007 .. (KA's)

ANSWER 6.28 (1.00)

c)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

REFERENCE

OP-CN-HO-ISE 2.7 E (9/4/86)

006000K422 ..(KA's)

ANSWER 6.29 (1.00)

b)

REFERENCE

OP-CN-HO-CLA Objective 1

013000B004 ..(KA's)

ANSWER 6.30 (1.00)

c)

REFERENCE

OP-CN-HO-NV Objective 3.0 2)

004000K106 ..(KA's)

ANSWER 6.31 (1.00)

d)

REFERENCE

OP-CN-HO-VF Objective 3.B.

034000K301 ..(KA's)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

6. PLANT SYSTEMS AND PLANT-WIDE GENERIC
. RESPONSIBILITIES (13%)

ANSWER 6.32 (1.00)

c)

REFERENCE

OP-CN-HO-VV Objective 8

022000A104 ..(KA's)

ANSWER 6.33 (1.00)

c)

REFERENCE

OP-CN-HO-VV Objective 8

022000A104 ..(KA's)

ANSWER 6.34 (1.00)

c)

REFERENCE

OP-CN-HO-CSF Objective 2

194001A102 026000K402 ..(KA's)

ANSWER 6.35 (1.00)

b)

(***** CATEGORY 6 CONTINUED ON NEXT PAGE *****)

REFERENCE

Exam Bank

194001A102 ..(KA's)

ANSWER 6.36 (1.00)

b)

REFERENCE

OPM 1-5 9.6.2

194001K101 ..(KA's)

(***** END OF CATEGORY 6 *****)

(********** END OF EXAMINATION **********)

QUESTION	VALUE	REFERENCE
5.01	1.00	4460
5.02	1.00	4484
5.03	1.00	4517
5.04	1.00	9000235
5.05	1.00	9000239
5.06	1.00	9000241
5.07	1.00	9000242
5.08	1.00	9000243
5.09	1.00	9000244
5.10	1.00	9000245
5.11	1.00	9000246
5.12	1.00	9000249
5.13	1.00	9000250
5.14	1.00	9000256
5.15	1.00	9000261
5.16	1.00	9000267
5.17	1.00	9000268
5.18	1.00	9000269
5.19	1.00	9000270
5.20	1.00	9000284
5.21	1.00	9000285
5.22	1.00	9000286
5.23	1.00	9000287
5.24	1.00	9000289
5.25	1.00	9000290
5.26	1.00	9000297
5.27	1.00	9000298
5.28	1.00	9000300
5.29	1.00	9000302
5.30	1.00	9000303
5.31	1.00	9000304
5.32	1.00	9000305
5.33	1.00	9001033
5.34	1.00	9001036
5.35	1.00	9001037
5.36	1.00	9001038
5.37	1.00	9001039
5.38	1.00	9001040
5.39	1.00	9001041
5.40	1.00	9001042
5.41	1.00	9001043
5.42	1.00	9001044
5.43	1.00	9001047
5.44	1.00	9001048
5.45	1.00	9001049
5.46	1.00	9001050
5.47	1.00	9001051
5.48	1.00	9001031
5.49	1.00	9001032
5.50	1.00	9001034
5.51	1.00	9001035
5.52	1.50	9001045
5.53	1.50	9001046
	54.00	