

February 19, 1988

Docket Nos. 50-269, 50-270, 50-287
License Nos. DPR-38, DPR-47, DPR-55

Duke Power Company
ATTN: Mr. H. B. Tucker, Vice President
Nuclear Production Department
422 South Church Street
Charlotte, NC 28242

Gentlemen:

SUBJECT: **OCONEE NUCLEAR STATION EXAMINATION REPORT - 50-269/OL-87-03**

The NRC administered examinations on December 14, 1987, to employees of your company who had applied for licenses to operate the Oconee Nuclear Station. At the conclusion of the written examination, a copy of the exam was left with your staff.

Copies of the written examination questions and answer key are included in this report as Enclosure 2. Facility comments regarding the written examination are included in this report as Enclosure 3.

In accordance with 10 CFR 2.790(a), a copy of this letter and its enclosures will be placed in NRC's Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

(ORIGINAL SIGNED BY C. A. JULIAN)

Caudle A. Julian, Chief
Operations Branch
Division of Reactor Safety

Enclosures:

1. Exam Report 50-269/OL-87-03
2. RO/SRO Exam Questions & Answer Key
3. Facility Comments

cc w/encls 1 & 3:
S. Frye, Corporate Training Director
M. S. Tuckman, Plant Manager

cc w/encls 1, 2 & 3:
T. Barr, Site Training Director

bcc w/encl: (See page 2)

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RETURN ORIGINAL
TO REG-II

Duke Power Company

2

February 19, 1988

bcc w/encl 1:

H. Pastis, Project Manager, NRR

T. Peebles, Section Chief, DRP

Bill Dean, OL Examiner, DRS

State of South Carolina

bcc w/encs 1, 2 & 3:

Senior Resident Inspector

Operator Licensing Branch, DLPQ:NRR

Document Control Desk

Mike King, INEL

RII

PRShaw:tj
02/ /88

RII

WMD
WMDean
02/12/88

RII

445
KBrockman
02/18/88

RII

CAJ
CAJulian
02/19/88

ENCLOSURE 1

EXAMINATION REPORT - 50-269/OL-87-03

Facility Licensee: Duke Power Company
Nuclear Production Department
422 South Church Street
Charlotte, NC 28242

Facility Name: Oconee Nuclear Station

Facility Docket No.: 50-269, 50-270, 50-287

Written examinations were administered at the Region II offices in Atlanta, Georgia.

Chief Examiner: William M. Dean 2/12/88
Date Signed

Approved by: Kenneth E. Brockman 2/18/88
Kenneth E. Brockman, Chief Operator
Licensing Section 2 Date Signed

Summary:

Examinations on December 14, 1987.

Two Senior Reactor Operator (SRO) and two Reactor Operator (RO) candidates were administered written re-examinations. All candidates passed.

Four of the 19 (21%) changes made to the answer key were a result of inadequate or incomplete reference material provided for exam generation.

50-269-0337-100
CYP

REPORT DETAILS

1. Facility Employees Contacted:

R. Swiegert, Operations Superintendent
D. Tidwell, Lead Instructor

*Attended Exit Meeting

2. Examiners:

M. King, INEL
R. Picker, INEL
*W. Dean

*Chief Examiner

3. Examination Review Meeting

At the conclusion of the written examinations, the examiners provided Mr. Tidwell with a copy of the written examination and answer key for review. The NRC resolutions to facility comments are listed below.

a. RO Exam (appropriate SRO questions are in parentheses)

- | | |
|--|--|
| (1) Question 1.18: | Comment accepted. Recommended answer will also be accepted. |
| (2) Question 1.20: | Comment accepted. Answer key will be modified as recommended. |
| (3) Question 1.21: | Comment noted. Answer key will be expanded to accept decay characteristics of Xenon and Samarium. |
| (4) Question 1.23: | Comment noted. Recommended modification will be included, but is not cogent to the desired answer. |
| (5) Question 2.03(b): | Comment noted. As no recommended action was provided, facility comment will be utilized to improve question clarity. This information should be emphasized in the training material. |
| (5) Question 2.05(b&d):
(6.05(b&d)) | Comment accepted. The recommended pair of answers will also be accepted, based on additional information provided. |

- (7) Question 2.08: Comment noted. Due to some confusion over what the initiating conditions were, answers will be evaluated based on assumptions stated by the candidates.
- (8) Question 2.13: Comment accepted. Answer key modified as recommended.
- (9) Question 2.14:
(6.18) Comment accepted. Recommended answer will also be accepted.
- (10) Question 2.19: Comment accepted. Due to confusion over the phrase "alternate source," the recommended answer also be accepted.
- (11) Question 2.21: Comment accepted. Answer key modified as recommended. It is noted that the erroneous training material has been corrected.
- (12) Question 3.13:
(6.13) Comment noted. The answer key has been clarified as recommended.
- (13) Question 3.14: Comment accepted. Recommended answers will also be accepted.
- (14) Question 3.19: Comment accepted. Answer key will be modified as recommended based on additional material provided.
- (15) Question 3.22: Comment accepted. Answer key modified as recommended.
- (16) Question 3.24: Comment accepted. Additional recommended answer will also be accepted.
- (17) Question 4.17(a):
(7.19(a)) Comment not accepted. The EFW flow can only be directed through two headers, of which one is the "NORMAL" path and the other is an "EMERGENCY" path as stated in the question. OP/1/A/1106/06, refers to the desired lineup as the "EMERGENCY" EFW lineup. No change to answer key.
- (18) Question 4.17(b):
(7.19(b)) Comment accepted. Due to lack of specificity in the initial conditions, the recommended answer will also be accepted.
- (19) Question 4.18(a):
(8.16(a)) Comment accepted. Answer key modified as recommended.

(20) Question 4.18(b):
(8.16(b)) Comment noted. The method of documentation, including requisite initials or signature, must be included to achieve full credit. SRO involvement in the documentation process will be accepted.

(21) Question 4.19: Comment not accepted. The question explicitly stated when a calorimetric was to be done "before" a planned power change. No change to answer key.

b. SRO Exam

(1) Question 5.15: Comment accepted. Question deleted.

(2) Question 5.17: Comment accepted. Recommended answer will also be accepted.

(3) Question 5.24: Comment not accepted. The question expressly stated that the effect of fission products and cladding changes should be neglected. No change to answer key.

(4) Question 6.07: Comment accepted. Due to the lack of question clarity recommended answer will also be accepted.

(5) Question 6.12: Comment accepted. Due to the lack of question specificity, additional recommended answers will also be accepted.

(6) Question 6.20(a): Comment not accepted. Recommended answer is not specific enough to demonstrate the knowledge required. No change to answer key.

(7) Question 6.20(b): Comment accepted. Recommended answer will also be accepted.

(8) Question 6.21(a): Comment noted. Since both EFW valves were listed in the question, the answer key will be modified to require starting of "both" MDEFW pumps.

(9) Question 7.08: Comment accepted. Recommended answer will also be accepted.

(10) Question 7.16: Comment accepted. Due to vagueness of the question, the additional recommended answers will also be accepted.

- (11) Question 7.18: Comment noted. Due to the vagueness of the question, actions comensurate with a warning alarm on RIA-40 will also be accepted.
- (12) Question 7.20(a): Comment accepted. Since a copy of the most recent revision of the procedure was not provided to the candidates, the "where" portion of the question will be deleted.
- (13) Question 8.07: Comment accepted. Both "a" and "c" will be accepted for full credit.
- (14) Question 8.11: Comment accepted. Due to the question's lack of specificity, additional recommended answer will also be accepted.
- (15) Question 8.13(b): Comment noted. Recommended modification will be made to answer key.
- (16) Question 8.15: Comment accepted. Question deleted based on revised material provided by the facility.
- (17) Question 8.18(b): Comment accepted. Question deleted.
- (18) Question 8.19: Comment accepted. Recommended answers will be added to the answer key and required for full credit.
- (19) Question 8.21(b): Comment noted. Due to the vagueness of the question, additional responses in addition to those in the answer key will not be penalized.
- (20) Question 8.25: Comment noted. The candidates were given the incorrect version of Technical Specifications on the examination. Question will be deleted.

4. Exit Meeting

No exit meeting was held, since there was only a written examination administered in the Region II offices.

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

FACILITY: DCONEE 1, 2&3
 REACTOR TYPE: PWR-B&W1ZZ
 DATE ADMINSTERED: 8Z/12/14
 EXAMINER: PICKER, B.
 CANDIDATE: _____

INSTRUCTIONS TO CANDIDATE:

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

CATEGORY	% OF	CANDIDATE'S	% OF	
VALUE	TOTAL	SCORE	VALUE	CATEGORY
<u>29.00</u>	<u>25.66</u>	_____	_____	5. THEORY OF NUCLEAR POWER PLANT OPERATION, FLUIDS, AND THERMODYNAMICS
<u>28.50</u>	<u>25.22</u>	_____	_____	6. PLANT SYSTEMS DESIGN, CONTROL, AND INSTRUMENTATION
<u>29.50</u>	<u>26.11</u>	_____	_____	7. PROCEDURES - NORMAL, ABNORMAL, EMERGENCY AND RADIOLOGICAL CONTROL
<u>26.00</u>	<u>23.01</u>	_____	_____	8. ADMINISTRATIVE PROCEDURES, CONDITIONS, AND LIMITATIONS
<u>113.0</u>		_____	_____%	Totals
		Final Grade		

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

Candidate's Signature

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NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. Restroom trips are to be limited and only one candidate at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
3. Use black ink or dark pencil only to facilitate legible reproductions.
4. Print your name in the blank provided on the cover sheet of the examination.
5. Fill in the date on the cover sheet of the examination (if necessary).
6. Use only the paper provided for answers.
7. Print your name in the upper right-hand corner of the first page of each section of the answer sheet.
8. Consecutively number each answer sheet, write "End of Category __" as appropriate, start each category on a new page, write only on one side of the paper, and write "Last Page" on the last answer sheet.
9. Number each answer as to category and number, for example, 1.4, 6.3.
10. Skip at least three lines between each answer.
11. Separate answer sheets from pad and place finished answer sheets face down on your desk or table.
12. Use abbreviations only if they are commonly used in facility literature.
13. The point value for each question is indicated in parentheses after the question and can be used as a guide for the depth of answer required.
14. Show all calculations, methods, or assumptions used to obtain an answer to mathematical problems whether indicated in the question or not.
15. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
16. If parts of the examination are not clear as to intent, ask questions of the examiner only.
17. You must sign the statement on the cover sheet that indicates that the work is your own and you have not received or been given assistance in completing the examination. This must be done after the examination has been completed.

18. When you complete your examination, you shall:

- a. Assemble your examination as follows:
 - (1) Exam questions on top.
 - (2) Exam aids - figures, tables, etc.
 - (3) Answer pages including figures which are part of the answer.
- b. Turn in your copy of the examination and all pages used to answer the examination questions.
- c. Turn in all scrap paper and the balance of the paper that you did not use for answering the questions.
- d. Leave the examination area, as defined by the examiner. If after leaving, you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION 5.01 (1.50)

WHICH of the following is NOT a basis for the Minimum Temperature for Criticality LCO?

- a. The moderator temperature coefficient is within its analyzed temperature range.
- b. The reactor boron concentration is at the critical concentration with a negative MTC.
- c. The pressurizer is capable of being in an operable status with a steam bubble.
- d. The reactor pressure vessel is above its minimum RTndt temperature.

QUESTION 5.02 (1.00)

For WHAT thermodynamic reason should a nitrogen bubble NOT be maintained in the pressurizer during power operation?

QUESTION 5.03 (1.00)

Which of the following statements is CORRECT?

During a reactor start-up power is being raised above the point of adding heat (POAH). Assume a linear reactor power increase to about 3% power.

- a. Since header pressure is 885 psig, Tave will not rise above the corresponding saturation temperature of 532 degF.
- b. Since the DTSGs are low level limited and header pressure is being maintained at 885 psig, Tave will rise and the steam temperature will tend to follow Th.
- c. With the header pressure being maintained at 885 psig, the DTSGs will remain at saturated conditions and no superheat will be added.
- d. Since the DTSGs are low level limited, the steam is superheated at zero power conditions and the superheat rises proportionally with power.

QUESTION 5.08 (1.00)

Delayed neutrons play a major role in the operation of the reactor because they ...

- a. Are born much later than prompt neutrons and therefore effectively lengthen the average neutron generation time.
- b. Are born at lower energy levels and are therefore more apt to cause fission as compared to being absorbed by a poison.
- c. Provide approximately 70% of the fission neutron inventory and have a higher importance factor associated with them as compared to prompt neutrons.
- d. Are considered epithermal neutrons and therefore have a smaller probability of leakage than the fast and thermal neutrons.

QUESTION 5.09 (1.00)

Which one of the following is TRUE regarding DTSG outlet pressure? (i.e., the actual pressure of the steam just as it leaves the DTSG)?

- a. DTSG outlet pressure decreases with increasing power because of the increasing effect of aspirating steam
- b. DTSG outlet pressure increases with increasing power to overcome head loss in the main steam piping
- c. DTSG outlet pressure decreases with increasing power because of the decrease in length of the superheat region
- d. DTSG outlet pressure does not vary with power because turbine header pressure is maintained constant

QUESTION 5.10 (1.00)

Indicate how natural circulation will be affected by each of the following situations. Consider each one separately and answer INCREASE, DECREASE, or NO EFFECT.

- a. Reduction of turbine bypass valve setpoint
- b. Reduction of feedwater temperature
- c. Decrease in DTSG level
- d. Increase in RCS pressure

QUESTION 5.11 (1.00)

Select the correct answer:

With the RCS saturated, WHAT is the BEST indication of a LOSS of natural circulation flow or interruption of boiler condenser cooling (reflux boiling)?

- a. Decreasing DTSG temperature, T_c equal to DTSG T_{sat} , Primary Δt increasing.
- b. Decreasing DTSG pressure, decreasing T_c , and decreasing T_h .
- c. Incore T/C and T_h increasing, DTSG T_{sat} increasing, and T_c increasing
- d. Incore T/C temperature increasing, DTSG T_{sat} constant, RCS pressure increasing.

QUESTION 5.12 (1.00)

Which one of the following statements correctly describes the behavior of RCS pressure, if a Small Break LOCA were to occur without Feedwater available? (Assume no ESF/ECCS actuation)

- a. Pressure initially decreases slowly, then rapidly drops when the OTSGs are boiled dry.
- b. Pressure initially decreases, then rapidly increases when the OTSGs boil dry.
- c. Pressure initially decreases, then when OTSGs boil dry, continues to decrease, but at a much slower rate.
- d. Pressure decreases slowly until it levels off somewhere above ECCS actuation pressure.
- e. Pressure initially increases, then rapidly drops when the OTSGs are boiled dry.

QUESTION 5.13 (1.00)

The source, intermediate and power range channels all use boron in their respective detectors (BF₃ or boron lined). Which one of the following is the CORRECT reason for the use of boron?

- a. It reduces the critical volume (size) of the detector. Since detectors which rely solely on gas ionization by neutrons are much larger.
- b. Neutrons do not carry a net electric charge. Therefore neutron detection must depend upon their interaction with target nuclei.
- c. Ionization of the boron by neutrons is much more responsive and accurate than other ionizations such as neutron-rhodium used in the in-core detectors.
- d. The neutron-boron reaction produces beta particles which have a much higher specific ionization than the neutron-gas reaction alone.

QUESTION 6.01 (1.00)

Which one of the following statements is correct?

As a result of a loss of instrument air

- a. Makeup is lost, RCP seal injection increases
- b. Makeup increases, RCP seal injection increases
- c. Makeup is lost, RCP seal injection is lost
- d. Makeup increases, RCP seal injection is lost

QUESTION 6.02 (1.00)

WHY is improper venting a potentially damaging situation for a control rod drive mechanism?

- a. Loss of the hydraulic buffer.
- b. Loss of cooling to the drive stator.
- c. Uncoupling of the stator and rotor field.
- d. Erosions of the thermal barrier.

QUESTION 6.03 (1.00)

WHICH breaker and/or contactor combination below would result in de-energizing ALL CRD motors?

- a. Breaker A, Breaker C, Contactor F.
- b. Breaker A, Breaker B, Contactor F.
- c. Breaker B, Breaker D, Contactor E.
- d. Breaker B, Contactor E, Contactor F.

QUESTION 6.07 (1.50)

STATE the actuation setpoints for the following Engineered Safety Features.

- a. High Pressure Injection
- b. Low Pressure Injection
- c. Reactor Building Isolation
- d. Reactor Building Spray

QUESTION 6.08 (0.50)

WHAT is indicated if the Sync Verification Indicator lamp on a Static Inverter stays on continuously, but at half brightness?

QUESTION 6.09 (1.50)

- a. WHAT FOUR trips are bypassed by the shutdown bypass switch in the RFS cabinets? (1.0)
- b. WHAT different limits, ONE AUTOMATIC and ONE ADMINISTRATIVE, are imposed when going to shutdown bypass? (0.5)

QUESTION 6.10 (1.00)

LIST the TWO parameters used to determine whether or not MFWPTs have tripped which enable an automatic start of the EFW pumps.

QUESTION 6.11 (2.50)

LIST ALL the events that occur when ES3 channels 5 and 6 actuate upon 4 psig RB pressure.

QUESTION 6.17 (1.00)

WHAT is the reason for the Seal Return Valve closing interlock, in the event that seal injection is lost and the RCPs are off for Unit 2?

QUESTION 6.18 (2.50)

The following concern the HPI system:

- a. WHAT TMI modification was installed to prevent Quarter Core Cooling? INCLUDE indications and controls. (2.0)
- b. Above WHAT power levels is considered are the worst case for Quarter Core Cooling? (0.5)

QUESTION 6.19 (1.00)

WHAT problem would result, while patching NI-5 to replace the NI-9 feed to the ICS. ASSUMING the ICS is in full automatic control.

QUESTION 6.20 (1.00)

- a. DESCRIBE how the Analog Channels of the Engineered Safeguards System are manually tripped.
- b. After a trip, HOW is a reset of the Analog system accomplished?

QUESTION 6.21 (2.00)

- a. How is automatic DTSG level control via FDW-315/316 initiated? (1.0)
- b. What action will occur in the event that the train "B" level input to FDW-315 is selected and instrument power to KVIC is lost. (1.0)

QUESTION 7.01 (1.00)

WHICH one of the four Critical Safety Functions below would require immediate response.

- a. Heat Sink -- Orange
- b. Containment Integrity -- Red
- c. RCS inventory -- Yellow
- d. Inadequate Core Cooling -- White

QUESTION 7.02 (1.00)

Reactor power is 10 E-6 amps in the intermediate range (approximately 1% power); the operating main FDW pump trips and all emergency FDW pumps start. WHICH one of the following is the expected response?

- a. The reactor trips on high pressure.
- b. The reactor trips on loss of both FDW pumps anticipatory trip.
- c. No action, only one pump tripped.
- d. The operator manually trips the reactor.

QUESTION 7.03 (1.50)

FILL IN THE SLANKS

Provide the missing information from Limitations and Precautions of OP/17A/1102/01, "Controlling Procedure for Unit Startup".

"If any two of the four NI's become ___a.____% non-conservative, have I&E calibrate NI's. In no case should ___b.____% in the non conservative direction be exceeded.

NI's are considered non-conservative when "____c.____."

QUESTION 7.04 (1.00)

WHICH one of the following conforms to the step numbering and rules of usage for "Controlling" procedures such as OP/1/A/1102/10, Unit Shutdown.

- a. Steps following numbers can be done in parallel with other numbered steps.
- b. Prior to going to the next sequential step, all parallel steps should be accomplished unless otherwise stated.
- c. All steps following a bullet () are parallel steps and can be done along with a critical step but not in any sequence.
- d. Steps must be done in the order listed regardless of how they are numbered or designated.

QUESTION 7.05 (0.50)

WHAT RCP seal leakage limits for Unit 3 requires notifying the Duty Engineer?

- a. 1.5 gpm
- b. 2.1 gpm
- c. 2.7 gpm
- d. 3.0 gpm

QUESTION 7.06 (0.50)

WHAT RCP Seal Leakage Limit on Unit 3 requires a plant shutdown and depressurization if exceeded for more than one hour?

- a. 2.1 gpm
- b. 2.75 gpm
- c. 3.0 gpm
- d. 3.35 gpm

QUESTION 7.07 (1.00)

WHAT is the preferred method for achieving high speed operation of a Reactor Building Cooling Fan if the fan is presently running in Low speed, as described in OP-1/A/1104/15, "Reactor Building Cooling System?"

- a. Turn to high speed.
- b. Turn off, then to high speed.
- c. Turn off, wait 30 minutes, then turn to high passing through auto.
- d. Turn to auto, wait 30 minutes, then turn to high speed.

QUESTION 7.08 (1.50)

STATE THREE conditions that require at least one train of reactor building spray to be operable.

QUESTION 7.09 (2.00)

LIST the FIVE automatic actions that should occur for a reactor trip according to Emergency Procedures, EP/1A/1800/01.

QUESTION 7.10 (1.50)

STATE THREE actions to be taken or initiated immediately to ensure adequate core cooling, per emergency procedure EP/1/A/1800/01 should Subcooling Margin be lost due to a LOCA.

QUESTION 7.11 (2.00)

Per Emergency Procedure, EP/1/A/1800/01:

- a. Under WHAT combination of TWO conditions must HPI cooling be initiated? (1.0)
- b. WHAT TWO actions must be taken to establish HPI cooling? (1.0)

QUESTION 7.12 (1.50)

LIST the SIX immediate action steps of AP-6, 'Loss of Control Room' to be taken in the event an evacuation of the control room is necessary and conditions DO NOT permit any action prior to leaving.

QUESTION 7.13 (2.00)

A CAUTION statement in AP-07, 'Loss of Low Pressure Injection System', section A, 'Failure of One Train of the LPI During ECCS Operation' contains the following:

"If only one LPI cooler is operable, then ~6000 gpm LPI and LPSW flow must be established through the operable cooler immediately after swapping LPI Pump suction from the BWST to the R.B. Emergency Sump..."

STATE the TWO bases for this CAUTION statement?

QUESTION 7.14 (1.00)

Under WHAT TWO conditions can a RCP be restarted after only a two second delay?

QUESTION 7.15 (1.00)

What are the 4 immediate manual actions required on a loss (or partial loss) of 1KI bus (Loss of ICS power)?

QUESTION 7.16 (2.00)

WHAT are the FOUR requirements necessary to allow the operator to disengage the fuel grapple from a fuel assembly? ASSUME all hoisting steps to reach the point of disengagement have been completed.

QUESTION 7.17 (1.00)

What is the criteria for required RCP shutdown per the EOP (EP/1/A/1800/01), based on subcooling margin?

QUESTION 7.18 (1.00)

WHAT indication tells the operator when all nitrogen has been vented from the pressurizer, when forming a steam bubble in accordance with DP/0/A/1103/05, "Pressurizer Operations"?

QUESTION 7.19 (1.00)

According to DP/1/A/1102/01, "Controlling Procedure for Unit Startup", WHAT must be done if activity above background exists on the OTSG secondary side?

QUESTION 7.20 (1.50)

- a. WHEN is it required to route EFW flow to the Emergency Header?
- b. WHAT OTSG level should be maintained if there are NO RCP's operating?

QUESTION 7.21 (1.50)

Referring to Procedure OP/2/A/1102/02, Reactor Trip Recovery provided, answer the following specific questions:

- a. WHAT must be done if the SRD if the SRD becomes unavailable?(0.5)
- b. WHAT must be done prior to exceeding 15% power?(0.5)
- c. WHY is it necessary to avoid changing load too fast?(0.5)

QUESTION 7.22 (2.50)

Referring to Procedure OP/1/A/1104/04 "Low Pressure Injection System" with enclosures, provide the following.

- a. WHERE can it be found and WHAT is the minimum NPSH for a RCP during heatup at 200 degrees F?(1.0)
- b. WHEN and why must 1LP-11, 38 and 94 be verified closed manually? (1.0)
- c. WHAT is the controller location and position for valve 1LP-103 when placing the LPI in the ES mode? (0.5)

QUESTION 8.01 (1.00)

FILL IN THE BLANKS

When the RCS is in a condition with pressure above ___a___ psig both CFT's shall be operable with a minimum level of ___b___ feet, a minimum concentration of borated water of ___c___ ppm boron, and a pressure of ___d___ psig.

QUESTION 8.02 (1.00)

If the specified surveillance frequency of a piece of equipment is monthly, what is the maximum allowable interval between surveillances?

- a. 28 days
- b. 35 days
- c. 45 days
- d. 60 days

QUESTION 8.03 (1.50)

INDICATE whether the following statements concerning "SRQ in the Control Room" duties are TRUE or FALSE.

- a. May NOT provide relief for Control Room operators.
- b. Becomes the reader of EOP should its use be required.
- c. May leave the control room if the Unit is below 350 degrees F.

QUESTION 8.04 (1.00)

Who shall the Shift Supervisor notify in the event the safe shutdown facility is inoperable per Technical Specification 3.18?
As stated in Operation Management Procedure 2-7, "SSFLCO Required Action".

- a. NRC Headquarters
- b. Region II Offices
- c. Duke Power Headquarters
- d. Security

QUESTION 8.05 (1.00)

Referring to the attached Technical Specification page 3.16-1 when are the Containment Hydrogen Recombiner System (portable fixed) required as stated in the Technical Specification bases following a LOCA?

- a. 10 days
- b. 20 days
- c. 30 days
- d. 45 days

QUESTION 8.06 (1.00)

Which one of the following is correct concerning Supplemental Tagging?

- a. The procedure is to be used primarily during unit outages and emergency situations when station manpower is short. However, it may be used anytime when more than one foreman or group is working on the same piece of equipment.
- b. The final work group shall not remove from, or return to service, any station equipment as this is the responsibility of station personnel assigned initial maintenance responsibility.
- c. The work group may place supplemental red tags on any station equipment that has at least one station two part serialized red tag (stub type) attached.
- d. When working on equipment tagged to them, the work group can change the position of a valve, switch, cut out or remove valve from the line, etc., that has a station red tag attached to it, provided they remove red tags if it is necessary to operate equipment to verify repairs.

QUESTION 8.07 (0.50)

True or False (0.5)

Equipment found to be Out Of Tolerance (OOT) is considered to be inoperable until proper evaluation is completed to determine if the OOT is conservative.

QUESTION 8.10 (1.00)

WHAT are the maximum allowable non-emergency whole body dose equivalents for an employee with a completed NRC form 4 for the following time periods?

- a. In any calendar quarter
- b. In any calendar year

QUESTION 8.11 (0.50)

What is the maximum percentage of scale reading allowed on a pocket dosimeter prior to use?

QUESTION 8.12 (1.00)

- a. Within WHAT time period should personnel accounting be completed after declaration of a Site Assembly?
- b. WHAT TWO locations would non-essential site personnel be evacuated if a site evacuation is deemed necessary?

QUESTION 8.13 (1.00)

The following concern the use of Radiation Chirpers:

- a. WHAT are the TWO radiation level guidelines that requires the use of Chirpers?
- b. WHERE on the body should a Chirper be worn?

QUESTION B.18 (1.00)

WHAT actions will be required by the Shift Supervisor, should an emergency occur that involves the activation of the Emergency Response Organization during normal working hours according to the DNS Emergency Plan section F., Emergency Communications?

QUESTION B.19 (1.00)

If a Safety Limit is exceeded, briefly explain the actions to be taken regarding the plant, according to Technical Specifications 6.3.1.

QUESTION B.20 (2.00)

The following apply to High Radiation Areas (HRA).

- a. WHAT method is used to temporarily secure a door to a HRA if a HRA guard is unavailable and whose approval is required to use this method of securing?
- b. WHAT is the individual's responsibility when entering and exiting the HRA?

QUESTION B.21 (2.00)

ASSUMING a control rod is declared inoperable due to causes other than excessive friction and the rod cannot be restored to operable within the one hour time limit.

- a. WHAT is the Shutdown Margin requirement?
- b. WHAT is ONE of the two other options from which the operator must choose which would allow continued operation of the reactor?

QUESTION 8.22 (1.00)

WHICH flux measurement system is the most preferred method of determining the Quadrant Power Tilt Limits?

QUESTION 8.23 (1.00)

WHAT is the Technical Specification Basis for limiting plant operation to 24 hours with ONE idle RCP in each loop (except for testing)?
See TS 3.1.1.a provided.

QUESTION 8.24 (0.00)

Question/Answer/Reference deleted from exam.

QUESTION 8.25 (1.50)

TRUE or FALSE

Indicate whether the following statements concerning tagging are TRUE or FALSE.

- a. In an area where heat generation and/or moisture may be a possible problem, wire should not be used to attach Red Tags to equipment.
- b. If more than one Supervisor is working independently on a piece of equipment, then one Supervisor will be assigned responsibility and the Red Tag will be issued in his name.
- c. The stub is removed prior to placing the Red Tag on the equipment.

(***** END OF CATEGORY 8 *****)
(***** END OF EXAMINATION *****)

ANSWER 5.01 (1.50)

b

REFERENCE

CNS TS, p. 3.1-8 & 3.1-9

001000K516 001000K515 ..(KA's)

ANSWER 5.02 (1.00)

Having nitrogen in the pressurizer would eliminate the natural advantages associated with having a saturated system for controlling pressure during an insurge. (Because the bubble in the PZR is normally steam, it may be rapidly de-superheated and condensed with spray. Nitrogen would not be condensed by spray, and would therefore be of less use in mitigating a pressure rise during an in-surge.)
[1.0]

REFERENCE

1. Dcone: OP-DC-SPS-CM-PZR, p. 18 of 22.
2. Dcone: OP-DC-SPS-CM-PZR Training Objective 1.F

010000K001 ..(KA's)

ANSWER 5.03 (1.00)

b

REFERENCE

ONS OP 1102/01, encl 4.3, p 6; IC-ICS, p 85;
ONS Training Lesson Plan, OP-DC-SPS-CM-SG, p 19.

035010K101 035010K109 ..(KA's)

ANSWER 5.04 (1.00)

c

REFERENCE

CR, Reactivity Balance Calculations SP-421.
ONS Training Lesson Plans, OP-OC-SP3-RT-RBC, pp. 8-17

001000K513 001010A201 ..(KA's)

ANSWER 5.05 (1.00)

b

REFERENCE

ONS FDNE, Sec III, pp. 115-120; Sec V, pp. 156-157

192008K110 ..(KA's)

ANSWER 5.06 (1.00)

a

REFERENCE

Ocone: FDNE, Sec III, pp. 115-120; Sec V, pp. 156-157

192008K110 ..(KA's)

ANSWER 5.07 (1.00)

b

REFERENCE

RT-104-RBC-R (QDB)

192006K110 192006K107 .. (KA's)

ANSWER 5.08 (1.00)

a

REFERENCE

RT-65-FF-R (QDB)

192003K107 .. (KA's)

ANSWER 5.09 (1.00)

b

REFERENCE

TRF-3-FF-R (QDB)

039000A106 .. (KA's)

ANSWER 5.10 (1.00)

- a. Increase
- b. Increase
- c. Decrease
- d. No effect

REFERENCE

THF-73-HT-R (QOB)

139008K123 .. (KA's)

ANSWER 5.11 (1.00)

d

REFERENCE

B&W Technical Document, Emergency Procedures Technical Bases, pg 8-9.
ONS Training Lesson Plan, OP-OC-SPS-PTR-AM-1
ONS Lesson Objectives, OP-OC-SPS-PTR-AM-1, LPSO 8, 9, 10

193008K121 193008K124 .. (KA's)

ANSWER 5.12 (1.00)

b

REFERENCE

OP-OC-SPS-PTR-AT pp 13/14; LO 1a
(4.1/4.7)

000074A207 .. (KA's)

ANSWER 5.13 (1.00)

b

REFERENCE

ONS Training Lesson Plan, OP-OC-IC-N1; LO 1b, 3d

015000K501 .. (KA's)

ANSWER 5.14 (1.00)

d

REFERENCE

ONS PNRE, p 120; ONS, NETRO, 12.1-4; CR, NETRO, 12.1-4.

001010K516 .. (KA's)

ANSWER 5.15 (0.00)

Question/answer/reference deleted from exam.

REFERENCE

Question/answer/reference deleted from exam.

193007K108 .. (KA's)

ANSWER 5.16 (1.00)

- a. nucleate boiling region [0.5]
- b. Film boiling region [0.5]

REFERENCE

ONS Training Lesson Plan, OF-OC-SPS-CM-SB, pp. 11-15

035010G007 .. (KA's)

ANSWER 5.17 (1.00)

- 1. EFW is not preheated
(Accept EFW is colder.)
 - 2. EFW is injected into the steam space
(Accept EFW injected onto the tubes.)
- (0.5 ea.)

REFERENCE

Generic: B&W Abnormal Transient Operator Guidelines Technical Bases Document

061000K501 035010K101 039000K107 ..(KA's)

ANSWER 5.18 (1.50)

1. Axial [0.25] -- Power shifts between top & bottom of core [0.25].
2. Radial [0.25] -- Power shifts between quads. across core [0.25].
3. Azimuthal [0.25] -- Power shifts around the core [0.25].

REFERENCE

Ocone: OP-DC-SPS-RT-FPP, pg 17 of 33
Ocone: OP-DC-SPS-RT-FPP, Training Objective 1.c

001010K534 001000K535 001000K56 ..(KA's)

ANSWER 5.19 (1.00)

- a. To prevent centerline fuel melt
- b. To ensure that clad temperatures remain less than or equal to 2200 degF on worst case LOCA. (To maintain DNBR \geq 1.3)

REFERENCE

CR, 73, pp B3-2, B 3/4 2-1.
ONS Training Lesson Plan, OP-DC-SPS-THF-PD, p. 14

000074K103 ..(KA's)

ANSWER 5.20 (2.50)

- a. "A" DTSG feed flow will increase (0.5)
"B" DTSG feed flow will decrease (0.5)
- b. "A" DTSG level will increase (0.5)
"B" DTSG level will decrease (0.5)
- c. RCS delta Tc will return to zero (0.5)

REFERENCE

DNS Training Lesson Plan, DP-DC-SFS-CM-ICS

002000K511 ..(KA's)

ANSWER 5.21 (3.00)

- a. Actual critical rod position (ACP) will be higher (0.5)
due to Xenon and Samarium buildup (0.5)
- b. ACP will be lower (0.5)
to compensate for the decreased reactivity of the boron (0.5)
- c. ACP will be higher (0.5)
due to fuel burnup (0.5)

REFERENCE

DNS Training Lesson Plan, DP-DC-SFS-RT-RBC, pp. 6-18

001010A207 ..(KA's)

ANSWER 5.22 (1.50)

These rods are Inconel (0.5) which are GRAY (lower absorption cross section) and have a longer effective poison length. (0.5) They have a less severe impact on Axial Flux Imbalance (0.5)

REFERENCE

OP-DC-SPS-THF-PD pp 12; LO 2f.4
(3.2/3.5)

192005K110 192005K114 .. (KA's)

ANSWER 5.23 (1.00)

at 2240 psia, $h_g = 1115$ BTU/lb [0.5]

at 20 psia, at saturation conditions, $h_g = 1156$ BTU/lb and
 $h_f = 196$ BTU/lb

calculate: $(1156-1115)/(1156-196) = .043 \gg 95.7\%$ quality [0.5]

OR

If use Mollier: 95% quality (+/- 1%) [1.0]

REFERENCE

OP-BA-SPS-THF-STM pp 20/21; LO 2e
(3.3/3.4)

193003K125 .. (KA's)

ANSWER 5.24 (1.00)

1. The fuel temperature coefficient becomes more negative as Pu-240 builds up (causing increased resonance capture).
2. The MTC becomes more negative due to the reduction of the soluble poison effect.

REFERENCE

DNS Training Lesson Plan, OP-DC-SPS-RT-RC, pp 12, 16-18

192004K103 .. (KA's)

ANSWER 6.01 (1.00)

a

REFERENCE

Ocone: OP-DC-SPS-SY-HP1, p. 29 of 43.

078000K302 .. (KA's)

ANSWER 6.02 (1.00)

a

REFERENCE

ONS Training Lesson Plans, OP-DC-PNS-CRD, p. 17
LPSO Training Objective, OP-DC-PNS-CRD, 1. g.

001000K104 .. (KA's)

ANSWER 6.03 (1.00)

b

REFERENCE

ONS Training Lesson Plan, OP-DC-SPS-IC-RPS, p. 42
ONS LPSO - Training Objectives, OP-DC-SPS-IC-RPS, #2.a.

000029K301 012000K103 012000K602 .. (KA's)

ANSWER 6.04 (1.00)

c

REFERENCE

ONS Training Lesson Plan OP-OC-SPS-IC-SPDS Page 10
ONS LP50 Training Objective OP-OC-SPS-IC-SPDS, 1.g.
194001A115 .. (KA's)

ANSWER 6.05 (1.50)

[0.3 each]

- a. 107
 - b. high level limits OR steam demand (either answer acceptable)
 - c. 575
 - d. below OR same (either answer acceptable)
 - e. 101
- must be in designated pair*

REFERENCE

ONS Training Lesson Plan, OP-OC-TA-NT, pp 7&8
ONS CSO Training Objective, OP-OC-TA-NT, 1.b.

041020A202 .. (KA's)

ANSWER 6.06 (2.00)

[0.25 for signal and 0.25 for direction of change]

- 1. Th (increases), increasing BTU limit.
- 2. S/B pressure (increases), lowering BTU limit.
- 3. RC flow, no change.
- 4. FDW temperature (increases), increasing BTU limit.

REFERENCE

- 1. DUKE: ICS training material.

016000G005 .. (KA's)

ANSWER 6.07 (1.50)

(0.25 each)

- a. 1600 psig RCS, 3 psig RB
- b. 550 psig RCS, 3 psig RB
- c. 3 psig RB
- d. 10 psig RB

OR

(0.25 ea.)

- a. ≥ 1500 psig RCS, ≤ 4 psig RB
- b. ≥ 500 psig RCS, ≤ 4 psig RB
- c. ≤ 4 psig RB,
- d. ≤ 30 psig RB

REFERENCE

DNS Training Lesson Plans, DP-DC-SPS-IC-ES, p. 7

022000K403 006000K405 ..(KA's)

ANSWER 6.08 (0.50)

This is an indication that there is a mismatch between AC line and inverter output voltage.

REFERENCE

DNS Training Lesson Plan, DP-DC-SPS-EL-VPS, p. 13

062000K504 ..(KA's)

ANSWER 6.09 (1.50)

- a. 1. Flux/flow imbalance [0.25]
2. Power/pump [0.25]
3. Low pressure [0.25]
4. Variable low pressure [0.25]

b. AUTOMATIC: new high pressure trip of 1720 [0.25]

ADMINISTRATIVE: nuclear over power trip setpoint reduced to \leq
5% (4.00%) of rated power during reactor shutdown
[0.25]

REFERENCE

ONS Training Lesson Plans, IC-RPS-RQ-1e, QB,
OP-DC-SPS-1C-RPS, p. 34
012000K402 012000K604 ..(KA's)

ANSWER 6.10 (1.00)

Both MFWFTs have: 1) low hydraulic oil pressure (<75 psig) [0.5]
2) low discharge pressure (<750 psig) [0.5].

REFERENCE

ONS Training Lesson Plans, OP-DC-SPS-SY-EF, pp. 41 and 42
LPSD Training Objectives, OP-DC-SPS-SY-EF, 1. b. & k.
059000K416 061000K402 ..(KA's)

ANSWER 6.11 (2.50)

The three LPSW outlet valves on the RBCU's go fully open. [0.5]

LPSW is isolated to the RB aux fans and full LPSW flow is supplied
to the B-RBCU. [0.5]

The standby RBCU automatically starts and runs in low speed while
the two running units automatically swap to low speed. [0.5]

Penetration Room ventilation fans starting [0.5] and Essential Reactor
Building Isolation [0.5].

REFERENCE

DNS Training Lesson Plans, OP-OC-SPS-SY-RBC, p. 19

013000K103 .. (KA's)

ANSWER 6.12 (2.00) [any 2]

1. fusible dropout plates [0.5] -- provides open flow path to RB atmosphere. [0.5]
2. blowout plates [0.5] -- to attenuate shock wave and protect cooling coils. [0.5]
3. Located above the water level (calculated) during post accident conditions. (1.0)
4. RBCU speed shifts (to slow) on ES actuation. (1.0)

REFERENCE

DNS Training Lesson Plans, OP-OC-SPS-SY-RBC, pp. 11 & 19

022000K405 .. (KA's)

ANSWER 6.13 (1.25)

[5 @ 0.25 each]

1. MS-87 Steam supply to EFW pump
2. MS-126 Main Steam to AUX steam control.
3. MS-129 Main Steam to AUX steam control.
4. FDW-315 S/G feedreq valve
5. FDW-316 S/G feedreq valve

REFERENCE

DNS Training Lesson Plan, OP-OC-SPS-SY-EF, p. 62

LPSO Training Objectives, OP-OC-SPS-SY-EF, 1. f.

061000A202 000065A208 061000K601 .. (KA's)

ANSWER 6.14 (1.25)

Essential Trips: [2 @ 0.25 each]

Overspeed

Low-Low Lube Oil Pressure

Non-essential Trips: [any 3 @ 0.25 each]

Jacket water temperature.

Low Lube oil pressure.

High crankcase pressure.

High Bearing temperature

Unit Vibration

REFERENCE

DNS Training Lesson Plan, DP-OC-SPS-SSF-DG, pp. 28 & 29

064000K402 064000K401 .. (KA's)

ANSWER 6.15 (2.00)

- a. 1. Prevent opening of the Code Safety Valves [0.5] --
2450 psig [0.25]
2. Ensure NDT protection for the RCS [0.5] -- 475 psig [0.25] (1.5)
- b. FALSE (0.5)

REFERENCE

DNS Training Lesson Plan, DP-OC-SPS-CM-PZR, pp. 12, 12a & 14

LPSD Training Objectives, DP-OC-SPS-CM-PZR, 1. d. & n.

010000B004 .. (KA's)

ANSWER 6.16 (0.00)

Question /Answer/reference deleted from exam.

REFERENCE

Question /Answer/reference deleted from exam.

ANSWER 6.17 (1.00)

If seal return were not stopped, hot RCS water could flow up the shaft of the pump and through the seal staging devices, causing over-heating the seals [1.0].

REFERENCE

DNS Training Lesson Plan, OP-DC-SPS-SY-HPI, p. 23
OP-DC-SPS-CM-CPS, pp 28 & 29
LPSD Training Objectives, OP-DC-SPS-CM-CPS, 1. g.

003000K404 .. (KA's)

ANSWER 6.18 (2.50)

- a. HP-409 & 410 installed [0.5] to allow the operator to x-connect injection headers to supply cooling to 3 of 4 nozzles [0.5]. (1.0)
(Accept "flow in both headers" for "3 of 4 nozzles".)

Controls and Indications: [2 @ 0.5 each]

1. Can throttle either valve
2. Flow indication through either valve in Control Room. OR
Unit 3 has computer indications of valve NOT closed. (1.0)

- b. $\geq 60\%$ (0.5)

REFERENCE

DNS Training Lesson Plans, OP-DC-SPS-SY-HPI, pp. 27 & 28

006000K405 006020A202 .. (KA's)

ANSWER 6.19 (1.00)

While NI input to ICS was removed a continuous rod withdrawal would occur.

REFERENCE

ONS Training Lessons Plans, DP-OC-SPS-RPB, p. 38
715000K304 .. (KA's)

ANSWER 6.20 (1.00)

- a. Rotating the switch on the Pressure Test module to the "test operate" position. [0.5]
- b. Depressing the "output state" toggle switch on bistable that has tripped. (Verbatim answer not required. Knowledge of operator action of a manual reset switch local to cabinet (on Listable) is acceptable.) [0.5]

REFERENCE

ONS Training Lesson Plan, DP-OC-IC-ES, p. 15
LPSP Training Objectives, DP-OC-IC-ES, B. 8. (9/9/83)

013000A401 .. (KA's)

ANSWER 6.21 (2.00)

- a. Auto start of BOTH MDEFWP. (1.0)
- b. No auto swap back to primary channel will occur or must be manually selected to primary channel. (1.0)

REFERENCE

ONS CPSP Training Objective DP-OC-SPS-34-EF,
1.L., 1.F., 1.q. & 1.r.
035010K401 .. (KA's)

ANSWER 7.01 (1.00)

b

REFERENCE

DNS Training Lesson Plan, DP-OC-SPS-IC-SPDS, p. 9

000069K301 .. (KA's)

ANSWER 7.02 (1.00)

d

REFERENCE

DNS Training Lesson Plan, DP-OC-SPS-IC-RPS, pp 14, 15
LP80 Training Objective, DP-OC-SPS-IC-RPS, 1. k.

000054K301 .. (KA's)

ANSWER 7.03 (1.50)

- a. >2%
- b. >=4%
- c. "Thermal Power Best" > NI's [0.5 each]

REFERENCE

DNS Procedures, DP/1/A/1102/01, p. 3

015020K511 015000K504 .. (KA's)

ANSWER 7.04 (1.00)

c

REFERENCE

DNS Procedures, various, Limitations and Precautions.

194001A111 194001A109 194001A102 .. (KA's)

ANSWER 7.05 (0.50)

b

REFERENCE

DNS Procedures, DP/1, 2, 3/A/1103/06, p. 1
DP/3/A/1103/06, p. 3

003000G002 .. (KA's)

ANSWER 7.06 (0.50)

d

REFERENCE

DNS Procedures, DP/1, 2, 3/A/1103/06, p. 1
DP/3/A/1103/06, p. 3

003000G002 .. (KA's)

ANSWER 7.07 (1.00)

c

REFERENCE

DNS Procedures, DP/1/A/1104/15, p. 2

022000K201 .. (KA's)

ANSWER 7.08 (1.50)

1. Oconee Tech Spec. 3.3.5 b(2) -- RBC tech spec (TEST OR MAINTENANCE OF A RBC SYSTEM)
 2. Fuel in the core with AND
 3. RCS pressure \geq 350 psig, OR
 4. RCS temp \geq 250 degrees.
- (3 of 4 @ 0.5 ea.)

REFERENCE

DNS Training Lesson Plan, OP-DC-SPS-SY-BB, p. 14 of '8.
DNS LPSO Training Objectives, OP-DC-SPS-SY-BB, #3.a.
DNS Technical Specifications, 3.3.5.
000040K302 .. (KA's)

ANSWER 7.09 (2.00)

(5 @ 0.4 each)

1. Control Rod Groups 1-7 drop into core.
2. Turbine - generator trips.
3. Unit auxiliaries transfer to CT1.
4. Turbine bypass valves open (at approximately 1010 psig).
5. Feedwater runback to control S/G level.

REFERENCE

DNS Emergency Procedures, EP/1A/1800/01, p. 2.
000007K301 .. (KA's)

ANSWER 7.10 (1.50)

(0.5 each)

1. Trip all Reactor Coolant Pumps.
2. Manually initiate HPI.
3. Raise DTSG level to 95% on the Operate Range.

REFERENCE

DNS Abnormal Procedure, AP-8, Loss of Control Room, Section 8, pp. 8&9

000068G010 .. (KA's)

ANSWER 7.13 (2.00)

(1.0 each)

1. to provide adequate cooldown rate.
2. Maintain R. B. environmental qualification criteria for the R. B. equipment protection

REFERENCE

DNS Abnormal Procedure AP-07, p. 5

006000A202 .. (KA's)

ANSWER 7.14 (1.00)

(0.5 each)

1. Motor has been running normally for 2 hours or more.
2. Measured Stator Temperature by RTD is below 245 F and reached steady state or decreasing.

REFERENCE

DNS Procedures, DP/1, 2, 3/A/11/ 3/06, p. 1
DP/3/A/1103/06, p. 3

003000K614 .. (KA's)

ANSWER 7.15 (1.00)

- a. Trip the reactor
- b. Trip the turbine generator
- c. Trip both main FDW pumps
- d. Verify all operable EFWPs start

REFERENCE

Ocone: Proc. AP/1/A/1700/23, Loss of 1K1, pg 2 of 5

062000A201 ..(KA's)

ANSWER 7.16 (2.00)

(Unit 1 & 2)

1. < 1200 lbs. on Dillon load cell.
2. Low load light on (@ 400 #).
3. Hydraulic pressure > 100 lbs.
4. Mechanical Locking pin is removed.
5. Hoist tape readings in spec.
6. stable count rate

OR

(Unit 3)

1. Low load light on (@ 800 #).
2. Air pressure available to pneumatic system.
3. Hoist tape readings in spec.
4. stable count rate

(Requirements from different units may not be mixed
unless ALL requirements are given and the applicable
unit(s) identified.)

REFERENCE

DNS Training Lesson Plans, OP-OC-SPS-FH-FHB, p. 12
LPSD Training Objectives, OP-OC-SPS-FH-FHB, 1. b.
034000K401 ..(KA's)

ANSWER 7.17 (1.00)

Subcooling margin equal to 0 degrees F/ in EITHER loop OR
the core.

REFERENCE

EAP-130-E11-R (QCB)

000009K323 .. (KA's)

ANSWER 7.18 (1.00)

Quench Tank Pressure (0.5) stops increasing (0.5)

REFERENCE

DP-QC-SFS-CM-PZR p. 17; LO 11
(2.6/2.8)

007000A206 .. (KA's)

ANSWER 7.19 (1.00)

CSAE Exhaust to Stack Drain (IV-196) must be LOCKED CLOSED.

(In response to candidates question the proctor advised to interpret "above background" as the first level above background which requires actions. This was assumed to mean the alert level by the candidates. Answers addressing these actions will be acceptable.)

REFERENCE

ONS Procedures, DP/1/A/1102/01, p. 2

055000K104 000037K306 .. (KA's)

ANSWER 7.20 (1.50)

- a. If RCP's are, or may be, lost (1.0)
- b. 50% operating range (0.5)
OR
240" XSUR range

REFERENCE

DNS Procedures, DP/1/A/1106/06, enclosure 3.5, pp. 6 & 7

061000K101 061000K411 ..(KA's)

ANSWER 7.21 (1.50)

- a. Rod Withdrawal Must Stop.[0.5]
- b. Turn off Rx Bldg. Lights [0.5].
- c. Allows ICS to track MW demand more smoothly in this load range [0.5].

REFERENCE

DNS DP/2/A/1102/02 pp. 10, 14, 15

194001A102 ..(KA's)

ANSWER 7.22 (2.50)

- a. Enclosure 3.10 p. 1 or 2 [0.5], 295 PSIG [0.5].
- b. During RCS heatup in switch over mode [0.5].
To prevent overpressurization of the LPI cooler [0.5]
- c. 59F CR [0.25], closed [0.25].

REFERENCE

DNS DP/1/1104/04 various pages
LPSD Training Objectives, DP-DC-SPS-SY-LPI, 1 a,b,f,g

194001A102 ..(KA's)

ANSWER 8.01 (1.00)

[0.25 each]

- a. 800
- b. 13 (+/- .44) (1040 +/- 30 cubic feet)
- c. 1835
- d. 600 (+/- 25)

REFERENCE

ONS, Technical Specifications, p. 3.3-2

006000K602 .. (KA's)

ANSWER 8.02 (1.00)

c

REFERENCE

ONS, Technical Specifications, p. 4.0-1

ANSWER 8.03 (1.50)

- a. TRUE (0.5)
- b. TRUE (0.5)
- c. FALSE (0.5)

REFERENCE

ONS, OMP 2-1, Enclosure 4.2
194001A103 .. (KA's)

ANSWER 8.04 (1.00)

d.

REFERENCE

ONS OMP 2-7, p. 2

194001A102 .. (KA's)

ANSWER 8.05 (1.00)

b

REFERENCE

ONS T.S. page 3.16-1 & 2 Admendment 156, 158, 155

028000G006 .. (KA's)

ANSWER 8.06 (1.00)

a or c (Either answer is correct. Post exam correction)

REFERENCE

ONS Station Directive 3.1.2, page 3.

194001K102 .. (KA's)

ANSWER 8.07 (0.50)

False

REFERENCE

ONS Station Directive 3.1.2, pp. 4 & 5

ANSWER 8.08 (1.00)

b.

REFERENCE

Question/Answer/Reference deleted from exam.

001000G005 .. (KA's)

ANSWER 8.15 (2.00)

- a. (Verbal) approval of two operators (0.33), one of whom is a supervisor (0.33) who holds an SRO license (0.34). (1.0)

(Note: Stating two OPERATORS, one of whom is a SRO is sufficient for full credit as all SROs at OCONEE are considered to be supervisors.)

- b. Change documented on working copy (0.33) by the ^{SRO or the} individual performing the procedure (0.33) initials of the SRO approving the change in sequence (0.34). (1.0)

REFERENCE

DNS, SD 2.2.1., Station Procedures, p. 4

DNS, OMP 1-9, Use of Procedures, p. 7

194001K102 194001K101 .. (KA's)

ANSWER 8.16 (1.00)

For the specific job/task (0.5) and the period of time for which it was granted (0.5)

REFERENCE

DNS, Station Directives (TS), p. 2

194001K103 .. (KA's)

ANSWER 8.17 (1.00)

1. Sole responsibility to initiate and emergency actions within the provisions of the Station Emergency Plan [0.5]
2. Responsible for making protective actions guides for the safety and welfare of the public to the appropriate off-site agency if the CMC/Recovery Manager is not in a position to do so [0.5]

(1.0)

REFERENCE

DNS Emergency Plan, Figure B-3, p. B-9

194001A116 .. (KA's)

ANSWER 8.18 (1.00)

1. Announced over the PA system that the TSC and OSC are to be staffed.
2. Initiate a Site Assembly.
3. *Notify state/county agencies within 15 minutes*
4. *Notify NRC within 1 hour*

REFERENCE

DNS Emergency Plan section F., Emergency Communications, P. F-3

194001A116 .. (KA's)

ANSWER 8.19 (1.00)

Shutdown immediately (0.5), and maintain a safe shutdown condition until the Commission authorizes resumption of operations (0.5)

REFERENCE

DNS, TS, p. 6.3-1

002000G005 .. (KA's)

ANSWER 8.20 (2.00)

- a. padlock (0.5), Shift Supervisor (0.5)
- b. Ensure the door is closed behind then on entering (0.5) and to conduct a door check prior to leaving the area (0.5)

REFERENCE

ONS, Station Directives, SD 3.3.4, p. 2

194001K103 .. (KA's)

ANSWER 8.21 (2.00)

- a. Shutdown Margin $>1\%$ delta K/K with highest rod withdrawn [0.5]
Plus an additional allowance for the withdrawn worth of the inoperable rod [0.5]. (1.0)
- b. Candidate must answer with either of the below options.
Reduce power to $< 60\%$ of allowable power for RCP combination within one hour [0.5] and reduce NI overpower trip setpoint for flux and flux/flow/imbalance to 65.5% of thermal power value allowable for RCP combination within next four hours [0.5] (1.0)

OR

Position the remaining rods in the affected group such that the inoperable rod is maintained within 9 inches of the group average [0.5] and the group position is within the limits of rod position given in the rod position limit curves [0.5] (1.0)

REFERENCE

ON. Training Lesson Plans, p. 10
LPSD Training Objectives, OP-QC-SPS-APC-T47, #2 & #6

000005K306 000005K105 .. (KA's)

ANSWER 8.22 (1.00)

Incore detectors (via computer)

REFERENCE

ONS Training Lesson Plans, OF-OC-SFS-AFC-T47, p. 15
LP50 Training Objectives, #9-12

015020K504 .. (KA's)

ANSWER 8.23 (1.00)

ECCS cooling performance has not been calculated in accordance to Final
Acceptance Criteria.

REFERENCE

ONS Technical Specification Basis, 3.1.1.a, p. 3.1-2

003000G006 . (KA's)

ANSWER 8.24 (0.00)

Question/Answer/Reference deleted from exam.

REFERENCE

Question/Answer/Reference deleted from exam.

029000G006 .. (KA's)

ANSWER 8.25 (1.50)

(0.5 each)

- a. TRUE
- b. FALSE
- c. FALSE

REFERENCE

ONS, Station Directive 3.1.1 (OP), p. 7

194001K102 ..(KA's)

(***** END OF CATEGORY 8 *****)
(***** END OF EXAMINATION *****)

