UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-413/96-300 and 50-414/96-300

Licensee: Duke Power Company
422 South Church Street
Charlotte, NC 28242

Docket Nos.: 50-413 and 50-414 License Nos.: NPF-35 and NPF-52

Facility Name: Catawba Nuclear Station Units 1 and 2

Inspection Conducted: May 6-10, 1996

Examiner: Paul Steiner 5/30/96
Paul M. Steiner Date Signed

Accompanying Personnel: Michael Ernstes, RII
D. Charles Payne, RII
Gary Weale, Sonalysts

Approved by: T A Peebles 5/31/96
Thomas A. Peebles, Chief Date Signed
Operator Licensing and Human
Performance Branch
Division of Reactor Safety

## SUMMARY

Scope:

NRC examiners conducted regular, announced operator licensing initial examinations during the period of May 6-10, 1996. Examiners administered examinations under the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7. Four Senior Reactor Operator (SRO) and six Reactor Operator (RO) candidates received written and operating examinations.

Results:

Candidate Pass/Fail:

| | SRO | RO | Total | Percent |
|---|---|---|---|---|
| Pass | 4 | 6 | 10 | 100% |
| Fail | 0 | 0 | 0 | 0% |

Examiners identified a weakness regarding the candidates' ability to perform alternate path tasks (paragraph 2.b.(1)).

Enclosure 1

Examiners identified an inspector follow-up item regarding the time for a D/G to overheat on a loss of nuclear service water (RN) cooling. A discrepancy exists between the Final Safety Analysis Report and the annunciator response procedure for low RN flow to a diesel generator, IFI-50-413, 50-414/96-300-01 (paragraph 2.d).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. Addis, Nuclear Training Manager
*A. Bhatnagar, Operations Manager
*D. Bradley, Shift Operations Manager
*M. Brady, Nuclear Section Manager
*S. Frye, Operations Training Manager
*G. Peterson, Site Manager

Other licensee employees contacted included instructors, engineers, technicians, operators, and office personnel.

T. Kiker, Operations Instructor

NRC Personnel

*M. Ernstes, Examiner
*R. Freudenberger, Senior Resident Inspector
*D. Payne, Examiner
*T. Peebles, Operator Licensing and Human Performance Branch Chief
*P. Steiner, Chief Examiner
*G. Weale, Sonalysts Contract Examiner

*Attended exit interview

Acronyms and initialisms used in this report are listed in the last paragraph.

2. Discussion

a. Scope

NRC examiners conducted regular, announced operator licensing initial examinations during the period of May 6-10, 1996. Examiners administered examinations under the guidelines of the Examiner Standards (ES), NUREG-1021, Revision 7. Four Senior Reactor Operator (SRO) and six Reactor Operator (RO) candidates received written and

operating examinations. All candidates passed the examinations. Three candidates were evaluated as marginal on their operating examinations.

b. Candidate Performance

The examiners evaluated the candidates' performance during simulator scenarios and Job Performance Measures (JPMs) using the guidelines of NUREG-1021, "Examiner Standards," Revision 7, Supplement 1, and concluded that the candidates performed satisfactorily. However, there were three marginal passes. While the candidates performed well on the written examination, they demonstrated some generic weaknesses during the operating portions of the examination. When challenged with alternate path tasks that were not common to Catawba training material, the candidates performed poorly. The following paragraphs discuss these items in detail.

(1) Alternate Path Tasks

The candidates demonstrated generic weaknesses when faced with alternate path tasks that were not from Catawba training material. The examiners were concerned with the candidates' inability to evaluate and effectively combat situations that may arise as a plant degrades during an actual event. The examiners identified this area as a weakness.

a. Three out of three candidates failed to recognize a loss of cooling to the 1B diesel generator (D/G). During a scenario which simulated a loss of Station Auxiliary Transformer B, RN cooling water valve RN-292B, "D/G 1B Hx Inlet Isol," was failed shut. The valve is designed to automatically open on a D/G start. The candidates failed to recognize the loss of RN flow to the D/G. None of the candidates monitored RN flow to the D/G or verified the automatic action of RN-292 opening. One candidate recognized that the valve was shut three minutes after the D/G started. The facility Final Safety Analysis Report (FSAR) states that the D/G can run two minutes without cooling water.

b. Two out of three candidates took improper action upon receipt of a radiation alarm from EMF-33 with a failure of the steam generator (SG) blowdown flow control valve BB-27 to isolate. The Annunciator Response Procedure (ARP) requires the operators to verify that all automatic isolations occur. One candidate failed to identify BB-27 as being open, the other recognized it was open but took no action with the exception of informing the SRO who also took no action.

c. Five of six candidates had difficulty with a task requiring them to locally borate the nuclear coolant system using step 4 of FRS-1, "Nuclear Power Generation ATWS." Candidates were unable to efficiently locate valves required to establish Emergency Boration Flow. One SRO-upgrade candidate was unable to find the local emergency boration flow meter.

d. Five of six candidates failed to effectively monitor D/G operating parameters during a task requiring them to start and load a D/G with a malfunctioning governor. A malfunction was inserted to simulate D/G governor speed control being stuck in the raise mode. The JPM required that the candidates successfully trip the D/G output breaker before the D/G reached 5750 KW load, and shutdown the D/G before it tripped on overspeed. All of the candidates tripped the D/G output breaker prior to the D/G exceeding the 5750 KW load limit, but four of the six did not monitor D/G frequency and allowed the D/G to trip on overspeed. One candidate shut the D/G down just before it reached the overspeed trip, but was not monitoring frequency and was unaware that speed was still rising.

(2) EOP Usage

There was an isolated instance where an SRO-upgrade candidate displayed a significant weakness in Emergency Operating Procedure (EOP) usage. Step RNO 9.a (2) of EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS," (retype #4, approved 1/18/96) required the crew to determine if pressure in any S/G was still decreasing in an uncontrolled manner OR any S/G was depressurized. If this was the case, the faulted S/Gs were to be isolated using step 10. At this point in the scenario, S/Gs "B" and "C" were completely depressurized from a previous feedline break. Therefore, step 10 should have been conducted to isolate the faulted S/Gs. The crew did not make the appropriate transition to step 10 and left the S/Gs un-isolated. During post-scenario questioning, the SRO candidate explained that since the S/Gs were completely "blown down," pressure was not decreasing; therefore, the transition to step 10 to isolate the S/Gs was not appropriate. This was a weakness in fundamental EOP rules of usage. Although this error was very significant, consideration of the candidate's overall performance resulted in a satisfactory grade.

c. Diesel Generator Low Cooling Flow Annunciator

The inspectors are concerned with the configuration that must be present for annunciators D1 and D4 on panel 1AD-12, "DIESEL GEN HX A (B) OUTLET FLOW - LO," to alarm. These annunciators can only alarm when their respective cooling water inlet isolation valves 1RN-292B and 1RN-232A are fully open. These valves receive an "OPEN" signal on a D/G start. Since a cooling water isolation valve not traveling fully open is a probable cause of a low flow condition, interlocking the annunciator with the full open position does not provide the operators with an indication of a loss of flow.

d. Review of Updated Final Safety Analysis Report (UFSAR) Commitments

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description, highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the UFSAR descriptions. While performing the examinations discussed in this report, the examiners reviewed the applicable portions of the UFSAR that related to diesel generator cooling.

The facility FSAR paragraph 8.3.1.1.3.9, "Cooling Systems," stated that, "Actual vendor tests on engines of the same size and model show that the diesel can start from warm standby and operate for a minimum of two minutes without nuclear service water being supplied to the diesel generator heat exchanger." The Annunciator Response Procedure (ARP) for D1 and D4 on panel 1AD-12, Retype #7 stated, "The Diesel should not be operated for > 10 minutes without flow to the Diesel Gen HX." The ARP was not in agreement with the FSAR. The inspectors identified this item for follow-up as Inspector Follow-up Item IFI-96-300-01.

3. Action on Previous Inspection Findings

(Closed) VIO 50-413,414/95-01-01: Failure to determine, following medical examination, that three licensed operators required a conditional license. Based on a sample audit of 10 licensed operator medical records, the inspector verified the corrective actions described in the licensee's response letter, dated March 14, 1995, to be reasonable and complete. No similar problems were identified.

4. Exit Interview

At the conclusion of the site visit, the examiners met with representatives of the plant staff listed in paragraph 1 to discuss the results of the examinations and inspection findings. The licensee did not identify as proprietary any material provided to, or reviewed by the

examiners. The examiners further discussed in detail the inspection finding listed below. Dissenting comments were not received from the licensee.

| Item Number | Description and Reference |
|---|---|
| IFI-96-300-01 | Inspector follow-up item regarding D/G loss of cooling, and the time to failure (paragraph 2.d). |

SIMULATOR FACILITY REPORT

Facility Docket Nos: 50-413 & 50-414

Facility Licensee: NPF-35 & NPF-52

Operating Tests Administered On: May 7-10, 1996

This form is to be used only to report observations. These observations do not constitute, in and of themselves, audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required solely in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

| ITEM | DESCRIPTION |
|---|---|
| NONE | |

Enclosure 2

NRC RESOLUTION OF FACILITY COMMENTS

The NRC agrees with the facility comment and accepts both answers "b" and "d" on SRO question 004 and RO question 009.

Enclosure 4

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

Master
Catawba 96-300

REGION: 2

CANDIDATE'S NAME: **MASTER COPY**

FACILITY: Catawba 1 & 2

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 96/05/06

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE: 100

CANDIDATE'S SCORE: _____

FINAL GRADE: _____%

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

_____
Candidate's Signature

Nuclear Regulatory Commission
Operator Licensing
Examination

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

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | a | b | c | d | ___ | 023 | a | b | c | d | ___ |
| 002 | a | b | c | d | ___ | 024 | a | b | c | d | ___ |
| 003 | a | b | c | d | ___ | 025 | a | b | c | d | ___ |
| 004 | a | b | c | d | ___ | 026 | a | b | c | d | ___ |
| 005 | a | b | c | d | ___ | 027 | a | b | c | d | ___ |
| 006 | a | b | c | d | ___ | 028 | a | b | c | d | ___ |
| 007 | a | b | c | d | ___ | 029 | a | b | c | d | ___ |
| 008 | a | b | c | d | ___ | 030 | a | b | c | d | ___ |
| 009 | a | b | c | d | ___ | 031 | a | b | c | d | ___ |
| 010 | a | b | c | d | ___ | 032 | a | b | c | d | ___ |
| 011 | a | b | c | d | ___ | 033 | a | b | c | d | ___ |
| 012 | a | b | c | d | ___ | 034 | a | b | c | d | ___ |
| 013 | a | b | c | d | ___ | 035 | a | b | c | d | ___ |
| 014 | a | b | c | d | ___ | 036 | a | b | c | d | ___ |
| 015 | a | b | c | d | ___ | 037 | a | b | c | d | ___ |
| 016 | a | b | c | d | ___ | 038 | a | b | c | d | ___ |
| 017 | a | b | c | d | ___ | 039 | a | b | c | d | ___ |
| 018 | a | b | c | d | ___ | 040 | a | b | c | d | ___ |
| 019 | a | b | c | d | ___ | 041 | a | b | c | d | ___ |
| 020 | a | b | c | d | ___ | 042 | a | b | c | d | ___ |
| 021 | a | b | c | d | ___ | 043 | a | b | c | d | ___ |
| 022 | a | b | c | d | ___ | 044 | a | b | c | d | ___ |
| | | | | | | 045 | a | b | c | d | ___ |

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 046 | a | b | c | d | ___ | 069 | a | b | c | d | ___ |
| 047 | a | b | c | d | ___ | 070 | a | b | c | d | ___ |
| 048 | a | b | c | d | ___ | 071 | a | b | c | d | ___ |
| 049 | a | b | c | d | ___ | 072 | a | b | c | d | ___ |
| 050 | a | b | c | d | ___ | 073 | a | b | c | d | ___ |
| 051 | a | b | c | d | ___ | 074 | a | b | c | d | ___ |
| 052 | a | b | c | d | ___ | 075 | a | b | c | d | ___ |
| 053 | a | b | c | d | ___ | 076 | a | b | c | d | ___ |
| 054 | a | b | c | d | ___ | 077 | a | b | c | d | ___ |
| 055 | a | b | c | d | ___ | 078 | a | b | c | d | ___ |
| 056 | a | b | c | d | ___ | 079 | a | b | c | d | ___ |
| 057 | a | b | c | d | ___ | 080 | a | b | c | d | ___ |
| 058 | a | b | c | d | ___ | 081 | a | b | c | d | ___ |
| 059 | a | b | c | d | ___ | 082 | a | b | c | d | ___ |
| 060 | a | b | c | d | ___ | 083 | a | b | c | d | ___ |
| 061 | a | b | c | d | ___ | 084 | a | b | c | d | ___ |
| 062 | a | b | c | d | ___ | 085 | a | b | c | d | ___ |
| 063 | a | b | c | d | ___ | 086 | a | b | c | d | ___ |
| 064 | a | b | c | d | ___ | 087 | a | b | c | d | ___ |
| 065 | a | b | c | d | ___ | 088 | a | b | c | d | ___ |
| 066 | a | b | c | d | ___ | 089 | a | b | c | d | ___ |
| 067 | a | b | c | d | ___ | 090 | a | b | c | d | ___ |
| 068 | a | b | c | d | ___ | 091 | a | b | c | d | ___ |

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

| | | | | | |
|---|---|---|---|---|---|
| 092 | a | b | c | d | ___ |
| 093 | a | b | c | d | ___ |
| 094 | a | b | c | d | ___ |
| 095 | a | b | c | d | ___ |
| 096 | a | b | c | d | ___ |
| 097 | a | b | c | d | ___ |
| 098 | a | b | c | d | ___ |
| 099 | a | b | c | d | ___ |
| 100 | a | b | c | d | ___ |

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

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 applicant 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 and each answer sheet.

6. Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.

7. The point value for each question is indicated in parentheses after the question.

8. If the intent of a question is unclear, ask questions of the examiner only.

9. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.

10. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.

11. To pass the examination, you must achieve a grade of 80% or greater.

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

13. When you are done and have turned in your examination, leave the examination area (EXAMINER WILL DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.

QUESTION: 001 (1.00)

WHICH ONE of the following states the conditions under which the parameter values listed in parentheses with the acronym ACC must be used during performance of an Emergency Procedure?

a. Only when containment pressure is currently equal to or greater than 1.2 psig.

b. Any time after containment pressure has exceeded 1.2 psig during an event, even if only momentarily.

c. Only when containment pressure is currently equal to or greater than 3.0 psig.

d. Any time after containment pressure has exceeded 3.0 psig during an event, even if only momentarily.

QUESTION: 002 (1.00)

WHICH ONE of the following states the comparison between the minimum subcooling margin (SCM) required in the Catawba emergency procedures and the actual minimum SCM value, AND the reason for the difference?

a. Catawba minimum SCM is 20 degrees F.smaller to allow the steam tables to be used directly for SCM verification.

b. Catawba minimum SCM is 20 degrees F. smaller because the RVLIS display and data book curves have a built-in conservatism factor.

c. Catawba minimum SCM is 20 degrees F. larger to provide slightly more conservatism than the generic ERGs.

d. Catawba minimum SCM is 20 degrees F. larger because the possible instrument error is assumed to be greater for conservatism.

QUESTION: 003 (1.00)

WHICH ONE of the following constitutes a Hazardous Atmosphere as defined in the Confined Space Entry Directive? (Nuclear System Directive 109, "Confined Space Entry," is available for reference.)

a. An atmospheric oxygen concentration of 19.9 percent.

b. An atmospheric hydrogen concentration of 0.9 percent.

c. Airborne combustible dust at a concentration that obscures vision at a distance of 19 feet.

d. An atmospheric concentration of a substance that could cause an operator to exceed 10% of the Permissible Exposure Limit for that substance in an extended exposure.

QUESTION: 004 (1.00)

WHICH ONE of the following describes who can make changes to Block Tag Out (BTO) boundaries besides the BTO Coordinator?

a. The Shift Work Manager

b. The Operational Control Group Supervisor

c. The Work Group Supervisor

d. The Work Control Center SRO

QUESTION: 005 (1.00)

WHICH ONE of the following describes a Containment space with a condition that at NO time will entry be allowed into that space?

a. The Annulus during Mode 1 operations at greater than 80% power.

b. The Annulus during Mode 4 operations with an Incore Instrumentation detector in motion.

c. Lower Containment, outside the Crane Wall, during Mode 1 operations at 40% power.

d. Lower Containment, inside the Crane Wall, during Mode 1 operations at 20% power.

QUESTION: 006 (1.00)

WHICH ONE of the following describes the correct method for locking a manual valve on a 4-inch diameter line?

a. Lock the handwheel to the valve bonnet on a valve at chest height using a break-away type seal.

b. Lock the handwheel to a nearby pipe that is 6 inches in diameter or larger using chain and a lock.

c. Lock the handwheel on a valve at waist level to a nearly column using a break-away type seal.

d. Lock the handwheel to the pipe containing the manual valve using chain and a lock.

QUESTION: 007 (1.00)

WHICH ONE of the following describes a condition in which a Reactor Operator (RO) can be designated to assume the "CONTROL ROOM COMMAND FUNCTION?"

a. At any time when directed by the Station Manager.

b. When assigned by the Operations Shift Manager with both units in Mode 5.

c. Following declaration of an Unusual Event when assigned by the Emergency Coordinator.

d. When the Control Room Supervisor becomes incapacitated as deemed necessary by the Operator at the Controls (OATC).

QUESTION: 008 (1.00)

A male licensed operator is to be given a Planned Special Exposure (PSE) that will be a Total Effective Dose Equivalent (TEDE) exposure. The operator's current exposure conditions are as follows:

- He has received previous PSEs totalling 16 rem TEDE over 4 years.
- His current annual exposure is 2.7 rem TEDE.
- He is 22 years old as of one month ago.
- His NRC Form-4 is up to date.
- He has received NO previous PSEs this year.

WHICH ONE of the following states the MAXIMUM PSE that can be assigned to the operator?

a. 1.8 rem

b. 2.3 rem

c. 5.0 rem

d. 9.0 rem

QUESTION: 009 (1.00)

WHICH ONE of the following describes the reason two licensed operators are required to be present when changing burned out annunciator indicating lamps in an area of the Control Room where an operator must stand on a "Roll Around" ladder over a control board?

a. To prevent important indications from being obscured by the person changing the burned out bulb.

b. To assist the person changing the bulb to prevent inadvertent actuation of a control device.

c. To take immediate action to remedy a situation caused by inadvertent actuation of a control device.

d. To steady the "Roll-Around" ladder to prevent falls and possible actuation of control devices.

QUESTION: 010 (1.00)

WHICH ONE of the following describes an item that should be entered in the Control Room Logbook as an Open Item?

a. A Red safety tagout.

b. A test in progress.

c. A closed pressurizer PORV block valve.

d. A Technical Specifications Action Item.

QUESTION: 011 (1.00)

Given the following conditions on Unit 1:

- Control rod D-12 has just been inserted 18 steps to realign it with control bank (CB) D.
- The Pulse-to-Analog (P/A) converter was inadvertently NOT updated after the rod realignment.

WHICH ONE of the following annunciators is most likely to alarm during subsequent operations because the P/A converter was NOT updated?

a. CONTROL ROD BANK LO LIMIT when CB D is inserted.

b. ROD CONTROL URGENT FAILURE when CB D is withdrawn.

c. ROD CONTROL NON-URGENT FAILURE when CB D is inserted.

d. BANK D FULL ROD WITHDRAWAL when CB D is withdrawn to 223 steps on the step counters.

QUESTION: 012 (1.00)

Given the following plant conditions on Unit 1:

- The reactor vessel head is in place.
- The NC system has been drained to 6.5% for midloop operations.
- The S/G primary side manways have been removed.

WHICH ONE of the following states the reason that at least one hot leg nozzle dam must be removed under these conditions?

a. To allow the cold leg plenum to be vented to containment.

b. To prevent a pressure buildup in the vessel during a loss of shutdown cooling.

c. To vent non-condensible gases that could inhibit natural circulation.

d. To eliminate the need for low-temperature overpressure protection.

QUESTION: 013 (1.00)

During a Catawba incident in 1986, pressurizer PORV 1NC-34A inadvertently opened while operators were making a small increase in NC pressure. When the PORV lifted, the operators were monitoring NC pressure on the Operator Aid Computer (OAC) to ensure that NC pressure remained below the PORV lift setpoint of approximately 400 psig.

WHICH ONE of the following combinations of "hindsight" operator actions could have prevented this incident?

a. Recognize that PORV lift pressure can be as low as 365 psig and monitor Loop "A" wide-range pressure indication.

b. Recognize that PORV lift pressure can be as low as 365 psig and monitor Loop "B" wide-range pressure indication.

c. Monitor Loop "C" wide-range pressure indication and maintain 22 psig margin to 400 psig PORV setpoint.

d. Monitor Loop "D" wide-range pressure indication and maintain 22 psig margin to 400 psig PORV setpoint.

QUESTION: 014 (1.00)

With the plant operating at 100% power, WHICH ONE of the following conditions will cause ALL NC pumps to trip automatically?

a. Two NC pump 6.9 KV supply buses have decreased to 92% of normal voltage.

b. Oil lift pressure decreases to 450 psig on two NC pumps.

c. Two NC pump 6.9 KV bus supply breakers trip on overfrequency.

d. Simultaneous loss of thermal barrier KC flow and seal injection flow on two NC pumps.

QUESTION: 015 (1.00)

WHICH ONE of the following is the primary purpose of the anti-reverse rotation device installed on the pump rotor of each NC pump?

a. Prevent stator winding damage due to excessive pump starting current.

b. Prevent backflow through a stopped NCP when other NCPs are running.

c. Prevent damage to the pump thrust bearing due to reverse rotation thrust.

d. Prevent overheating of pump bearings due to reverse rotation without internal cooling flow.

QUESTION: 016 (1.00)

WHICH ONE of the following combinations of operating conditions is likely to occur if the VCT pressure is allowed to remain at zero psig during long-term operation at full rated power?

a. Increased crud levels in the NCS and increased makeup rates to the NCP standpipes.

b. Increased total gas concentration in the NCS and increased No. 2 seal leakoff from the NCPs.

c. Decreased pH conditions in the NCS and decreased equilibrium temperature in the VCT.

d. Decreased I-131 concentration in the NCS and decreased No. 1 seal leakoff from the NCPs.

QUESTION: 017 (1.00)

WHICH ONE of the following is the reason that all letdown orifice outlet containment isolation valves (NV11A, 10A, and 13A) must be closed whenever the NC letdown to Regen HX isolation valves (NV1A and NV2A) are repositioned from open to close or close to open?

a. To prevent thermally shocking the letdown heat exchanger with a sudden slug of NCS water.

b. To prevent water hammmer in the piping between NV1A/NV2A and the letdown orifice outlet containment isolation valves (NV11A, 10A, and 13A)

c. To prevent creating a thermal lock that would prevent subsequent operation of the orifice isolation valves.

d. To maintain two pressure barriers between NCS temperatures and the NV demineralizers.

QUESTION: 018 (1.00)

Both NV mixed bed demineralizer resins were used for about 15 days each with the plant at full power between 20-50 EFPD. Since that time, mixed bed demineralizer "B" has remained isolated, while mixed bed demineralizer "A" has been in continuous service for the past 9 months with the unit at full power.

If the current NCS boron concentration is 50 ppm, WHICH ONE of the following will result from isolating mixed bed "A" and shifting to mixed bed B without additional conditioning of the bed "B" resin?

a. A decrease in T-avg.

b. A rapid increase in NCS pH.

c. A decrease in NCS boron concentration.

d. An increase in reactor power.

QUESTION: 019 (1.00)

WHICH ONE of the following is the reason that Residual Heat Removal (ND) System valves ND-1B (ND pump 1A loop suction isolation from loop "B") and ND-37A (ND pump 1B loop suction isolation from loop "C") have alternate power supplies?

a. To permit both valves in each ND loop suction path to be operated from the same pushbutton at MC-11.

b. To permit both valves in each ND loop suction path to be operated from the same Auxiliary Shutdown Panel.

c. To enable aligning an ND loop suction path if one essential power train is lost.

d. To enable isolating both ND loop suction paths if one essential power train is lost.

QUESTION: 020 (1.00)

Power has been connected to the Cold Leg Accumulator (CLA) discharge isolation valves for a plant shutdown and cooldown.

WHICH ONE of the following states when these valves will automatically close now that power is connected?

a. NCS wide-range pressure decreases below 1000 psig.

b. Lo-Lo level in the respective CLA with a Safety Injection (Ss) signal present.

c. Operator control is shifted to the Auxiliary Shutdown Panel.

d. Temperature of nitrogen entering the CLA decreases below 65 deg. F.

QUESTION: 021 (1.00)

Given the following plant conditions:

- A large break LOCA has occurred.
- EP/1/A/5000/ES-1.3, "Transfer to Cold Leg Recirculation," is being performed.
- Safety Injection has NOT been reset.

WHICH ONE of the following will prevent runout from occurring in the KC pumps during the performance of EP/ES-1.3?

a. KC Pump Recirculation Isolation valves (KC-C37A/C40B) are manually closed during the performance of EP/ES-1.3.

b. Auxiliary Building Non-Essential Header isolation valves are manually closed during the performance of EP/ES-1 3.

c. Reactor Building Non-Essential Header Isolation valves will automatically close before EP/ES-1.3 is performed.

d. ND Heat Exchanger KC outlet flow control valves are set to maintain flow below KC pump runout point.

QUESTION: 022 (1.00)

WHICH ONE of the following heat exchangers loses Component Cooling (KC) System flow upon a Phase "A" Containment Isolation (St) actuation?

a. NCP seal return heat exchanger.

b. NCP thermal barrier heat exchangers.

c. NV letdown heat exchanger.

d. NCDT heat exchanger.

QUESTION: 023 (1.00)

With the plant operating steady-state at 100% power, WHICH ONE of the following undesirable operating conditions is likely to result in a PZR SURGE LINE LO TEMP alarm?

No other annunciators are alarming.

a. Pressurizer temperature has slowly decreased due to pressurizer heaters being off.

b. Small insurge/outsurge cycles are occurring due to core xenon oscillations.

c. Spray valve bypass flow has stopped due to orifice fouling problems.

d. T-hot has decreased due to inadvertent boration flow being undetected.

QUESTION: 024 (1.00)

Given the following conditions on Unit 1:

- Reactor power is steady at 100%.
- Pressurizer pressure channel selector switch is in the 3-2 position.
- Pressurizer pressure control is in AUTO at 2270 psig.
- Pressurizer spray valves are partially open.
- All Pressurizer PORVs are closed.

If the pressurizer pressure master controller setpoint is instantly changed to 2370 psig, WHICH ONE of the following is the response of the pressurizer PORVs and spray valves over the next hour?

ASSUME NO other operator action is taken and pressurizer pressure control remains in automatic.

a. All PORVs remain closed, spray valves close.

b. All PORVs remain closed, spray valves remain open.

c. PORV NC-34A remains closed, spray valves close, PORVs NC-32B/36B cycle open.

d. PORV NC-34A cycles open, spray valves remain open, PORVs NC-32B/36B remain closed.

QUESTION: 025 (1.00)

WHICH ONE of the following groups of pressurizer heaters will receive diesel generator (D/G) power after an on-site AC electrical distribution system blackout occurs?

a. A and D

b. B and A

c. C and B

d. D and C

QUESTION: 026 (1.00)

Select the combination below that completes the following statement.

When the plant is operating normally at 100% power, the cold-calibrated pressurizer level channel indicates a level that is ___(X)___ than the actual level because the water in the ___(Y)___ is hotter than it is during cold plant conditions.

a. (X) Lower; (Y) Reference leg

b. (X) Lower; (Y) Impulse leg (pressurizer)

c. (X) Higher; (Y) Reference leg

d. (X) Higher; (Y) Impulse leg (pressurizer)

QUESTION: 027 (1.00)

Given the following plant conditions on Unit 1:

- Reactor power is at 100%.
- KC pumps 1B1 and 1B2 are supplying system loads.
- An inadvertent Train A safety injection (Ss) actuation has just occurred, followed immediately by a 3-second loss of voltage on essential switchgear 1ETB.

WHICH ONE of the following describes the response of the KC pumps to this event?

a. KC pumps 1B1/1B2 will restart after 3 seconds while KC pumps 1A1/1A2 will autostart on a signal from the sequencer.

b. KC pumps 1B1/1B2 will restart after 3 seconds while KC pumps 1A1/1A2 will start immediately on low system pressure of 65 psig.

c. KC pumps 1B1/1B2 will be shed from 1ETB; then the accelerated sequencer will start KC pumps 1A1/1A2.

d. KC pumps 1B1/1B2 will be shed from 1ETB; then the LOCA-committed sequencer will start all KC pumps 1A1/1A2/1B1/1B2.

QUESTION: 028 (1.00)

With the plant initially operating at 100% power, WHICH ONE Of the following must be individually reset after a spurious Train A Safety Injection actuation occurs on Unit 1 to regain full operational control of the KC system?

a. KC to ND Heat Exchanger 1A Supply Isolation Valve, KC-56A

b. ND Heat Exchanger 1A Flow Control Valve, KC-57A

c. Reactor Building Non-Essential Header Isolations, KC-3A, 230A

d. Auxiliary Building Non-Essential Header Isolations, KC-1A, 50A

QUESTION: 029 (1.00)

Given the following indications associated with rod D-4 Digital Rod Position Indication (DRPI):

- General Warning light for rod D-4 is flashing.
- Rod bottom light for rod D-4 is lit.
- Urgent alarms 1, 2, and 3 are flashing for rod D-4.
- RPI URGENT annunciator is alarming.

WHICH ONE of the following describes the condition of rod D-4 DRPI?

a. Rod D-4 DRPI indication is at half accuracy.

b. Rod D-4 DRPI indication is at full accuracy.

c. Rod D-4 position cannot be determined by DRPI.

d. Rod D-4 DRPI indication is valid, and the rod is fully inserted.

QUESTION: 030 (1.00)

Given the following conditions at Unit 1:

- Reactor startup is in progress.
- Source range channel N31 indicates 8E4 cps.
- Source range channel N32 indicates 7.5E4 cps.
- Intermediate range channel N35 indicates 4E-10 amps.
- Intermediate range channel N36 indicates 1.2E-11 amps.
- P-6 S/R BLOCK PERMISSIVE light is energized.

WHICH ONE of the following statements describes the compensation conditions of the Intermediate Range channels N35 and N36?

a. N35 is overcompensated.

b. N36 is overcompensated.

c. N35 is undercompensated.

d. N36 is undercompensated.

QUESTION: 031 (1.00)

WHICH ONE of the following describes the arrangement of sensing taps on the NC pipe elbow detectors used to measure loop flow rates in the NC system?

a. One high pressure (HP) tap on the inside of the elbow and three low pressure (LP) taps on the outside.

b. One HP tap on the outside of the elbow and three LP taps on the inside.

c. One LP tap on the inside of the elbow and three HP taps on the outside.

d. One LP tap on the outside of the elbow and three HP taps on the inside.

QUESTION: 032 (1.00)

Given the following plant conditions:

- A LOCA has caused a trip from full power and safety injection.
- NS Pump "A" started automatically on Train A Sp signal.
- Train B Sp signal failed to actuate, but NS pump "B" was manually started by an operator.
- The Ss signal and sequencer have been reset.
- The Train A Sp signal has NOT been reset.
- Containment pressure is 1.2 psig.
- Both NS pumps are stopped for shifting their suctions to the containment sump.

WHICH ONE of the following describes the operation of the NS pumps during the suction swapover process?

a. Both NS pumps will start automatically if containment pressure increases above 3.0 psig.

b. Both NS pumps will start automatically when their respective sump suction valve (NS-18A, NS-1B) reaches full open.

c. When the sump suction valves (NS-18A, NS-1B) reach full open, NS pump "A" will start automatically and the operator can start NS pump "B" manually.

d. The operator CANNOT start NS pump "B" manually when its sump suction valve (NS-1B) reaches full open; NS pump "A" will start automatically when its sump suction valve (NS-18A) reaches full open.

QUESTION: 033 (1.00)

WHICH ONE of the following is the basis for limiting high RN outlet flow rates from the NS heat exchangers?

a. Increased likelihood of RN pump runout.

b. Vibration of NS heat exchanger tubes could result in tube failure.

c. Over-cooling of NS spray could cause pressurized thermal shock conditions in containment.

d. Thermal shock conditions could cause failure of NS heat exchanger shell seismic restraints.

QUESTION: 034 (1.00)

The following conditions exist at Unit 2:

- Reactor power is stable at 100%.
- Cold Leg Accumulator (CLA) "A" level has recently started increasing.
- Accumulator "A" fill valves have been verified isolated from the accumulator.
- Accumulator "A" level has increased from 7940 gallons to 8000 gallons over the last 15 minutes.
- There was NO measurable NCS leakage before the accumulator level increase.

WHICH ONE of the following NCS leakage limits has been exceeded?

a. The IDENTIFIED LEAKAGE limit.

b. The UNIDENTIFIED LEAKAGE limit.

c. The PRESSURE BOUNDARY LEAKAGE limit.

d. The NCS PRESSURE ISOLATION VALVE LEAKAGE limit.

QUESTION: 035 (1.00)

Given the following plant conditions on Unit 1:

- A large LOCA has caused a plant trip from full power and a safety injection.
- An electrical problem in Train "B" prevented initiation of the auto swap to cold leg recirculation in that train.
- Required Train "B" valve manipulations for cold leg recirc have been performed from the main control board.
- A Containment Pressure Control System (CPCS) signal is still present.
- The requirements are met to put Train "B" of ND Auxiliary Containment Spray in operation.

WHICH ONE of the following valve conditions ensures, by its interlocks, that all the valve interlocks required for opening NS-38B (ND spray header containment isolation valve) have been met?

a. NI-136B (ND crossover to NI) closed.

b. NI-178B (ND cold leg injection) open.

c. NI-184B (containment sump line "B" isolation) open.

d. ND-36B or ND-37A (ND pump suctions from NC system) closed.

QUESTION: 036 (1.00)

WHICH ONE of the following is the reason that an NC pump should NOT be started if the #1 seal leakoff flow rate is LESS than required by Data Book Curve 1.9, NC Pump No. 1 Seal Normal Operating Range?

a. Indicates seal return valve lineup is incorrect, which will cause excessive leakoff if the pump is started.

b. Indicates crud blockage in seal area, which will prevent formation of required film between seal faces.

c. Indicates excessive differential pressure across the seal, which will cause excessive friction between the seal faces.

d. Indicates insufficient VCT pressure, which will allow leakoff flow to divert to the #2 seal standpipe.

QUESTION: 037 (1.00)

Given the following conditions on Unit 1:

- The reactor and main turbine are stable at 97% power.
- All plant control systems are in AUTO.
- Tavg is matched with Tref.
- Control Bank D is at 210 steps.

If continuous outward motion of Control Bank D suddenly commences, WHICH ONE of the following is the appropriate immediate action per the applicable abnormal procedure?

a. Verify rod motion stops when C-11 Bank D Withdrawal Limit is reached.

b. Verify rod motion stops when C-2 Power Range High Flux Rod Stop is reached.

c. Verify rod motion stops when C-3 Overtemperature Delta-T Rod Stop is reached.

d. Verify rod motion stops when CRD Bank Select switch is taken to MAN (manual) position.

QUESTION: 038 (1.00)

WHICH ONE of the following explains why the ROD CONTROL URGENT FAILURE annunciator does NOT alarm when a dropped rod in Shutdown Bank D is being recovered?

a. Shutdown Bank D has only one group of rods.

b. Shutdown banks have NO multiplexing thyristors.

c. Shutdown Bank D operates without a master cycler input.

d. Shutdown banks receive NO input from the bank overlap unit.

QUESTION: 039 (1.00)

Given the following conditions on Unit 1:

- The plant is shutdown in Mode 3.
- Train A Shutdown Margin (SDM) Monitor has just been enabled.
- Automatic blended makeup to the VCT is in progress from 1B Reactor Makeup Water (RMW) pump and 1A Boric Acid (BA) pump.
- The operator is preparing to test Train B SDM Monitor before enabling that monitor.

WHICH ONE of the following states the annunciators that will alarm if the operator inadvertently depresses the TEST pushbutton for Train A SDM Monitor vice Train B SDM Monitor?

a. TRAIN A SHUTDOWN MARGIN ALARM and BA FLOW DEVIATION

b. TRAIN A SHUTDOWN MARGIN ALARM and TOTAL MAKEUP FLOW DEVIATION

c. TRAIN A W/R NEUTRON FLUX SYS TROUBLE and BA FLOW DEVIATION

d. TRAIN A W/R NEUTRON FLUX SYS TROUBLE and TOTAL MAKEUP FLOW DEVIATION

QUESTION: 040 (1.00)

The following plant conditions exist on Unit 1:

- The reactor is at 100% power.
- All systems are aligned normally and in automatic control where applicable.

A tube rupture in WHICH ONE of the following heat exchangers would cause a slow dilution of the NCS boron concentration if NO operator action were taken?

a. 1B ND heat exchanger.

b. NV letdown heat exchanger.

c. NV seal water heat exchanger.

d. NV excess letdown heat exchanger.

QUESTION: 041 (1.00)

Given the following conditions on Unit 1:

- The plant is in Mode 5 with NC system temperature at 110 deg. F.
- ND Train B is in operation.
- NC System level is at 6.3% (mid-loop operations).
- ND Heat Exchanger 1B Outlet Control Valve (ND-60) has just failed open due to a diaphragm rupture.

If NO operator action is taken and B ND pump flow increases to maximum, WHICH ONE of the following could occur to cause a loss of ND cooling?

a. ND pump overcurrent trip due to high discharge pressure.

b. ND pump loss of suction due to vortexing at the NC loop suction.

c. ND pump overspeed trip from runout due to low discharge pressure.

d. ND pump low suction trip due to loss of net positive suction head.

QUESTION: 042 (1.00)

Given the following conditions on Unit 1:

- The plant is stable at 100% power.
- Component Cooling (KC) pumps 1A1 and 1A2 are running.
- All the KC supply and return isolations are open.
- A large rupture has just occurred in KC Essential Header 1A.

WHICH ONE of the following will occur automatically to ensure that at least one train of KC pumps will have adequate NPSH for subsequent Safety Injection needs if the header rupture cannot be plugged or isolated from Essential Header 1A? Assume NO operator action is taken.

a. 1B1/1B2 KC pumps will autostart when 1A1/1A2 pumps stop.

b. KC Essential Header 1A will isolate when header pressure decreases to 67 psig.

c. KC Non-Essential Headers will isolate when KC surge tank levels decrease to 34%.

d. KC surge tank makeup valves will open when surge tank levels decrease to 50%.

QUESTION: 043 (1.00)

Given the following conditions on Unit 1:

- Reactor is at 100% power.
- Pressurizer pressure controller is selected to "2 & 3"
- Pressurizer pressure controls are in AUTO.
- All pressurizer pressure channels are operable.
- All pressurizer control components are operable.

WHICH ONE of the following describes the final result if Channel 3 pressurizer pressure detector fails LOW under these conditions, and NO operator action is taken?

a. High pressurizer pressure reactor trip will occur.

b. PORV NC-34A will maintain NCS pressure 80 to 100 psig above normal.

c. No effect on NCS pressure, but PORVs NC-32B and NC-36B will be blocked.

d. PORV NC-34A will maintain NCS pressure from 100 psig above normal to 50 psig below normal.

QUESTION: 044 (1.00)

Given the following plant conditions on Unit 1:

- NCS temperature is 250 deg. F.
- LOW PRESSURE is selected on both trains of low temperature overpressure protection.
- NCS pressure is 375 psig, and increasing.

If NCS loop "D" wide-range T-hot fails HIGH, WHICH ONE of the following describes the system response?

a. PORV NC-34A is disabled.

b. PORV NC-32B is disabled.

c. Both NC-34A and NC-32B are disabled.

d. Neither NC-32B nor NC-34A is disabled.

QUESTION: 045 (1.00)

With the pressurizer pressure and level control systems/components in AUTO, WHICH ONE of the following abnormal pressurizer/level conditions will cause the pressurizer spray valves to be open while the pressurizer backup heaters are energized?

a. Low level with low pressure

b. Low level with high pressure

c. High level with low pressure

d. High level with high pressure

QUESTION: 046 (1.00)

With the plant operating at 100% power and pressurizer level control selected to Channel I, a system failure causes the following plant events to occur sequentially with NO operator action taken:

- Charging flow reduces to minimum and pressurizer level decreases.
- Letdown isolates and all pressurizer heaters turn off.
- Pressurizer level increases to the high level reactor trip.

WHICH ONE of the following failures has occurred to cause this sequence of events?

a. Level channel I has failed LOW.

b. Level channel I has failed HIGH.

c. Auctioneered High Tavg signal has failed HIGH.

d. Reference level signal has failed to the no-load value.

QUESTION: 047 (1.00)

Given the following conditions on Unit 2:

- Reactor startup is in progress.
- All NI switches are in normal lineup for startup operations in the Source Range.
- Intermediate Range (IR) Channel N35 indicates 8E-11 amps.
- IR channel N36 indicates 1.1E-10 amps.
- No manual Main Control Board blocks have been inserted.
- Source Range (SR) Channel N31 indicates 7E3 cps.
- SR Channel N32 indicates 6E3 cps.

If a SR drawer instrument power fuse blows, causing a loss of high voltage to the Channel N31 SR detector, WHICH ONE of the following describes the plant response under these conditions?

a. A reactor trip signal is generated, resulting in a reactor trip.

b. A reactor trip signal is generated, but no trip occurs because one IR channel is above P-6.

c. No reactor trip signal is generated because one IR channel is already above P-6.

d. No reactor trip signal is generated because Channel N31 output will be failed low.

QUESTION: 048 (1.00)

Given the following conditions on Unit 1:

- The crew is conducting a plant shutdown.
- Reactor power has decreased to 1.2E-11 amps on Intermediate Range (IR) channels N35 and N36.
- An upper detector failure has caused Power Range (PR) channel N41 indication to stabilize at 27%.
- PR channel N43 has a circuitry problem resulting in a constant output of 31%.
- Neither Source Range (SR) channel has energized automatically.

WHICH ONE of the following is the operator action required to energize SR channel N31 under these conditions?

a. Momentarily select RESET on Train A SR Select switch.

b. Momentarily select RESET on Trains A and B SR Select switches.

c. Go to BLOCK on PR High Flux Low Setpoint Block control switch.

d. Go to BYP on NOT P-10 Bypass Switch for PR N41.

QUESTION: 049 (1.00)

Given the following conditions on Unit 1:

- The plant was operating near 100% power.
- A large steam pipe rupture has just been reported in the area of the main turbine stop valves.
- The crew has tripped the reactor and is initiating a manual Main Steam Isolation.
- The operator initially depresses the Train A RESET pushbutton in error.
- He then correctly depresses the Train A INITIATE pushbutton.

WHICH ONE of the following describes the Main Steam Isolation Valve (MSIV) response if NO other operator action is taken?

a. Only MSIVs on SGs "A" and "C" will close.

b. NO MSIVs will close.

c. ALL MSIVs will close immediately.

d. MSIVs on SGs "A" and "C" will close immediately; MSIVs on SGs "B" and "D" will close when the LOW Steamline Pressure setpoint is reached.

QUESTION: 050 (1.00)

An automatic safety injection occurred 8 minutes ago from 100% power due to a steam break outside containment that was isolated by shutting all Main Steam Isolation Valves. The following plant conditions currently exist:

| | |
|---|---|
| NC system pressure: | Restored to 2200 psig |
| Steam generator pressures: | All restored to 980 psig |
| ETA & ETB Busses: | Both energized |
| Reactor Trip Breaker "A": | Opened by SI actuation |
| Reactor Trip Breaker "B": | Closed, never opened |
| Safety Injection and Sequencer Reset buttons: | Depressed, both trains |
| Train "A" NI and ND pumps: | Secured |

If NC system pressure rapidly decreases to 1500 psig now, and no operator action is taken, WHICH ONE of the following describes the response of the NI and ND pumps in Train A and Train B?

a. NI and ND pumps in Train B will be load shed by the sequencer.

b. NI and ND pumps will start in both Train A and Train B.

c. Train A NI and ND pumps will start; Train B NI and ND pumps will continue to run.

d. Train B NI and ND pumps will continue to run; Train A NI and ND pumps will NOT start.

QUESTION: 051 (1.00)

Given the following conditions on Unit 1:

- A large LOCA has caused a reactor trip from full power and a safety injection.
- NC pressure decreased rapidly to saturation pressure.
- All safety injection/ECCS components responded properly.
- All actions required by EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," have been completed.
- The crew is currently performing EP/1/A/5000/E-1, "Loss of Reactor or Secondary Coolant."
- The TSC has just reported that the reactor core is beginning to uncover.

WHICH ONE of the following is the RVLIS display that should be used to confirm this report?

a. Normal D/P

b. Reactor Vessel D/P

c. Reactor Vessel Lower Range

d. Reactor Vessel Upper Range

QUESTION: 052 (1.00)

WHICH ONE of the following describes the automatic response of the Lower Containment Cooling System Air Handling Units if lower containment pressure increases to 0.5 psig?

a. The normal cooling water control valve fully opens.

b. The cooling water bypass valve fully opens; the normal cooling water control valve remains on thermostatic control.

c. The fans shift to high speed and the normal cooling water control valve fully opens.

d. The fans shift to high speed and the cooling water bypass valve fully opens; the normal cooling water control valve remains on thermostatic control.

QUESTION: 053 (1.00)

Select the combination below that completes the following statement.

According to the Precautions in OP/1/A/6450/10, "Containment Hydrogen Control Systems," the Containment Hydrogen Purge System should NOT be used when the containment H2 concentration is below ___(X)___, but the Hydrogen Purge System is the ONLY H2 control system approved for use when the containment H2 concentration is above ___(Y)___.

a. (X) 3%; (Y) 4%

b. (X) 3%; (Y) 6%

c. (X) 4%; (Y) 4%

d. (X) 4%; (Y) 6%

QUESTION: 054 (1.00)

WHICH ONE of the following will occur if the Containment Purge Mode Selector Switch is inadvertently left in the FUEL position when the reactor vessel missile shield is lowered into place after refueling?

a. Negative pressurization of upper and lower containment.

b. Negative pressurization of lower containment and overpressurization of upper containment.

c. Overpressurization of lower containment causing automatic opening of ice condenser doors.

d. Overpressurization of upper and lower containment causing automatic start of containment air return fans.

QUESTION: 055 (1.00)

Given the following conditions on Unit 1:

- The Steam Dump Mode Select Switch is in the TAVG position.
- The plant is operating at 90% full power.

WHICH ONE of the following describes the Steam Dump Control System response if turbine impulse pressure Channel II fails HIGH?

a. All steam dumps will trip open.

b. Steam dumps will NOT respond to a load rejection.

c. All steam dumps will modulate open due to C-7A and C-7B actuation.

d. Steam dump control system will respond to any load rejection sensed on turbine impulse pressure Channel I.

QUESTION: 056 (1.00)

Given the following outputs/indications from the excore nuclear instrumentation channels with power stable during a Unit 1 startup:

N-41: 70% (Upper detector failed HIGH, NO operator action taken)
N-42: 22%
N-43: 24%
N-44: 20%

WHICH ONE of the following is the power range value that is used to set the steam generator level program?

a. 20%

b. 22%

c. 23%

d. 24%

QUESTION: 057 (1.00)

WHICH ONE of the following is the reason a Precaution in OP/1/A/6250/02, "Auxiliary Feedwater System," requires valve 1CA-6 (CA Pumps Suction from CA CST) to remain open during MODE 1 operations?

a. To prevent air binding of the turbine-driven CA pump suction.

b. To prevent inadvertent draining of the Upper Surge Tank.

c. To prevent an undesired automatic suction shift to Nuclear Service Water (RN).

d. To prevent the possibility of losing all three Condensate Grade suction sources from a fire.

QUESTION: 058 (1.00)

Given the following conditions on Unit 1:

- A plant startup is in progress.
- Motor-driven Aux Feed (CA) pumps and flow control valves are being used for SG level control.

WHICH ONE of the following describes the response of the motor-driven CA flow control valves if a CA system motor-driven automatic start occurs from this condition?

a. Valves will remain in initial position; after CA reset occurs, valves will automatically throttle to control SG levels.

b. Valves will remain in initial position; after CA reset occurs, the operator can throttle the valves to control SG levels.

c. Valves will fully open to the travel stop; after CA reset occurs, valves will automatically throttle to control SG levels.

d. Valves will fully open to the travel stop; after CA reset occurs, the operator can throttle the valves to control SG levels.

QUESTION: 059 (1.00)

WHICH ONE of the following actions is required to be taken immediately per EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," if the turbine fails to trip and will NOT trip manually from the main control board?

a. Run back the turbine in MANUAL.

b. Manually initiate Main Steam Isolation.

c. Depress OFF on both LH (electro-hydraulic) pump control pushbuttons.

d. Dispatch operator to trip turbine at front standard.

QUESTION: 060 (1.00)

Given the following conditions on Unit 1:

- The plant was operating at 100% power.
- A pressurizer vapor space rupture has occurred to cause a plant trip and safety injection.
- The crew has transitioned to EP/1/A/5000/E-1, "Loss of Reactor Coolant or Secondary Coolant."
- Adverse containment conditions exist.

WHICH ONE of the following parameters checked in EP/E-1 has alternate values specified for use during adverse containment conditions?

a. Pressurizer level

b. NCS wide-range pressure

c. NCS wide-range RTD temperature

d. Core exit thermocouple temperature

QUESTION: 061 (1.00)

The following conditions exist on Unit 1 with a leaking pressurizer PORV:

- The reactor is shutdown.
- Pressurizer pressure is steady at 1985 psig.
- Pressurizer relief tank (PRT) pressure is steady at 15 psig.
- PRT temperature is steady at 110 degrees F.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%.

WHICH ONE of the following will be the approximate temperature indicated on the Relief Valve Discharge monitor (1NCRD5940) due to the leaking pressurizer PORV?

a. 170 F.

b. 220 F.

c. 250 F.

d. 300 F.

QUESTION: 062 (1.00)

Given the following conditions on Unit 1:

- The plant was stable at full power.
- A LOCA has occurred to cause a safety injection.
- Pressurizer pressure is stable at 1350 psig.
- Containment temperature is 155 degrees F.
- Actual pressurizer level is 50%.

Select the combination below that fills in the following blanks concerning the effects of these conditions on the pressurizer level indicated on Channel I.

The pressurizer pressure being below normal tends to make the indicated pressurizer level read ___(X)___ than actual; the containment temperature being above normal tends to make the indicated pressurizer level read ___(Y)___ than actual.

a. (X) Lower; (Y) Lower.

b. (X) Lower; (Y) Higher.

c. (X) Higher; (Y) Lower.

d. (X) Higher; (Y) Higher.

QUESTION: 063 (1.00)

WHICH ONE of the following is the reason EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," requires tripping the NC pumps (NCPs) if containment pressure has exceeded 3 psig?

a. To prevent intake of containment spray water droplets into NCP stator cooling air louvers.

b. To prevent NCP overheating which would eventually result in shaft seizure.

c. To minimize the NC break flow rate to reduce the containment pressure transient.

d. To minimize the time the NCP operates in cavitation if the high containment pressure is due to a LOCA.

QUESTION: 064 (1.00)

Given the following conditions on Unit 1:

- The plant is operating at 100% power.
- EMF-33 (Condenser Air Ejector Monitor) has just alarmed due to a 10 gpm steam generator (SG) tube leak.
- All Automatic actions initiated by EMF-33 have occurred, and have been left in the automatic-actuated condition.

Under these plant conditions, which ONE of the following has the highest likelihood of determining which SG has the leak?

a. Checking feedwater (CF) flow rates

b. Enabling EMF-34 (SG Sample Monitor)

c. Frisking SG sample cation columns

d. Observing EMF-71, 72, 73, 74 (SG Leakage)

QUESTION: 065 (1.00)

Given the following conditions on Unit 1:

- The plant is operating at 100% power.
- Unknown to the operators, one main condenser vacuum detector is failed AS IS at 29 inches Hg vac.
- An extended loss of all offsite power has just occurred.
- Both reactor trip breakers have opened.

WHICH ONE of the following will be the response of the condenser steam dumps to these conditions and events? (Assume NO operator action is taken concerning the condenser steam dumps.)

a. Will NOT open during this event because C-9 is lost when loss of all offsite power occurs.

b. Will open initially and then close when the second condenser vacuum detector decreases below 15 inches Hg vac.

c. Will open and remain open because one condenser vacuum detector is failed at 29 inches Hg vac.

d. Will NOT open initially, but will open when the second condenser vacuum detector decreases below 15 inches Hg vac.

QUESTION: 066 (1.00)

WHICH ONE of the following is the reason the Unit 2 Digital Feedwater Control System (DFCS) reduces each steam generator (SG) level setpoint to 50% after 2 minutes if one Feedwater Pump trips when the plant is operating at full rated power?

a. To reduce NCS cooldown rate.

b. To prevent a Reactor Trip on high pressurizer pressure due to partial loss of feed flow.

c. To prevent subsequent Feedwater Isolation on Hi-Hi SG level.

d. To prevent subsequent Feedwater Isolation due to possible reactor trip and low NCS Tavg.

QUESTION: 067 (1.00)

WHICH ONE of the following lineups can be used on the Lower Containment Ventilation System air handling units if it is desired to reduce containment temperature below 100 degrees F for a containment building entry during Mode 3 operations to restore containment integrity?

a. Fans in low speed; Normal cooling water flow control valve failed open.

b. Fans in low speed; cooling water bypass valve failed open and normal cooling water flow control valve on thermostatic control.

c. Fans in high speed; Normal cooling water flow control valve failed open.

d. Fans in high speed; cooling water bypass valve failed open and normal cooling water flow control valve failed open.

QUESTION: 068 (1.00)

Select the combination below that completes the following statement.

The Start/Enable signal for a Containment Air Return (CAR) fan requires ___(X)___ Containment Pressure Control System (CPCS) pressure transmitter(s) to sense a pressure increase to 0.4 psig; the Stop signal for a CAR fan requires ___(Y)___ CPCS pressure transmitter(s) to sense a pressure decrease to 0.3 psig.

a. (X) one; (Y) one

b. (X) one; (Y) two

c. (X) two; (Y) two

d. (X) two; (Y) one

QUESTION: 069 (1.00)

Given the following conditions on Unit 1:

- The plant was operating at 100% power.
- A pipe rupture upstream of a pressurizer safety valve has caused a plant trip and safety injection.
- The crew has transitioned to EP/1/A/5000/E-1, "Loss of Reactor or Secondary Coolant."

WHICH ONE of the following combinations of parameters, if indicating an abnormally large rapid increase, would confirm a RVLIS indication that core uncovery was occurring?

a. Gamma-Metrics flux levels and Pressurizer pressure.

b. Containment radiation levels and Pressurizer pressure.

c. Gamma-Metrics flux levels and Pressurizer level.

d. Containment radiation levels and Pressurizer level.

QUESTION: 070 (1.00)

Given the following plant conditions on Unit 1:

- The reactor was operating at 100% power.
- A loss of all offsite power has occurred.
- The reactor and turbine have tripped.
- After 30 seconds, neither diesel generator has started automatically.

Per EP/1/A/5000/ECA-0.0, "Loss of All AC Power," WHICH ONE of the following combinations is the PREFERRED sequence of methods for attempting to start the diesel generators (D/Gs) if the autostart is NOT successful?

a. Manually initiate SI; THEN manually start from Control Room.

b. Manually initiate SI; THEN locally start from D/G room.

c. Manually start from Control Room; THEN locally start from D/G room.

d. Manually start from Control Room; THEN manually initiate SI.

QUESTION: 071 (1.00)

EP/1/A/5000/ECA-0.0, "Loss of All AC Power," requires depressurization of all intact steam generators (SGs) to 165 psig if AC power CANNOT be regained.

WHICH ONE of the following is the reason for the CAUTION prior to the depressurization step that warns against allowing SG pressures to decrease below 65 psig?

a. To prevent runout of the ND pumps when power is restored.

b. To prevent injection of accumulator nitrogen into the NC system.

c. To ensure T-cold remains above NCS INTEGRITY RED Path criterion.

d. To ensure delta-P across SG tubewalls remains within limits.

QUESTION: 072 (1.00)

Given the following conditions on Unit 1:

- The reactor was operating at 100% power.
- A loss of all offsite power has occurred.
- The reactor and turbine have tripped.
- Both diesel generators (D/Gs) have started automatically, but neither 1ETA or 1ETB has loaded automatically.
- Both Normal feeder breakers from ATC/ATD are open.
- Both Alternate feeder breakers from SATA/SATB are open.
- NO lockouts have occurred on bus 1ETA or 1ETB.

WHICH ONE of the following is the reason that EP/1/A/5000/ECA-0.0, "Loss of All AC Power," directs the diesel generators to be shutdown at this point rather than attempting to manually energize the 1ETA/ETB busses?

a. The time required for manual energizing would cause excessive overheating of the D/Gs.

b. The procedure for manual energizing does NOT cover closing a D/G breaker onto a dead bus.

c. The status of 1ETA/1ETB load shed is uncertain, so manual energizing may cause D/G overloading.

d. The electrical interlocks for manual energizing CANNOT be satisfied under these conditions.

QUESTION: 073 (1.00)

Given the following conditions on Unit 1:

- Reactor is at 100 percent power.
- Power is lost to 120 VAC panelboard 1ERPB.

WHICH ONE of the following will occur?

a. Reactor trip on Power Range High Flux.

b. "B" steam generator level decreases to Lo-Lo trip point.

c. N-42 fails high causing rods to step in initially.

d. Overpower Rod Stop would prevent outward rod motion if attempted.

QUESTION: 074 (1.00)

WHICH ONE of the following would be a "follow-up notification" when making emergency notifications to the states and counties?

a. The required "30-MINUTE NOTIFICATION" following the declaration of a GENERAL EMERGENCY.

b. The notification of an upgrade in emergency classification to GENERAL EMERGENCY.

c. The notification of a downgrade in emergency classification to SITE AREA EMERGENCY.

d. The notification of an injured person while in a SITE AREA EMERGENCY.

QUESTION: 075 (1.00)

The sealed box containing the high radiation area lock master keys at Unit 2 is found to be open.

WHICH ONE of the following describes the action to be initiated by the Operations Shift Manager?

a. The Shift Operating Engineer must inventory the keys and reseal the box.

b. The Operations Shift Manager must inventory the keys and reseal the box.

c. Radiation Protection must inventory the keys and the Operations Shift Manager must reseal the box.

d. Radiation Protection must inventory the keys and reseal the box.

QUESTION: 076 (1.00)

WHICH ONE of the following is the person responsible for ensuring entries are made in the Technical Specification Action Item Log?

a. Shift Work Manager.

b. Operator at the Controls.

c. Control Room SRO.

d. Shift Support Assistant.

QUESTION: 077 (1.00)

WHICH ONE of the following is the MINIMUM required number of supplemental (Administrative) members assigned to the fire brigade each shift?

a. 4

b. 5

c. 6

d. 7

QUESTION: 078 (1.00)

The following conditions exist at Unit 1:

- A Loss of Coolant Accident has occurred.
- The crew is performing EP/1/A/5000/E-1, "Loss of Reactor or Secondary Coolant."
- A RED path condition is noted on the computer for Containment Integrity.
- The Control Room Supervisor directs a transition to EP/1/A/5000/FR-Z.1, "Response to High Containment Pressure".
- As the procedure reader is reading the "Symptoms or Entry Conditions" of EP/FR-Z.1, the RED path indication clears on Containment Integrity and turns YELLOW.

WHICH ONE of the following describes the action to be taken?

a. Complete EP/FR-Z.1 to ensure the RED path condition does NOT recur.

b. Return to EP/E-1 without initiating EP/FR-Z.1.

c. Complete EP/FR-Z.1 to clear the YELLOW path on Containment Integrity.

d. Check for any higher priority YELLOW paths and take action to clear the highest priority.

QUESTION: 079 (1.00)

WHICH ONE of the following reactor control (IRX) system components converts the mismatch between the rate of change of reactor power and the rate of change of turbine power into a temperature error signal?

a. Variable gain unit.

b. Non-linear gain unit.

c. Combined error signal summer unit.

d. Power mismatch rate comparator (derivative unit).

QUESTION: 080 (1.00)

WHICH ONE of the following NC System leakage detection systems must be OPERABLE for continued Mode 1 operations (i.e., WHICH system has NO alternate methods or backups)? (Technical Specification 3.4.6 is available for reference.)

a. The Containment Atmosphere Particulate Radioactivity Monitoring System

b. The Containment Atmosphere Gaseous Radioactivity Monitoring System

c. The Containment Ventilation Unit Condensate Drain Tank Level Monitoring Subsystem

d. The Containment Floor and Equipment Sump Level and Flow Monitoring Subsystem

QUESTION: 081 (1.00)

Given the following plant conditions:

- NC system T-avg is 375 degrees F.
- NC system pressure is 1400 psig.
- NC system temperature and pressure must be held at current values.

WHICH ONE of the following is the reason NI pump "A" is the preferred pump to use for increasing the level in C cold leg accumulator (CLA) under these conditions?

a. Using NI pump "A" will make only one NI train INOPERABLE.

b. Using NI pump "A" requires local repositioning of only one valve.

c. Using NI pump "A" results in a higher flowrate and shorter fill time.

d. Using NI pump "A" will maintain both NI trains OPERABLE.

QUESTION: 082 (1.00)

Given the following conditions on Unit 1:

- Reactor power is stable at 90%.
- Routine testing of Train B SSPS was in progress.
- Testing has been paused because reactor trip breaker "B" (RTB) did NOT open on a Train B SSPS test trip signal as expected.
- The test trip signal has been cleared and all Train B SSPS switches have been returned to normal.
- Bypass breaker "B" (BYB) has been reopened and racked out.

If the crew inadvertently racks in and closes Bypass breaker "A" (BYA) for conducting a Train B SSPS trip retest, WHICH ONE of the following describes when a reactor trip will occur, if at all, during the retest?

a. When BYA is racked in and closed.

b. When the Train B SSPS is taken to test.

c. When the retest trip signal is generated in Train B SSPS.

d. The reactor will NOT trip if the problem is in RTB because RTA and RTB will remain closed during the retest.

QUESTION: 083 (1.00)

Given the following conditions on Unit 1:

- The reactor and main turbine are stable at 68% power.
- All control systems are in AUTO except rod control, which is in MANUAL.

WHICH ONE of the following events causes the Loop "B" overtemperature (OT) delta-T trip setpoint to INCREASE? Assume each event occurs separately.

a. Loop "B" T-avg unit output fails HIGH.

b. N42 power range lower detector fails HIGH.

c. Channel II pressurizer pressure detector fails HIGH.

d. Power is increased to 100% with a normal power ramp.

QUESTION: 084 (1.00)

Given the following conditions on Unit 2:

- The plant was operating at 100% power.
- A Hi-Hi S/G Level trip and Feedwater (CF) Isolation have occurred.
- Steam Generator (S/G) levels are "A" 76%, "B" 78%, "C" 75%, and "D" 75%.
- NC System Tavg is 557 deg. F.
- NC System pressure is 2200 psig.

WHICH ONE of the following combinations of actions must the operator perform prior to depressing the RESET pushbutton in order to reset the CF Isolation signal?

a. Reduce "B" S/G level below trip setpoint and heat up NCS above Low Tavg setpoint.

b. Heat up NCS above Low Tavg setpoint and reduce NCS pressure below P-11.

c. Reduce "B" S/G level below trip setpoint and close reactor trip breakers.

d. Close reactor trip breakers and heat up NCS above Low Tavg setpoint.

QUESTION: 085 (1.00)

WHICH ONE of the following describes the conditions that will FIRST clear the RPI AT BOTTOM ROD DROP alarm during a reactor startup?

a. When all shutdown banks are fully withdrawn, and Control Bank "A" is withdrawn past 3 steps.

b. When all shutdown banks are fully withdrawn, and Control Banks "A" and "B" are withdrawn past 6 steps.

c. When all shutdown banks and Control Banks "A" and "B" are fully withdrawn, and the Bank Overlap Unit is manually reset.

d. When Control Bank "C" is withdrawn past the rod insertion limit, and the Bank Overlap Unit is manually reset.

QUESTION: 086 (1.00)

Given the following conditions on Unit 1:

- The reactor is at 100% power.
- The plant has operated at full rated power for 4 months.
- The Reactor Group has adjusted the Venturi Fouling Factor 2% due to fouling of the steam generator feed flow venturis.
- A series of rapid downpower/uppower transients will be conducted before returning the plant to full rated power.

WHICH ONE of the following states the action that must be taken concerning the Venturi Fouling Factor (VFF) to ensure accurate thermal power indications when the plant is returned to full power?

a. Adjust the VFF upward from 0.98 to 1.0.

b. Adjust the VFF upward from 1.0 to 1.02.

c. Adjust the VFF downward from 1.02 to 1.0.

d. Adjust the VFF downward from 1.0 to 0.98.

QUESTION: 087 (1.00)

WHICH ONE of the following is the arrangement of the NCS loop wide-range pressure detectors that provides the pressure permissive signal to allow opening the ND pump 1A loop suction from loop "B" (ND-1B, ND-2A)?

a. NCS loop "B" pressure detector inputs ND-1B; ND-2A from NCS loop "A" pressure detector.

b. NCS loop "B" pressure detector inputs ND-1B; ND-2A from NCS loop "C" pressure detector.

c. NCS loop "C" pressure detector inputs ND-1B; ND-2A from NCS loop "A" pressure detector.

d. NCS loop "C" pressure detector inputs ND-1B; ND-2A from NCS loop "B" pressure detector.

QUESTION: 088 (1.00)

WHICH ONE of the following states the Operator Aid Computer (OAC) indications for an incore thermocouple (T/C) that is being monitored at the Incore Thermocouple Panel?

a. The OAC temperature reading will be yellow.

b. The OAC temperature reading will be flashing.

c. The OAC will show an alarm for the disconnected T/C.

d. The OAC temperature location will be blank for the disconnected T/C.

QUESTION: 089 (1.00)

WHICH ONE of the following is the MINIMUM Spent Fuel Pool water depth allowed by Technical Specifications, and the basis for requiring this level to be maintained?

a. 6 feet below walking deck level to provide adequate NPSH for operation of Spent Fuel Pool Cooling Pumps.

b. 6 feet below walking deck level to ensure leakage of weir gate seal to empty fuel transfer canal will NOT drop level below tops of irradiated fuel assemblies.

c. 23 feet above irradiated fuel assemblies to provide adequate radiation shielding for unrestricted access of plant personnel.

d. 23 feet above irradiated fuel assemblies to provide adequate filtration of fission gas released from a ruptured assembly.

QUESTION: 090 (1.00)

Given the following conditions on Unit 1:

- A plant power reduction is in progress.
- Control Bank (CB) D rod M-12 position has remained at 196 steps.
- CB D step counters have decreased to 178 steps during the power reduction.
- The operators are stabilizing steam generator levels after the power reduction.
- Rod E-3 in Shutdown Bank C has just dropped to the bottom of the core.

WHICH ONE of the following actions is required by OP/1/A/6150/08, "Rod Control," for these conditions?

a. Recover the dropped rod and restore T-ref to T-avg before realigning the misaligned rod.

b. Realign the misaligned rod and restore T-avg to T-ref before recovering the dropped rod.

c. Request Reactor Engineering to provide guidance on which rod should be recovered first.

d. Perform a plant shutdown and be in HOT STANDBY (Mode 3) within 6 hours.

QUESTION: 091 (1.00)

Given the following conditions on Unit 1:

- The plant was operating at steady-state full power when a loss of off-site power and all NC pumps occurred.
- The following indications are observed during performance of Step 2 of EP/1/A/5000/E-0, "Reactor Trip or Safety Injection."
  - All rod bottom lights are dark.
  - RTB indicates closed; RTA, BYA, and BYB indicate open.
  - Indicated amps are decreasing on both N35 and N36 Intermediate Range channels.
- The above indications do NOT change when the manual reactor trip switches are actuated.

WHICH ONE of the following actions should be taken by the crew?

a. Go to EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ ATWS."

b. Continue in EP/E-0; intent of step has been met.

c. Continue in EP/E-0 and dispatch an operator to shift rod position indication to the alternate power source.

d. Remain at Step 2 of EP/E-0 until RTB is opened locally or rod bottom light indication is restored.

QUESTION: 092 (1.00)

WHICH ONE of the following methods of removing a void in the reactor vessel head is the most effective method for removing a non-condensible gas void?

a. Starting an NC pump.

b. Repressurizing the NC system.

c. Opening a reactor vessel head vent.

d. Increasing charging flow to the NC system until the pressurizer is nearly solid.

QUESTION: 093 (1.00)

Given the following conditions on Unit 1:

- A large-break LOCA has occurred.
- EP/1/A/5000/E-1 "Loss of Reactor or Secondary Coolant," was entered.
- EP/E-1 was suspended at step 12 (Evaluate plant status) to transition to EP/1/A/5000/FR-Z.1, "Response to High Containment Pressure," based on an ORANGE path in CONTAINMENT INTEGRITY.
- While the crew was performing EP/FR-Z.1, the RO reported that the criteria for shifting to cold leg recirculation per EP/1/A/5000/ES-1.3, "Transfer to Cold Leg Recirculation," were satisfied.
- No RED paths or other ORANGE paths are present.

WHICH ONE of the following describes the actions required to be taken by the crew at this point? (EP/1/A/5000/ES-1.3, "Transfer to Cold Leg Recirculation," is provided for reference.)

a. Stop EP/FR-Z.1, perform all steps of EP/ES-1.3, and then return to EP/FR-Z.1.

b. Stop EP/FR-Z.1, perform the first 8 steps of EP/ES-1.3 and then return to EP/FR-Z.1.

c. Continue with EP/FR-Z.1 until completion, then perform all steps of EP/ES-1.3, and then return to step 12 of EP/E-1.

d. Continue with EP/FR-Z.1 until completion, then return to step 12 of EP/E-1, and then transition to EP/ES-1.3.

QUESTION: 094 (1.00)

WHICH ONE of the following is the reason for immediately tripping the turbine in response to an ATWS at high power level, even though a rapid increase in NCS temperature and pressure will likely result?

a. To shutdown the reactor by adding negative reactivity as moderator temperature increases.

b. To prevent turbine overspeed when the main generator output breakers subsequently open.

c. To maintain steam generator inventory for a coincident loss of feedwater.

d. To follow E-0, "Reactor Trip or Safety Injection," as closely as possible so repetition of the initial steps will NOT be necessary when the reactor is ultimately tripped.

QUESTION: 095 (1.00)

With a steam line rupture in progress on Unit 1, the crew has just returned to step 2 of EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," after transitioning to EP/1/A/5000/FR-S.1, "Response to Nuclear Power Generation/ATWS." The crew now notes that a RED path exists on Heat Sink because:

- All CA pumps are stopped.
- Total feedwater flow is 0 gpm.
- All S/G narrow range levels are below 11%.

At this point, WHICH ONE of the following is the correct time to transition to EP/1/A/5000/FR-H.1, "Response to Loss of Secondary Heat Sink"?

a. Immediately.

b. Upon completing the EP/E-0 Immediate Action steps.

c. During the check of total CA flow at step 18 of EP/E-0.

d. Upon transitioning to EP/1/A/5000/E-2, "Faulted Steam Generator Isolation," if directed by the Critical Safety Function Status Trees at that time.

QUESTION: 098 (1.00)

Given the following conditions that have just started on Unit 1:

- Reactor power is stable at 90%.
- Pressurizer level is DECREASING at 50%.
- PZR LO LEVEL DEVIATION annunciator is alarming
- REGEN HX LETDN HI TEMP annunciator is alarming.
- CHARGING LINE HI/LO FLOW annunciator is alarming at 150 gpm.
- NCP SEAL WTR LO FLOW annunciator is NOT alarming.
- No other annunciators are currently alarming.

WHICH ONE of the following events could cause these conditions?

a. Loss of running charging pump.

b. Closure of letdown isolation valve.

c. Failed open NV pump discharge flow control valve (NV-294).

d. Rupture on charging line at containment penetration.

QUESTION: 096 (1.00)

WHICH ONE of the following is the reason that the Technical Specification Action Statement for excessive Specific Activity in the reactor coolant system requires Tavg to be decreased below 500 degrees F after the reactor is brought to HOT STANDBY?

a. To prevent an uncontrolled release of radioactivity if a steam generator tube ruptures.

b. To minimize potential for containment contamination from inadvertent pressurizer PORV operation.

c. To limit the cladding temperature to minimize the release of additional fission products into the coolant.

d. To reduce the possibility of a subsequent pressurized thermal shock condition by limiting the amount of NC system cooldown potential.

QUESTION: 097 (1.00)

An NC System (NCS) sample taken during a large increase in plant power determines that the NCS DOSE EQUIVALENT I-131 activity is 10 microCuries per gram, thus exceeding the Technical Specifications limit by a factor of 10.

WHICH ONE of the following is the reason the Technical Specifications limit can be postponed and plant operations can continue for up to 48 hours with the high I-131 level?

a. Crud flushed from the pressurizer surge line during the power level change can interfere with the iodine analysis.

b. Changes in xenon concentration due to increased power level can cause a temporary increase in coolant iodine concentration.

c. Fuel rod expansion during power level increases can cause iodine spiking due to releases from pinhole defects in the clad.

d. Axial power oscillations after power level changes can cause xenon oscillations that result in iodine oscillations.

QUESTION: 099 (1.00)

The following plant conditions exist:

- The reactor was operating at 100% power.
- A valid reactor trip signal has been received.
- Automatic reactor trip did NOT occur.
- The reactor CANNOT be tripped manually.
- The turbine has been tripped.
- Tavg has increased to 610 degrees F in all NC loops.
- The Feedwater and motor-driven CA pumps are running.
- Emergency boration operations have been initiated.
- NC system pressure is 2350 psig.

WHICH ONE of the following is the method of reducing NC system pressure directed by EP/1/A/5000/FR-S.1, "Nuclear Power Generation/ATWS"?

a. Use pressurizer PORVs

b. Actuate Safety Injection

c. Manually open pressurizer spray valves

d. Open NV Supply to Pressurizer Aux Spray, NV-37, to initiate auxiliary pressurizer spray

QUESTION: 100 (1.00)

Per EP/1/A/5000/ECA-0.0, "Loss of All AC Power" WHICH ONE of the following is used for depressurizing all intact steam generators after a loss of all AC power?

a. Steam generator PORVs in AUTO.

b. Steam generator PORVs in MANUAL.

c. Atmospheric steam dumps in T-AVG mode.

d. Atmospheric steam dumps in STEAM PRESS mode.

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

ANSWER: 001 (1.00)

d.

REFERENCE:

OMP 1-7, pg. 5.

194001K109 [3.4/3.4]

194001K109 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

OP-CN-PS-CCM, pg. 10.

KA 194001A101 [3.3/3.4]

194001A101 ..(KA's)

ANSWER: 003 (1.00)

b.

REFERENCE:

NSD 109 pg. 109-5

KA 194001K114 [3.3/3.6]

194001K114 ..(KA's)

ANSWER: 004 (1.00)

b. ~~c~~ d QJ 5/21/96

REFERENCE:

NSD 500, pg. 500-31, OMP 2-18, Attachment 7, pg. 3.

KA 194001K102 [3.7/4.1]

194001K102 ..(KA's)

ANSWER: 005 (1.00)

b.

REFERENCE:

CNS Site Directive 3.1.2, pg. 3 and 5.

KA 194001K105 [3.1/3.4]

194001K105 ..(KA's)

ANSWER: 006 (1.00)

d.

REFERENCE:

OMP 2-33, pg. 4.

KA 194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

OMP 1-8, pg. 4.

KA 194001A111 [2.8/4.1]

[Similar question used on 11/94 NRC exam]

194001A111 ..(KA's)

ANSWER: 008 (1.00)

c.

REFERENCE:

Radiation Worker Training, pg. 33.

KA 194001K103 [2.8/3.4]

194001K103 ..(KA's)

ANSWER: 009 (1.00)

c.

REFERENCE:

OMP 2-16, pg. 4.

KA 194001A102 [4.1/3.9]

194001A102 ..(KA's)

ANSWER: 010 (1.00)

c.

REFERENCE:

OMP 2-17, pg. 2.

KA 194001A106 [3.4/3.4]

194001A106 ..(KA's)

ANSWER: 011 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IRE, pg. 19.

KA 001050A101 [4.0/4.2]

001050A101 ..(KA's)

ANSWER: 012 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, Page 34; OP/1/A/6150/06 Prec. 2.27.

KA 002000G010 [3.4/3.9]

Similar question used on 10/92 NRC exam.

002000G010 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, pg. 41.

KA 002000K410 [4.2/4.4]

002000K410 ..(KA's)

ANSWER: 014 (1.00)

c.

REFERENCE:

LP OP-CN-PS-NCP, pg. 25, 26.

KA 062000K402 [2.5/2.7]

062000K402 ..(KA's)

ANSWER: 015 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NCP, pg. 14.

KA 003000A203 [2.7/3.1]

003000A203 ..(KA's)

ANSWER: 016 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NV, pg. 19.

KA 003000K104 [2.6/2.9]

003000K104 ..(KA's)

ANSWER: 017 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NV, pg. 13, 14.

KA 004010K403 [3.1/3.6]

004010K403 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NV, pg. 17.

KA 004020K504 [2.6/3.1]

004020K504 ..(KA's)

ANSWER: 019 (1.00)

c.

REFERENCE:

LP CN-OP-PS-ND, pg. 10.

KA 005000K203 [2.7/2.8]

005000K203 ..(KA's)

ANSWER: 020 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-CLA, pg. 10.

KA 006020K602 [2.6/2.8]

006020K602 ..(KA's)

ANSWER: 021 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-KC, pg. 16.

KA 008030A301 [3.0/3.1]

008030A301 ..(KA's)

ANSWER: 022 (1.00)

d.

REFERENCE:

LP OP-CN-PSS-KC, pg. 21.

KA 008030A304 [3.6/3.7]

008030A304 ..(KA's)

ANSWER: 023 (1.00)

c.

REFERENCE:

LP OP-CN-PS-NC, pg. 29.

KA 010000K401 [2.7/2.9]

010000K401 ..(KA's)

ANSWER: 024 (1.00)

c.

REFERENCE:

LP OP-CN-PS-IPE, pg. 10, 11.

KA 010000A302 [3.6/3.5]

010000A302 ..(KA's)

ANSWER: 025 (1.00)

b.

REFERENCE:

LP OP-CN-PS-IPE, pg. 17.

KA 062000K301 [3.5/3.9]

062000K301 ..(KA's)

ANSWER: 026 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ILE, pg. 8.

KA 011000K407 [2.9/3.2]

011000K407 ..(KA's)

ANSWER: 027 (1.00)

a.

REFERENCE:

LP OP-CN-DG-EQB, pg. 13.

KA 013000K108 [3.6/3.8]

013000K108 ..(KA's)

ANSWER: 028 (1.00)

b.

REFERENCE:

LP OP-CN-PSS-KC, pg. 14.

KA 013000A206 [3.7/4.0]

013000A206 ..(KA's)

ANSWER: 029 (1.00)

c.

REFERENCE:

LP OP-CN-IC-EDA, pg. 12.

KA 014000A102 [3.2/3.6]

014000A102 ..(KA's)

ANSWER: 030 (1.00)

b.

REFERENCE:

LP OP-CN-IC-IPX, pg. 21; LP OP-CN-IC-ENB, pg. 12.

KA 015000A303 [3.9/3.9]

015000A303 ..(KA's)

ANSWER: 031 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, pg. 22.

KA 016000K101 [3.4/3.4]

016000K101 ..(KA's)

ANSWER: 032 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 12.

KA 026000A301 [4.3/4.5]

026000A301 ..(KA's)

ANSWER: 033 (1.00)

b.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 13.

KA 026000G010 [3.3/3.5]

026000G010 ..(KA's)

ANSWER: 034 (1.00)

d.

REFERENCE:

Technical Specifications 3.4.6.2.

KA 000009G008 [3.2/3.9]

000009G008 ..(KA's)

ANSWER: 035 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 14.

KA 000011A113 [4.1/4.2]

000011A113 ..(KA's)

ANSWER: 036 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NCP, pg. 36.

KA 000015K207 [2.9/2.9]

000015K207 ..(KA's)

ANSWER: 037 (1.00)

d.

REFERENCE:

AP/1/A/5500/15, pg. 5.

000001A203 [4.5/4.8]

000001A203 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IRE, pg. 14.

KA 000003G009 [3.6/3.6]

000003G009 ..(KA's)

ANSWER: 039 (1.00)

b.

REFERENCE:

LP OP-CN-IC-ENC, pg. 9, 10.

KA 000022G009 [3.2/3.2]

000022G009 ..(KA's)

ANSWER: 040 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-RC, pg. 12; LP OP-CN-PS-NV, pg. 27.

KA 000024A206 [3.6/3.7]

000024A206 ..(KA's)

ANSWER: 041 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ND, pg. 14.

KA 000025K101 [3.9/4.3]

000025K101 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-KC, pg. 11.

KA 000026A105 [3.1/3.1]

000026A105 ..(KA's)

ANSWER: 043 (1.00)

a.

REFERENCE:

OP-CN-PS-IPE, pg. 19, 20.

KA 000027A216 [3.6/3.9]

000027A216 ..(KA's)

ANSWER: 044 (1.00)

a.

REFERENCE:

OP-CN-PS-IPE, pg. 16.

KA 000027A218 [3.4/3.5]

000027A218 ..(KA's)

ANSWER: 045 (1.00)

d.

REFERENCE:

LP OP-CN-PS-ILE, pg. 9.

KA 000028A212 [3.1/3.5]

000028A212 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ILE, pg. 15.

KA 000028A201 [3.4/3.6]

000028A201 ..(KA's)

ANSWER: 047 (1.00)

a.

REFERENCE:

LP OP-CN-IC-ENB, pg. 10; SR Drawer front drawing

KA 000032A209 [2.5/2.9]

000032A209 ..(KA's)

ANSWER: 048 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IPX, pg. 17.

KA 000032A101 [3.1/3.4]

000032A101 ..(KA's)

ANSWER: 049 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 21.

KA 000040A101 [4.6/4.6]

000040A101 ..(KA's)

ANSWER: 050 (1.00)

d.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 16.

KA 000040A101 [4.6/4.6]

000040A101 ..(KA's)

ANSWER: 051 (1.00)

c.

REFERENCE:

LP OP-CN-PS-CCM, pg. 9, 10.

KA 000074A101 [4.2/4.4]

000074A101 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

LP OP-CN-CNT-VV, pg. 14.

KA 022000K402 [3.1/3.4]

022000K402 ..(KA's)

ANSWER: 053 (1.00)

b.

REFERENCE:

OP/1/A/6150/10, pg. 1.

KA 028000A101 [3.4/3.8]

028000A101 ..(KA's)

ANSWER: 054 (1.00)

b.

REFERENCE:

LP OP-CN-CNT-VP, pg. 8, 9.

KA 029000G010 [2.9/3.1]

029000G010 ..(KA's)

ANSWER: 055 (1.00)

b.

REFERENCE:

LP OP-CN-STM-IDE, pg. 12.

KA 041020A408 [3.0/3.1]

041020A408 ..(KA's)

ANSWER: 056 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CF-IFE, pg. 13.

KA 059000A302 [2.9/3.1]

059000A302 ..(KA's)

ANSWER: 057 (1.00)

c.

REFERENCE:

LP OP-CN-CF-CA, pg. 10.

KA 061000G010 [3.5/3.6]

061000G010 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CA, pg. 14.

KA 061000A303 [3.9/3.9]

061000A303 ..(KA's)

ANSWER: 059 (1.00)

a.

REFERENCE:

EP/1/A/5000/E-0, pg. 4.

KA 000007G010 [4.2/4.1]

000007G010 ..(KA's)

ANSWER: 060 (1.00)

a.

REFERENCE:

LP OP-CN-EP-EP1, Obj. 4.2; EP/1/A/5000/E-1.

000008K202 [2.7/2.7]

000008K202 ..(KA's)

ANSWER: 061 (1.00)

c.

REFERENCE:

Steam Tables

KA 000008K302 [3.6/4.1]

000008K302 ..(KA's)

ANSWER: 062 (1.00)

d.

REFERENCE:

LP OP-CN-PS-ILE, pg. 16.

KA 000009A204 [3.8/4.0]

000009A204 ..(KA's)

ANSWER: 063 (1.00)

b.

REFERENCE:

E-0 Bkgd Doc, pg. 12; AP/1/A/5500/21, pg. 3.

KA 000011K314 [4.1/4.2]

Similar question used on 11/94 NRC exam

000011K314 ..(KA's)

ANSWER: 064 (1.00)

d.

REFERENCE:

LP OP-CN-WE-EMF, pg. 10; AP/1/A/5500/10, pg. 7.

KA 000037A104 [3.6/3.9]

000037A104 ..(KA's)

ANSWER: 065 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IPX, pg. 23.

KA 000051K301 [2.8/3.1]

000051K301 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

LP OP-CN-CF-IFE, Rev. 19, pg. 21.

KA 000054A202 [4.1/4.4]

000054A202 ..(KA's)

ANSWER: 067 (1.00)

a.

REFERENCE:

LP OP-CN-CNT-VV, pg. 13.

KA 000069A101 [3.5/3.7]

000069A101 ..(KA's)

ANSWER: 068 (1.00)

a.

REFERENCE:

LP CN-OP-CNT-VX, pg. 10.

KA 000069A202 [3.9/4.4]

NOTE: Needs facility verification; Training drawing CN-ECCS-NS-04 does not indicate the CPCS transmitter redundancy described in Lesson Plan reference.

000069A202 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

Exam Bank EP-CSF #181.

KA 000074K102 [4.6/4.8]

000074K102 ..(KA's)

ANSWER: 070 (1.00)

d.

REFERENCE:

EP/1/A/5000/ECA-0.0, Bkgd Doc, pg. 7.

KA 000055A203 [3.9/4.7]

000055A203 ..(KA's)

ANSWER: 071 (1.00)

b.

REFERENCE:

EP/1/A/5000/ECA-0.0 Bkgd Doc, pg. 23.

KA 000055K302 [4.3/4.6]

000055K302 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

EP/ECA-0.0 Bkgd Doc, pg. 7.

KA 000056K302 [4.4/4.7]

000056K302 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

LP CN-OP-EL-EPL, page 19.
Exam Bank

KA 000057A219 [4.0/4.3]

Similar question used on 11/94 NRC exam.

000057A219 ..(KA's)

ANSWER: 074 (1.00)

d.

REFERENCE:

RP/0/A/5000/05, pg. 2; RP/0/A/5000/06B, pg. 3.

KA 194001A116 [3.1/4.4]

194001A116 ..(KA's)

ANSWER: 075 (1.00)

d.

REFERENCE:

OMP 2-9, pg. 5.

KA 194001A112 [3.1/4.1]

194001A112 ..(KA's)

ANSWER: 076 (1.00)

c.

REFERENCE:

OMP 2-29, pg. 3.

KA 194001A106 [3.4/3.4]

194001A106 ..(KA's)

ANSWER: 077 (1.00)

b.

REFERENCE:

OMP 1-10, pg. 3.

KA 194001K116 [3.5/4.2]

194001K116 ..(KA's)

ANSWER: 078 (1.00)

b.

REFERENCE:

OMP 1-7, pg. 7.

KA 194001A102 [4.1/3.9]

194001A102 ..(KA's)

ANSWER: 079 (1.00)

b.

REFERENCE:

LP OP-CN-IC-RX, pg. 13, 17.

KA 001000A301 [4.1/4.0]

001000A301 ..(KA's)

ANSWER: 080 (1.00)

d.

REFERENCE:

T.S. 3.4.6

KA 002000G011 [3.3/4.0]

002000G011 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

OP/1/A/6200/09 Encl. 4.4, pg. 2.

KA 006000G011 [3.6/4.2]

006000G011 ..(KA's)

ANSWER: 082 (1.00)

b.

REFERENCE:

LP OP-CN-IC-IPX, pg. 12.

KA 012000K401 [3.7/4.0]

012000K401 ..(KA's)

ANSWER: 083 (1.00)

c.

REFERENCE:

LP OP-CN-IC-IPX, pg. 18; Tech Specs Table 2.2-1.

KA 012000K611 [2.9/2.9]

012000K611 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 19.

KA 013000A402 [4.3/4.4]

013000A402 ..(KA's)

ANSWER: 085 (1.00)

a.

REFERENCE:

LP OP-CN-IC-EDA, pg. 14.

KA 014000A102 [3.2/3.6]

014000A102 ..(KA's)

ANSWER: 086 (1.00)

a.

REFERENCE:

LP OP-CN-IC-ENB, pg. 25.

KA 015000K504 [2.6/3.1]

015000K504 ..(KA's)

ANSWER: 087 (1.00)

d.

REFERENCE:

LP OP-CN-PS-ND, pg. 10.

KA 016000K403 [2.8/2.9]

016000K403 ..(KA's)

ANSWER: 088 (1.00)

c.

REFERENCE:

LP OP-CN-IC-ENA, pg. 11.

KA 017020K101 [3.2/3.2]

017020K101 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

T.S. 3.9.10 and Basis.

KA 033000K404 [2.7/2.9]

033000K404 ..(KA's)

ANSWER: 090 (1.00)

d.

REFERENCE:

OP/1/A/6150/08, pg. 1

KA 000005A203 [3.5/4.4]

000005A203 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

EP/E-0 Bkgd Doc., pg. 2.

KA 000007A202 [4.3/4.6]

000007A202 ..(KA's)

ANSWER: 092 (1.00)

c.

REFERENCE:

LP OP-CN-EP-CSF, pg. 37.

KA 000009A238 [3.9/4.3]

000009A238 ..(KA's)

ANSWER: 093 (1.00)

b.

REFERENCE:

EP/ES-1.3, Bkgd. Doc, pg. 3.

KA 000011A111 [4.2/4.2]

000011A111 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

FR-S.1, Background Document, pg. 2.

KA 000029K306 [4.2/4.3]

000029K306 ..(KA's)

ANSWER: 095 (1.00)

a.

REFERENCE:

EP/E-0 Bkgd. Doc, pg. 3.

KA 000040G012 [3.8/4.1]

000040G012 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

T.S. 3.4.8 Basis.

KA 000076K305 [2.9/3.6]

000076K305 ..(KA's)

ANSWER: 097 (1.00)

c.

REFERENCE:

T.S. 3.4.8 Basis.

KA 000076G007 [2.9/3.4]

000076G007 ..(KA's)

ANSWER: 098 (1.00)

d.

REFERENCE:

AP/1/A/5500/12, pg. 4.

KA 000022A201 [3.2/3.8]

000022A201 ..(KA's)

ANSWER: 099 (1.00)

a.

REFERENCE:

EP/1/A/5000/FR-S.1, Bkgd Doc, pg. 4.

KA 000029K312 [4.4/4.7]

000029K312 ..(KA's)

ANSWER: 100 (1.00)

b.

REFERENCE:

EP/1/A/5000/ECA-3.0, pg. 21; LP OP-CN-EP-EPS, pg. 8.

KA 000056A101 [4.0/3.8]

000056A101 ..(KA's)

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

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE

Master
Catawba 96-300

REGION: 2

CANDIDATE'S NAME: **MASTER COPY**

FACILITY: Catawba 1 & 2

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 96/05/06

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE: 100

CANDIDATE'S SCORE: _____

FINAL GRADE: _____ %

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

_____
Candidate's Signature

Nuclear Regulatory Commission
Operator Licensing
Examination

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

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001 a b c d ___
002 a b c d ___
003 a b c d ___
004 a b c d ___
005 a b c d ___
006 a b c d ___
007 a b c d ___
008 a b c d ___
009 a b c d ___
010 a b c d ___
011 a b c d ___
012 a b c d ___
013 a b c d ___
014 a b c d ___
015 a b c d ___
016 a b c d ___
017 MATCHING
a ___
b ___
c ___
d ___

MULTIPLE CHOICE

018 a b c d ___
019 a b c d ___
020 a b c d ___
021 a b c d ___
022 a b c d ___
023 a b c d ___
024 a b c d ___
025 a b c d ___
026 a b c d ___
027 a b c d ___
028 a b c d ___
029 a b c d ___
030 a b c d ___
031 a b c d ___
032 a b c d ___
033 a b c d ___
034 a b c d ___
035 a b c d ___
036 a b c d ___
037 a b c d ___
038 a b c d ___
039 a b c d ___

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

040 a b c d ___

041 a b c d ___

042 a b c d ___

043 a b c d ___

044 a b c d ___

045 a b c d ___

046 a b c d ___

047 a b c d ___

048 a b c d ___

049 a b c d ___

050 a b c d ___

051 a b c d ___

052 MATCHING

a ___

b ___

c ___

d ___

MULTIPLE CHOICE

053 a b c d ___

054 a b c d ___

055 a b c d ___

056 a b c d ___

057 a b c d ___

058 a b c d ___

059 a b c d ___

060 a b c d ___

061 a b c d ___

062 a b c d ___

063 a b c d ___

064 a b c d ___

065 a b c d ___

066 a b c d ___

067 a b c d ___

068 a b c d ___

069 a b c d ___

070 a b c d ___

071 a b c d ___

072 a b c d ___

073 a b c d ___

074 a b c d ___

075 a b c d ___

076 a b c d ___

077 a b c d ___

078 a b c d ___

079 a b c d ___

080 a b c d ___

ANSWER SHEET

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

| | | | | | |
|---|---|---|---|---|---|
| 081 | a | b | c | d | ___ |
| 082 | a | b | c | d | ___ |
| 083 | a | b | c | d | ___ |
| 084 | a | b | c | d | ___ |
| 085 | a | b | c | d | ___ |
| 086 | a | b | c | d | ___ |
| 087 | a | b | c | d | ___ |
| 088 | a | b | c | d | ___ |
| 089 | a | b | c | d | ___ |
| 090 | a | b | c | d | ___ |
| 091 | a | b | c | d | ___ |
| 092 | a | b | c | d | ___ |
| 093 | a | b | c | d | ___ |
| 094 | a | b | c | d | ___ |
| 095 | a | b | c | d | ___ |
| 096 | a | b | c | d | ___ |
| 097 | a | b | c | d | ___ |
| 098 | a | b | c | d | ___ |

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

QUESTION: 001 (1.00)

With the plant operating steady-state at 100% power, WHICH ONE of the following undesirable operating conditions is likely to result in a PZR SURGE LINE LO TEMP alarm?

No other annunciators are alarming.

a. Pressurizer temperature has slowly decreased due to pressurizer heaters being off.

b. Small insurge/outsurge cycles are occurring due to core xenon oscillations.

c. Spray valve bypass flow has stopped due to orifice fouling problems.

d. T-hot has decreased due to inadvertent boration flow being undetected.

QUESTION: 002 (1.00)

With the plant initially operating at 100% power, WHICH ONE Of the following must be individually reset after a spurious Train A Safety Injection actuation occurs on Unit 1 to regain full operational control of the KC system?

a. KC to ND Heat Exchanger 1A Supply Isolation Valve, KC-56A

b. ND Heat Exchanger 1A Flow Control Valve, KC-57A

c. Reactor Building Non-Essential Header Isolations, KC-3A, 230A

d. Auxiliary Building Non-Essential Header Isolations, KC-1A, 50A

QUESTION: 003 (1.00)

With the pressurizer pressure and level control systems/components in AUTO, WHICH ONE of the following abnormal pressurizer/level conditions will cause the pressurizer spray valves to be open while the pressurizer backup heaters are energized?

a. Low level with low pressure

b. Low level with high pressure

c. High level with low pressure

d. High level with high pressure

QUESTION: 004 (1.00)

Select the combination below that completes the following statement.

According to the Precautions in OP/1/A/6450/10, "Containment Hydrogen Control Systems," the Containment Hydrogen Purge System should NOT be used when the containment H2 concentration is below ___(X)___, but the Hydrogen Purge System is the ONLY H2 control system approved for use when the containment H2 concentration is above ___(Y)___.

a. (X) 3%; (Y) 4%

b. (X) 3%; (Y) 6%

c. (X) 4%; (Y) 4%

d. (X) 4%; (Y) 6%

QUESTION: 005 (1.00)

WHICH ONE of the following is the reason a nitrogen overpressure is maintained on the Pressurizer Relief Tank (PRT)?

a. Maintain correct pre-stress on the rupture disks (outward delta-P)

b. Reduce the potential for corrosion of the tank internals.

c. Prevent the formation of an explosive gas mixture in the tank.

d. Reduce the amount of water needed to quench a safety valve discharge.

QUESTION: 006 (1.00)

WHICH ONE of the following states the conditions under which the parameter values listed in parentheses with the acronym ACC must be used during performance of an Emergency Procedure?

a. Only when containment pressure is currently equal to or greater than 1.2 psig.

b. Any time after containment pressure has exceeded 1.2 psig during an event, even if only momentarily.

c. Only when containment pressure is currently equal to or greater than 3.0 psig.

d. Any time after containment pressure has exceeded 3.0 psig during an event, even if only momentarily.

QUESTION: 007 (1.00)

WHICH ONE of the following states the comparison between the minimum subcooling margin (SCM) required in the Catawba emergency procedures and the actual minimum SCM value, AND the reason for the difference?

a. Catawba minimum SCM is 20 degrees F.smaller to allow the steam tables to be used directly for SCM verification.

b. Catawba minimum SCM is 20 degrees F. smaller because the RVLIS display and data book curves have a built-in conservatism factor.

c. Catawba minimum SCM is 20 degrees F. larger to provide slightly more conservatism than the generic ERGs.

d. Catawba minimum SCM is 20 degrees F. larger because the possible instrument error is assumed to be greater for conservatism.

QUESTION: 008 (1.00)

WHICH ONE of the following constitutes a Hazardous Atmosphere as defined in the Confined Space Entry Directive? (Nuclear System Directive 109, "Confined Space Entry," is available for reference.)

a. An atmospheric oxygen concentration of 19.9 percent.

b. An atmospheric hydrogen concentration of 0.9 percent.

c. Airborne combustible dust at a concentration that obscures vision at a distance of 19 feet.

d. An atmospheric concentration of a substance that could cause an operator to exceed 10% of the Permissible Exposure Limit for that substance in an extended exposure.

QUESTION: 009 (1.00)

WHICH ONE of the following describes who can make changes to Block Tag Out (BTO) boundaries besides the BTO Coordinator?

a. The Shift Work Manager

b. The Operational Control Group Supervisor

c. The Work Group Supervisor

d. The Work Control Center SRO

QUESTION: 010 (1.00)

WHICH ONE of the following lists the two-way radio channel(s) that MUST be used for direct communications with Catawba Nuclear Station Safety Department?

a. Channel #1

b. Channel #2

c. Channel #2 and #3

d. Channel #3

QUESTION: 011 (1.00)

WHICH ONE of the following describes a Containment space with a condition that at NO time will entry be allowed into that space?

a. The Annulus during Mode 1 operations at greater than 80% power.

b. The Annulus during Mode 4 operations with an Incore Instrumentation detector in motion.

c. Lower Containment, outside the Crane Wall, during Mode 1 operations at 40% power.

d. Lower Containment, inside the Crane Wall, during Mode 1 operations at 20% power.

QUESTION: 012 (1.00)

WHICH ONE of the following describes the correct method for locking a manual valve on a 4-inch diameter line?

a. Lock the handwheel to the valve bonnet on a valve at chest height using a break-away type seal.

b. Lock the handwheel to a nearby pipe that is 6 inches in diameter or larger using chain and a lock.

c. Lock the handwheel on a valve at waist level to a nearly column using a break-away type seal.

d. Lock the handwheel to the pipe containing the manual valve using chain and a lock.

QUESTION: 013 (1.00)

WHICH ONE of the following describes a condition in which a Reactor Operator (RO) can be designated to assume the "CONTROL ROOM COMMAND FUNCTION?"

a. At any time when directed by the Station Manager.

b. When assigned by the Operations Shift Manager with both units in Mode 5.

c. Following declaration of an Unusual Event when assigned by the Emergency Coordinator.

d. When the Control Room Supervisor becomes incapacitated as deemed necessary by the Operator at the Controls (OATC).

QUESTION: 014 (1.00)

A male licensed operator is to be given a Planned Special Exposure (PSE) that will be a Total Effective Dose Equivalent (TEDE) exposure. The operator's current exposure conditions are as follows:

- He has received previous PSEs totalling 16 rem TEDE over 4 years.
- His current annual exposure is 2.7 rem TEDE.
- He is 22 years old as of one month ago.
- His NRC Form-4 is up to date.
- He has received NO previous PSEs this year.

WHICH ONE of the following states the MAXIMUM PSE that can be assigned to the operator?

a. 1.8 rem

b. 2.3 rem

c. 5.0 rem

d. 9.0 rem

QUESTION: 015 (1.00)

WHICH ONE of the following describes the reason two licensed operators are required to be present when changing burned out annunciator indicating lamps in an area of the Control Room where an operator must stand on a "Roll Around" ladder over a control board?

a. To prevent important indications from being obscured by the person changing the burned out bulb.

b. To assist the person changing the bulb to prevent inadvertent actuation of a control device.

c. To take immediate action to remedy a situation caused by inadvertent actuation of a control device.

d. To steady the "Roll-Around" ladder to prevent falls and possible actuation of control devices.

QUESTION: 016 (1.00)

WHICH ONE of the following describes an item that should be entered in the Control Room Logbook as an Open Item?

a. A Red safety tagout.

b. A test in progress.

c. A closed pressurizer PORV block valve.

d. A Technical Specifications Action Item.

QUESTION: 017 (2.00)

Match the Rod Control Mode Switch conditions in Column A with the associated rod speeds in Column B. Assume there is NO reactor power/turbine power mismatch signal. (0.5 each)

(Numbers from Column B may be used once, more than once, or not at all, but only a single answer may occupy each answer space.)

| Column A (MODE SWITCH CONDITIONS) | Column B (ROD SPEEDS) |
|---|---|
| _____a. In AUTO when temperature mismatch has been reduced to 1.2 degrees F. | 1. 0 steps/minute |
| _____b. In AUTO when temperature mismatch initially increases to 1.2 degrees F. | 2. 8 steps/minute |
| _____c. In MANUAL while inserting Control Bank D rods for an increasing 1.2 degree F. temperature mismatch. | 3. 40 steps/minute |
| _____d. In S/D B during realignment of a Shutdown Bank B rod that is misaligned by 12 steps. | 4. 48 steps/minute |
| | 5. 64 steps/minute |
| | 6. 72 steps/minute |

QUESTION: 018 (1.00)

At high plant power levels, WHICH ONE of the following reactor control (IRX) system components decreases the gain applied to the power mismatch error signal as plant power level is increased, thus minimizing reactor power overshoots at high power levels when rod control is in AUTO?

a. Variable gain unit.

b. Non-linear gain unit.

c. Overpower rod stop circuit.

d. Power mismatch rate comparator (derivative unit).

QUESTION: 019 (1.00)

Given the following conditions on Unit 1:

- Control rod D-12 has just been inserted 18 steps to realign it with control bank (CB) D.
- The Pulse-to-Analog (P/A) converter was inadvertently NOT updated after the rod realignment.

WHICH ONE of the following annunciators is most likely to alarm during subsequent operations because the P/A converter was NOT updated?

a. CONTROL ROD BANK LO LIMIT when CB D is inserted.

b. ROD CONTROL URGENT FAILURE when CB D is withdrawn.

c. ROD CONTROL NON-URGENT FAILURE when CB D is inserted.

d. BANK D FULL ROD WITHDRAWAL when CB D is withdrawn to 223 steps on the step counters.

QUESTION: 020 (1.00)

Given the following plant conditions on Unit 1:

- The reactor vessel head is in place.
- The NC system has been drained to 6.5% for midloop operations.
- The S/G primary side manways have been removed.

WHICH ONE of the following states the reason that at least one hot leg nozzle dam must be removed under these conditions?

a. To allow the cold leg plenum to be vented to containment.

b. To prevent a pressure buildup in the vessel during a loss of shutdown cooling.

c. To vent non-condensible gases that could inhibit natural circulation.

d. To eliminate the need for low-temperature overpressure protection.

QUESTION: 021 (1.00)

During a Catawba incident in 1986, pressurizer PORV 1NC-34A inadvertently opened while operators were making a small increase in NC pressure. When the PORV lifted, the operators were monitoring NC pressure on the Operator Aid Computer (OAC) to ensure that NC pressure remained below the PORV lift setpoint of approximately 400 psig.

WHICH ONE of the following combinations of "hindsight" operator actions could have prevented this incident?

a. Recognize that PORV lift pressure can be as low as 365 psig and monitor Loop "A" wide-range pressure indication.

b. Recognize that PORV lift pressure can be as low as 365 psig and monitor Loop "B" wide-range pressure indication.

c. Monitor Loop "C" wide-range pressure indication and maintain 22 psig margin to 400 psig PORV setpoint.

d. Monitor Loop "D" wide-range pressure indication and maintain 22 psig margin to 400 psig PORV setpoint.

QUESTION: 022 (1.00)

With the plant operating at 100% power, WHICH ONE of the following conditions will cause ALL NC pumps to trip automatically?

a. Two NC pump 6.9 KV supply buses have decreased to 92% of normal voltage.

b. Oil lift pressure decreases to 450 psig on two NC pumps.

c. Two NC pump 6.9 KV bus supply breakers trip on overfrequency.

d. Simultaneous loss of thermal barrier KC flow and seal injection flow on two NC pumps.

QUESTION: 023 (1.00)

WHICH ONE of the following is the primary purpose of the anti-reverse rotation device installed on the pump rotor of each NC pump?

a. Prevent stator winding damage due to excessive pump starting current.

b. Prevent backflow through a stopped NCP when other NCPs are running.

c. Prevent damage to the pump thrust bearing due to reverse rotation thrust.

d. Prevent overheating of pump bearings due to reverse rotation without internal cooling flow.

QUESTION: 024 (1.00)

During unit operation at 100% power, a spurious Phase A Containment Isolation Actuation occurs. NO operator action is taken.

WHICH ONE of the following describes an effect of the Phase A Isolation on Loop "D" NC pump seal operation?

a. No. 1 seal leakoff flow is unaffected.

b. No. 2 seal leakoff flow rate increases.

c. No. 3 seal standpipe makeup rate increases.

d. Seal injection flow is stopped.

QUESTION: 025 (1.00)

WHICH ONE of the following combinations of operating conditions is likely to occur if the VCT pressure is allowed to remain at zero psig during long-term operation at full rated power?

a. Increased crud levels in the NCS and increased makeup rates to the NCP standpipes.

b. Increased total gas concentration in the NCS and increased No. 2 seal leakoff from the NCPs.

c. Decreased pH conditions in the NCS and decreased equilibrium temperature in the VCT.

d. Decreased I-131 concentration in the NCS and decreased No. 1 seal leakoff from the NCPs.

QUESTION: 026 (1.00)

WHICH ONE of the following is the reason that all letdown orifice outlet containment isolation valves (NV11A, 10A, and 13A) must be closed whenever the NC letdown to Regen HX isolation valves (NV1A and NV2A) are repositioned from open to close or close to open?

a. To prevent thermally shocking the letdown heat exchanger with a sudden slug of NCS water.

b. To prevent water hammmer in the piping between NV1A/NV2A and the letdown orifice outlet containment isolation valves (NV11A, 10A, and 13A)

c. To prevent creating a thermal lock that would prevent subsequent operation of the orifice isolation valves.

d. To maintain two pressure barriers between NCS temperatures and the NV demineralizers.

QUESTION: 027 (1.00)

Both NV mixed bed demineralizer resins were used for about 15 days each with the plant at full power between 20-50 EFPD. Since that time, mixed bed demineralizer "B" has remained isolated, while mixed bed demineralizer "A" has been in continuous service for the past 9 months with the unit at full power.

If the current NCS boron concentration is 50 ppm, WHICH ONE of the following will result from isolating mixed bed "A" and shifting to mixed bed B without additional conditioning of the bed "B" resin?

a. A decrease in T-avg.

b. A rapid increase in NCS pH.

c. A decrease in NCS boron concentration.

d. An increase in reactor power.

QUESTION: 028 (1.00)

WHICH ONE of the following is the reason that Residual Heat Removal (ND) System valves ND-1B (ND pump 1A loop suction isolation from loop "B") and ND-37A (ND pump 1B loop suction isolation from loop "C") have alternate power supplies?

a. To permit both valves in each ND loop suction path to be operated from the same pushbutton at MC-11.

b. To permit both valves in each ND loop suction path to be operated from the same Auxiliary Shutdown Panel.

c. To enable aligning an ND loop suction path if one essential power train is lost.

d. To enable isolating both ND loop suction paths if one essential power train is lost.

QUESTION: 029 (1.00)

WHICH ONE of the following conditions must exist to open ND-37A (ND pump 1B suction from loop "C")?

a. ND-2A (ND pump 1A suction from loop "B") closed.

b. ND-36B (ND pump 1B suction from loop "C") closed.

c. FW-55B (ND pump 1B suction from FWST) closed.

d. NI-185A (ND pump 1A suction from containment sump) closed.

QUESTION: 030 (1.00)

Power has been connected to the Cold Leg Accumulator (CLA) discharge isolation valves for a plant shutdown and cooldown.

WHICH ONE of the following states when these valves will automatically close now that power is connected?

a. NCS wide-range pressure decreases below 1000 psig.

b. Lo-Lo level in the respective CLA with a Safety Injection (Ss) signal present.

c. Operator control is shifted to the Auxiliary Shutdown Panel.

d. Temperature of nitrogen entering the CLA decreases below 65 deg. F.

QUESTION: 031 (1.00)

WHICH ONE of the following parameters makes the refueling water storage tank (FWST) INOPERABLE if the plant is in Mode 3?

a. A solution temperature of 95 deg. F.

b. An outside air temperature of 45 deg. F.

c. A boron concentration of 2500 ppm.

d. A contained water volume of 360,000 gallons.

QUESTION: 032 (1.00)

WHICH ONE of the following discharges NC system water to the PRT?

a. NC loop drains.

b. NCP No. 2 seal leakoff.

c. Reactor vessel head vent.

d. Reactor vessel flange leakoff.

QUESTION: 033 (1.00)

Given the following plant conditions:

- A large break LOCA has occurred.
- EP/1/A/5000/ES-1.3, "Transfer to Cold Leg Recirculation," is being performed.
- Safety Injection has NOT been reset.

WHICH ONE of the following will prevent runout from occurring in the KC pumps during the performance of EP/ES-1.3?

a. KC Pump Recirculation Isolation valves (KC-C37A/C40B) are manually closed during the performance of EP/ES-1.3.

b. Auxiliary Building Non-Essential Header isolation valves are manually closed during the performance of EP/ES-1.3.

c. Reactor Building Non-Essential Header Isolation valves will automatically close before EP/ES-1.3 is performed.

d. ND Heat Exchanger KC outlet flow control valves are set to maintain flow below KC pump runout point.

QUESTION: 034 (1.00)

WHICH ONE of the following heat exchangers loses Component Cooling (KC) System flow upon a Phase "A" Containment Isolation (St) actuation?

a. NCP seal return heat exchanger.

b. NCP thermal barrier heat exchangers.

c. NV letdown heat exchanger.

d. NCDT heat exchanger.

QUESTION: 035 (1.00)

Given the following conditions on Unit 1:

- Reactor power is steady at 100%.
- Pressurizer pressure channel selector switch is in the 3-2 position.
- Pressurizer pressure control is in AUTO at 2270 psig.
- Pressurizer spray valves are partially open.
- All Pressurizer PORVs are closed.

If the pressurizer pressure master controller setpoint is instantly changed to 2370 psig, WHICH ONE of the following is the response of the pressurizer PORVs and spray valves over the next hour?

ASSUME NO other operator action is taken and pressurizer pressure control remains in automatic.

a. All PORVs remain closed, spray valves close.

b. All PORVs remain closed, spray valves remain open.

c. PORV NC-34A remains closed, spray valves close, PORVs NC-32B/36B cycle open.

d. PORV NC-34A cycles open, spray valves remain open, PORVs NC-32B/36B remain closed.

QUESTION: 036 (1.00)

WHICH ONE of the following groups of pressurizer heaters will receive diesel generator (D/G) power after an on-site AC electrical distribution system blackout occurs?

a. A and D

b. B and A

c. C and B

d. D and C

QUESTION: 037 (1.00)

Select the combination below that completes the following statement.

Regardless of the position of the Pressurizer Level Control Channel Selector Switch, letdown isolation valve NV-2A CANNOT receive a low level (17%) closure signal from pressurizer level channel ___(X)___, while letdown isolation valve NV-1A CANNOT receive a low level closure signal from pressurizer level channel ___(Y)___.

a. (X) I; (Y) II

b. (X) II; (Y) I

c. (X) III; (Y) I

d. (X) II; (Y) III

QUESTION: 038 (1.00)

Select the combination below that completes the following statement.

When the plant is operating normally at 100% power, the cold-calibrated pressurizer level channel indicates a level that is ___(X)___ than the actual level because the water in the ___(Y)___ is hotter than it is during cold plant conditions.

a. (X) Lower; (Y) Reference leg

b. (X) Lower; (Y) Impulse leg (pressurizer)

c. (X) Higher; (Y) Reference leg

d. (X) Higher; (Y) Impulse leg (pressurizer)

QUESTION: 039 (1.00)

Given the following conditions on Unit 1:

- The plant is at 100% power.
- Solid-state protection system (SSPS) testing is in progress.
- Reactor trip breaker "B" (RTB) is OPEN.
- Bypass breaker "B" (BYB) is CLOSED.
- Reactor trip breaker "A" (RTA) is CLOSED.
- Bypass breaker "A" (BYA) is OPEN.

WHICH one of the following is the response of Breaker RTA immediately after Breaker BYA is manually taken to CLOSE?

a. RTA shunt trip coil and undervoltage trip coil will be energized.

b. RTA shunt trip coil and undervoltage trip coil will be deenergized.

c. RTA shunt trip coil will be deenergized and RTA undervoltage trip coil will be energized.

d. RTA shunt trip coil will be energized and RTA undervoltage trip coil will be deenergized.

QUESTION: 040 (1.00)

WHICH ONE of the following NCS flow conditions will cause a reactor trip?

a. Low flow on 2 of 3 detectors in 2 of 4 loops when operating at 5% reactor power.

b. Low flow on 2 of 3 detectors in 1 of 4 loops when operating at 15% reactor power.

c. Low flow on 1 of 3 detectors in 2 of 4 loops when operating at 50% reactor power.

d. Low flow on 2 of 3 detectors in 1 of 4 loops when operating at 75% reactor power.

QUESTION: 041 (1.00)

WHICH ONE of the following conditions blocks automatic reinitiation of a Safety Injection (Ss) after the Ss signal has been reset?

a. 60-second time delay

b. Reactor trip breakers in open position

c. Pressurizer pressure above P-11 setpoint

d. Ss signal initiating condition NOT cleared

QUESTION: 042 (1.00)

Given the following plant conditions on Unit 1:

- Reactor power is at 100%.
- KC pumps 1B1 and 1B2 are supplying system loads.
- An inadvertent Train A safety injection (Ss) actuation has just occurred, followed immediately by a 3-second loss of voltage on essential switchgear 1ETB.

WHICH ONE of the following describes the response of the KC pumps to this event?

a. KC pumps 1B1/1B2 will restart after 3 seconds while KC pumps 1A1/1A2 will autostart on a signal from the sequencer.

b. KC pumps 1B1/1B2 will restart after 3 seconds while KC pumps 1A1/1A2 will start immediately on low system pressure of 65 psig.

c. KC pumps 1B1/1B2 will be shed from 1ETB; then the accelerated sequencer will start KC pumps 1A1/1A2.

d. KC pumps 1B1/1B2 will be shed from 1ETB; then the LOCA-committed sequencer will start all KC pumps 1A1/1A2/1B1/1B2.

QUESTION: 043 (1.00)

Given the following indications associated with rod D-4 Digital Rod Position Indication (DRPI):

- General Warning light for rod D-4 is flashing.
- Rod bottom light for rod D-4 is lit.
- Urgent alarms 1, 2, and 3 are flashing for rod D-4.
- RPI URGENT annunciator is alarming.

WHICH ONE of the following describes the condition of rod D-4 DRPI?

a. Rod D-4 DRPI indication is at half accuracy.

b. Rod D-4 DRPI indication is at full accuracy.

c. Rod D-4 position cannot be determined by DRPI.

d. Rod D-4 DRPI indication is valid, and the rod is fully inserted.

QUESTION: 044 (1.00)

WHICH ONE of the following signals is used to provide the Percent Rated Thermal Power input to the Rod Insertion Limit computer?

a. Turbine first stage pressure.

b. Auctioneered high loop delta-temperature.

c. Auctioneered high loop T-avg temperature.

d. Auctioneered high excore NI power range channel.

QUESTION: 045 (1.00)

Given the following conditions at Unit 1:

- Reactor startup is in progress.
- Source range channel N31 indicates 8E4 cps.
- Source range channel N32 indicates 7.5E4 cps.
- Intermediate range channel N35 indicates 4E-10 amps.
- Intermediate range channel N36 indicates 1.2E-11 amps.
- P-6 S/R BLOCK PERMISSIVE light is energized.

WHICH ONE of the following statements describes the compensation conditions of the Intermediate Range channels N35 and N36?

a. N35 is overcompensated.

b. N36 is overcompensated.

c. N35 is undercompensated.

d. N36 is undercompensated.

QUESTION: 046 (1.00)

WHICH ONE of the following describes the arrangement of sensing taps on the NC pipe elbow detectors used to measure loop flow rates in the NC system?

a. One high pressure (HP) tap on the inside of the elbow and three low pressure (LP) taps on the outside.

b. One HP tap on the outside of the elbow and three LP taps on the inside.

c. One LP tap on the inside of the elbow and three HP taps on the outside.

d. One LP tap on the outside of the elbow and three HP taps on the inside.

QUESTION: 047 (1.00)

Given the following plant conditions:

- A LOCA has caused a trip from full power and safety injection.
- NS Pump "A" started automatically on Train A Sp signal.
- Train B Sp signal failed to actuate, but NS pump "B" was manually started by an operator.
- The Ss signal and sequencer have been reset.
- The Train A Sp signal has NOT been reset.
- Containment pressure is 1.2 psig.
- Both NS pumps are stopped for shifting their suctions to the containment sump.

WHICH ONE of the following describes the operation of the NS pumps during the suction swapover process?

a. Both NS pumps will start automatically if containment pressure increases above 3.0 psig.

b. Both NS pumps will start automatically when their respective sump suction valve (NS-18A, NS-1B) reaches full open.

c. When the sump suction valves (NS-18A, NS-1B) reach full open, NS pump "A" will start automatically and the operator can start NS pump "B" manually.

d. The operator CANNOT start NS pump "B" manually when its sump suction valve (NS-1B) reaches full open; NS pump "A" will start automatically when its sump suction valve (NS-18A) reaches full open.

QUESTION: 048 (1.00)

WHICH ONE of the following is the basis for limiting high RN outlet flow rates from the NS heat exchangers?

a. Increased likelihood of RN pump runout.

b. Vibration of NS heat exchanger tubes could result in tube failure.

c. Over-cooling of NS spray could cause pressurized thermal shock conditions in containment.

d. Thermal shock conditions could cause failure of NS heat exchanger shell seismic restraints.

QUESTION: 049 (1.00)

The following conditions exist at Unit 2:

- Reactor power is stable at 100%.
- Cold Leg Accumulator (CLA) "A" level has recently started increasing.
- Accumulator "A" fill valves have been verified isolated from the accumulator.
- Accumulator "A" level has increased from 7940 gallons to 8000 gallons over the last 15 minutes.
- There was NO measurable NCS leakage before the accumulator level increase.

WHICH ONE of the following NCS leakage limits has been exceeded?

a. The IDENTIFIED LEAKAGE limit.

b. The UNIDENTIFIED LEAKAGE limit.

c. The PRESSURE BOUNDARY LEAKAGE limit.

d. The NCS PRESSURE ISOLATION VALVE LEAKAGE limit.

QUESTION: 050 (1.00)

WHICH ONE of the following states the purpose of the Channel Current Comparator section of the Comparator and Rate drawer in the Excore Nuclear Instrumentation system?

a. Actuates P/R UPPER DET HI FLUX DEV alarm when the deviation between any two power range (P/R) upper detectors exceeds 3.5%.

b. Actuates COMPARATOR P/R CHANNEL DEVIATION alarm when excessive deviation exists between any two power range (P/R) channels.

c. Actuates COMPARATOR P/R CHANNEL DEVIATION alarm when excessive deviation exists between the upper and lower detectors of any P/R channel.

d. Actuates P/R LOWER DET HI FLUX DEV alarm when one P/R lower detector deviates by more than 3.5% from the average of all lower detectors.

QUESTION: 051 (1.00)

WHICH ONE of the following uses individual Loop Tavg as an input?

a. Rod control temperature error.

b. Feedwater isolation.

c. Steam dump actuation.

d. Pressurizer level control.

QUESTION: 052 (2.00)

Match each NC system chemistry function listed in Column A with its associated NV system chemical additive listed in Column B. (0.5 each)

(Numbers from Column B may be used once, more than once, or not at all, but only a single answer may occupy each answer space.)

| Column A (FUNCTIONS) | Column B (ADDITIVES) |
|---|---|
| _____a. Cause intentional crud burst during cooldown for maintenance | 1. Boric Acid (H2BO4) |
| _____b. Combine with dissolved oxygen during at-power operations. | 2. Lithium Hydroxide (LiOH) |
| _____c. Maintain slightly basic pH conditions in the NC system | 3. Carbonic Acid (H2CO3) |
| _____d. Scavenge dissolved oxygen during cold plant maintenance conditions. | 4. Hydrogen Peroxide (H2O2) |
| | 5. Hydrazine (N2H4) |
| | 6. Sodium Pentaborate (Na2BO4) |
| | 7. Hydrogen Gas (H2) |
| | 8. Nitrogen Gas (N2) |

QUESTION: 053 (1.00)

WHICH ONE of the following describes the automatic response of the Lower Containment Cooling System Air Handling Units if lower containment pressure increases to 0.5 psig?

a. The normal cooling water control valve fully opens.

b. The cooling water bypass valve fully opens; the normal cooling water control valve remains on thermostatic control.

c. The fans shift to high speed and the normal cooling water control valve fully opens.

d. The fans shift to high speed and the cooling water bypass valve fully opens; the normal cooling water control valve remains on thermostatic control.

QUESTION: 054 (1.00)

WHICH ONE of the following will occur if the Containment Purge Mode Selector Switch is inadvertently left in the FUEL position when the reactor vessel missile shield is lowered into place after refueling?

a. Negative pressurization of upper and lower containment.

b. Negative pressurization of lower containment and overpressurization of upper containment.

c. Overpressurization of lower containment causing automatic opening of ice condenser doors.

d. Overpressurization of upper and lower containment causing automatic start of containment air return fans.

QUESTION: 055 (1.00)

Given the following conditions on Unit 1:

- The Steam Dump Mode Select Switch is in the TAVG position.
- A reactor trip from 80% power has just occurred.
- Reactor Trip Breaker "A" will NOT open.

WHICH ONE of the following combinations states the response of the Steam Dump Control System dump valves and controllers to these events?

| | Load Rejection Controller | Plant Trip Controller | Atmospheric Dumps | Condenser Dumps |
|---|---|---|---|---|
| a. | Enabled | NOT enabled | Armed | NOT Armed |
| b. | Enabled | NOT enabled | NOT Armed | Armed |
| c. | NOT Enabled | Enabled | Armed | Armed |
| d. | NOT Enabled | Enabled | NOT Armed | NOT Armed |

QUESTION: 056 (1.00)

Given the following conditions on Unit 1:

- The Steam Dump Mode Select Switch is in the TAVG position.
- The plant is operating at 90% full power.

WHICH ONE of the following describes the Steam Dump Control System response if turbine impulse pressure Channel II fails HIGH?

a. All steam dumps will trip open.

b. Steam dumps will NOT respond to a load rejection.

c. All steam dumps will modulate open due to C-7A and C-7B actuation.

d. Steam dump control system will respond to any load rejection sensed on turbine impulse pressure Channel I.

QUESTION: 057 (1.00)

Given the following conditions on Unit 1:

- The plant is stable at 100% power.
- All plant control systems are in AUTO.

WHICH ONE of the following conditions would cause the Condensate Load Rejection Bypass Valve (CM83) to open automatically?

a. Feedwater Pump suction pressure is reduced by 100 psig.

b. Turbine impulse pressure is reduced by 200 psig due to a partial load rejection.

c. Feedwater Pump recirculation flow decreases to 200 gpm.

d. Condensate Booster Pump suction pressure decreases to 100 psig.

QUESTION: 058 (1.00)

Given the following conditions on Unit 1:

- A plant startup is in progress.
- Preparations are being made for starting the first Feedwater Pump.

WHICH ONE of the following is the reason why the Feedwater Pump suction valve is opened BEFORE the discharge valve during the pump starting procedure?

a. Prevent Feedwater Pump runout.

b. Prevent Feedwater Pump cavitation.

c. Prevent Feedwater Pump windmilling.

d. Prevent Feedwater Pump suction overpressure.

QUESTION: 059 (1.00)

Given the following outputs/indications from the excore nuclear instrumentation channels with power stable during a Unit 1 startup:

N-41: 70% (Upper detector failed HIGH, NO operator action taken)
N-42: 22%
N-43: 24%
N-44: 20%

WHICH ONE of the following is the power range value that is used to set the steam generator level program?

a. 20%

b. 22%

c. 23%

d. 24%

QUESTION: 060 (1.00)

WHICH ONE of the following is the reason a Precaution in OP/1/A/6250/02, "Auxiliary Feedwater System," requires valve 1CA-6 (CA Pumps Suction from CA CST) to remain open during MODE 1 operations?

a. To prevent air binding of the turbine-driven CA pump suction.

b. To prevent inadvertent draining of the Upper Surge Tank.

c. To prevent an undesired automatic suction shift to Nuclear Service Water (RN).

d. To prevent the possibility of losing all three Condensate Grade suction sources from a fire.

QUESTION: 061 (1.00)

Given the following conditions on Unit 1:

- The plant is in Mode 3 conducting a cooldown.
- NC system temperature is 510 degrees F.
- NC system pressure is 1900 psig.
- 1A Feedwater Pump is maintaining steam generator levels.
- 1B Feedwater Pump is tripped/shutdown.
- Pressurizer Low Pressure Safety Injection (SI) has been blocked.
- Steamline Low Pressure SI has been blocked.
- Both Aux Feed (CA) train AUTO-START-DEFEAT buttons have been depressed.

WHICH ONE of the following events will cause the motor-driven CA pumps to start automatically?

a. "A" Feedwater Pump trips off causing all SG levels to decrease below the lo-lo level trip setpoint.

b. NC loop "B" spray valve, NC-29, fails open causing NC pressure to decrease to 1500 psig.

c. A steamline rupture causes "C" SG pressure to decrease to 700 psig at a 200 psig/second rate.

d. A feedline rupture causes "D" SG level to decrease below the lo-lo level trip setpoint and containment pressure to increase to 2 psig.

QUESTION: 062 (1.00)

Given the following conditions on Unit 1:

- A plant startup is in progress.
- Motor-driven Aux Feed (CA) pumps and flow control valves are being used for SG level control.

WHICH ONE of the following describes the response of the motor-driven CA flow control valves if a CA system motor-driven automatic start occurs from this condition?

a. Valves will remain in initial position; after CA reset occurs, valves will automatically throttle to control SG levels.

b. Valves will remain in initial position; after CA reset occurs, the operator can throttle the valves to control SG levels.

c. Valves will fully open to the travel stop; after CA reset occurs, valves will automatically throttle to control SG levels.

d. Valves will fully open to the travel stop; after CA reset occurs, the operator can throttle the valves to control SG levels.

QUESTION: 063 (1.00)

The following plant conditions exist on Unit 1:

- A plant power increase is in progress at 85%.
- Channel I pressurizer pressure detector has previously failed LOW and has been removed from service, including tripping all affected bistables.
- Power Range channel N-43 upper detector has just failed HIGH.

WHICH ONE of the following trip function bistables associated with the N43 Power Range channel failure will require a plant shutdown to Mode 3 to comply with Technical Specifications under these conditions?

a. "A" Steam Generator Lo-Lo Level

b. "C" Steam Generator Lo-Lo Level

c. NC Loop "C" Overpower Delta-T (OPDT)

d. NC Loop "C" Overtemperature Delta-T (OTDT)

QUESTION: 064 (1.00)

WHICH ONE of the following actions is required to be taken immediately per EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," if the turbine fails to trip and will NOT trip manually from the main control board?

a. Run back the turbine in MANUAL.

b. Manually initiate Main Steam Isolation.

c. Depress OFF on both LH (electro-hydraulic) pump control pushbuttons.

d. Dispatch operator to trip turbine at front standard.

QUESTION: 065 (1.00)

Given the following plant conditions on Unit 1:

- A large LOCA has caused a plant trip from full power and a safety injection.
- An electrical problem in Train "B" prevented initiation of the auto swap to cold leg recirculation in that train.
- Required Train "B" valve manipulations for cold leg recirc have been performed from the main control board.
- A Containment Pressure Control System (CPCS) signal is still present.
- The requirements are met to put Train "B" of ND Auxiliary Containment Spray in operation.

WHICH ONE of the following valve conditions ensures, by its interlocks, that all the valve interlocks required for opening NS-38B (ND spray header containment isolation valve) have been met?

a. NI-136B (ND crossover to NI) closed.

b. NI-178B (ND cold leg injection) open.

c. NI-184B (containment sump line "B" isolation) open.

d. ND-36B or ND-37A (ND pump suctions from NC system) closed.

QUESTION: 066 (1.00)

WHICH ONE of the following is the reason that an NC pump should NOT be started if the #1 seal leakoff flow rate is LESS than required by Data Book Curve 1.9, NC Pump No. 1 Seal Normal Operating Range?

a. Indicates seal return valve lineup is incorrect, which will cause excessive leakoff if the pump is started.

b. Indicates crud blockage in seal area, which will prevent formation of required film between seal faces.

c. Indicates excessive differential pressure across the seal, which will cause excessive friction between the seal faces.

d. Indicates insufficient VCT pressure, which will allow leakoff flow to divert to the #2 seal standpipe.

QUESTION: 067 (1.00)

Given the following conditions on Unit 1:

- The reactor and main turbine are stable at 97% power.
- All plant control systems are in AUTO.
- Tavg is matched with Tref.
- Control Bank D is at 210 steps.

If continuous outward motion of Control Bank D suddenly commences, WHICH ONE of the following is the appropriate immediate action per the applicable abnormal procedure?

a. Verify rod motion stops when C-11 Bank D Withdrawal Limit is reached.

b. Verify rod motion stops when C-2 Power Range High Flux Rod Stop is reached.

c. Verify rod motion stops when C-3 Overtemperature Delta-T Rod Stop is reached.

d. Verify rod motion stops when CRD Bank Select switch is taken to MAN (manual) position.

QUESTION: 068 (1.00)

WHICH ONE of the following explains why the ROD CONTROL URGENT FAILURE annunciator does NOT alarm when a dropped rod in Shutdown Bank D is being recovered?

a. Shutdown Bank D has only one group of rods.

b. Shutdown banks have NO multiplexing thyristors.

c. Shutdown Bank D operates without a master cycler input.

d. Shutdown banks receive NO input from the bank overlap unit.

QUESTION: 069 (1.00)

WHICH ONE of the following causes the ROD CONTROL URGENT FAILURE alarm when a misaligned control bank rod is realigned with its bank?

a. Logic error sensed in the logic cabinet.

b. Phase failure sensed in a power cabinet.

c. Pulser failure sensed in the logic cabinet.

d. Regulation failure sensed in a power cabinet.

QUESTION: 070 (1.00)

Given the following conditions on Unit 1:

- The plant is shutdown in Mode 3.
- Train A Shutdown Margin (SDM) Monitor has just been enabled.
- Automatic blended makeup to the VCT is in progress from 1B Reactor Makeup Water (RMW) pump and 1A Boric Acid (BA) pump.
- The operator is preparing to test Train B SDM Monitor before enabling that monitor.

WHICH ONE of the following states the annunciators that will alarm if the operator inadvertently depresses the TEST pushbutton for Train A SDM Monitor vice Train B SDM Monitor?

a. TRAIN A SHUTDOWN MARGIN ALARM and BA FLOW DEVIATION

b. TRAIN A SHUTDOWN MARGIN ALARM and TOTAL MAKEUP FLOW DEVIATION

c. TRAIN A W/R NEUTRON FLUX SYS TROUBLE and BA FLOW DEVIATION

d. TRAIN A W/R NEUTRON FLUX SYS TROUBLE and TOTAL MAKEUP FLOW DEVIATION

QUESTION: 071 (1.00)

Given the following plant conditions on Unit 2:

- Reactor power is at 100%.
- All control systems and components are in automatic.
- VCT level is at 40% with auto makeup in progress.

If VCT level transmitter LT-5760 fails HIGH as indicated on the Operator Aid Computer and NO operator action is taken, WHICH ONE of the following describes the response of ACTUAL VCT level?

a. Increase to 85.3% and then cycle between 70.1% and 85.3%.

b. Increase to 49.3% and then cycle between 32.7% and 49.3%.

c. Decrease to 4.3%, where swapover to the FWST suction occurs.

d. Decrease to 0%, where charging pump cavitation causes loss of charging.

QUESTION: 072 (1.00)

The following plant conditions exist on Unit 1:

- The reactor is at 100% power.
- All systems are aligned normally and in automatic control where applicable.

A tube rupture in WHICH ONE of the following heat exchangers would cause a slow dilution of the NCS boron concentration if NO operator action were taken?

a. 1B ND heat exchanger.

b. NV letdown heat exchanger.

c. NV seal water heat exchanger.

d. NV excess letdown heat exchanger.

QUESTION: 073 (1.00)

Given the following conditions on Unit 1:

- The plant is in Mode 5 with NC system temperature at 110 deg. F.
- ND Train B is in operation.
- NC System level is at 6.3% (mid-loop operations).
- ND Heat Exchanger 1B Outlet Control Valve (ND-60) has just failed open due to a diaphragm rupture.

If NO operator action is taken and B ND pump flow increases to maximum, WHICH ONE of the following could occur to cause a loss of ND cooling?

a. ND pump overcurrent trip due to high discharge pressure.

b. ND pump loss of suction due to vortexing at the NC loop suction.

c. ND pump overspeed trip from runout due to low discharge pressure.

d. ND pump low suction trip due to loss of net positive suction head.

QUESTION: 074 (1.00)

Given the following conditions on Unit 1:

- The plant is stable at 100% power.
- Component Cooling (KC) pumps 1A1 and 1A2 are running.
- All the KC supply and return isolations are open.
- A large rupture has just occurred in KC Essential Header 1A.

WHICH ONE of the following will occur automatically to ensure that at least one train of KC pumps will have adequate NPSH for subsequent Safety Injection needs if the header rupture cannot be plugged or isolated from Essential Header 1A? Assume NO operator action is taken.

a. 1B1/1B2 KC pumps will autostart when 1A1/1A2 pumps stop.

b. KC Essential Header 1A will isolate when header pressure decreases to 67 psig.

c. KC Non-Essential Headers will isolate when KC surge tank levels decrease to 34%.

d. KC surge tank makeup valves will open when surge tank levels decrease to 50%.

QUESTION: 075 (1.00)

Given the following conditions on Unit 1:

- Reactor is at 100% power.
- Pressurizer pressure controller is selected to "2 & 3"
- Pressurizer pressure controls are in AUTO.
- All pressurizer pressure channels are operable.
- All pressurizer control components are operable.

WHICH ONE of the following describes the final result if Channel 3 pressurizer pressure detector fails LOW under these conditions, and NO operator action is taken?

a. High pressurizer pressure reactor trip will occur.

b. PORV NC-34A will maintain NCS pressure 80 to 100 psig above normal.

c. No effect on NCS pressure, but PORVs NC-32B and NC-36B will be blocked.

d. PORV NC-34A will maintain NCS pressure from 100 psig above normal to 50 psig below normal.

QUESTION: 076 (1.00)

Given the following plant conditions on Unit 1:

- NCS temperature is 250 deg. F.
- LOW PRESSURE is selected on both trains of low temperature overpressure protection.
- NCS pressure is 375 psig, and increasing.

If NCS loop "D" wide-range T-hot fails HIGH, WHICH ONE of the following describes the system response?

a. PORV NC-34A is disabled.

b. PORV NC-32B is disabled.

c. Both NC-34A and NC-32B are disabled.

d. Neither NC-32B nor NC-34A is disabled.

QUESTION: 077 (1.00)

With the plant operating at 100% power and pressurizer level control selected to Channel I, a system failure causes the following plant events to occur sequentially with NO operator action taken:

- Charging flow reduces to minimum and pressurizer level decreases.
- Letdown isolates and all pressurizer heaters turn off.
- Pressurizer level increases to the high level reactor trip.

WHICH ONE of the following failures has occurred to cause this sequence of events?

a. Level channel I has failed LOW.

b. Level channel I has failed HIGH.

c. Auctioneered High Tavg signal has failed HIGH.

d. Reference level signal has failed to the no-load value.

QUESTION: 078 (1.00)

Given the following conditions on Unit 2:

- Reactor startup is in progress.
- All NI switches are in normal lineup for startup operations in the Source Range.
- Intermediate Range (IR) Channel N35 indicates 8E-11 amps.
- IR channel N36 indicates 1.1E-10 amps.
- No manual Main Control Board blocks have been inserted.
- Source Range (SR) Channel N31 indicates 7E3 cps.
- SR Channel N32 indicates 6E3 cps.

If a SR drawer instrument power fuse blows, causing a loss of high voltage to the Channel N31 SR detector, WHICH ONE of the following describes the plant response under these conditions?

a. A reactor trip signal is generated, resulting in a reactor trip.

b. A reactor trip signal is generated, but no trip occurs because one IR channel is above P-6.

c. No reactor trip signal is generated because one IR channel is already above P-6.

d. No reactor trip signal is generated because Channel N31 output will be failed low.

QUESTION: 079 (1.00)

Given the following conditions on Unit 1:

- The crew is conducting a plant shutdown.
- Reactor power has decreased to 1.2E-11 amps on Intermediate Range (IR) channels N35 and N36.
- An upper detector failure has caused Power Range (PR) channel N41 indication to stabilize at 27%.
- PR channel N43 has a circuitry problem resulting in a constant output of 31%.
- Neither Source Range (SR) channel has energized automatically.

WHICH ONE of the following is the operator action required to energize SR channel N31 under these conditions?

a. Momentarily select RESET on Train A SR Select switch.

b. Momentarily select RESET on Trains A and B SR Select switches.

c. Go to BLOCK on PR High Flux Low Setpoint Block control switch.

d. Go to BYP on NOT P-10 Bypass Switch for PR N41.

QUESTION: 080 (1.00)

Given the following conditions on Unit 1:

- The plant was operating near 100% power.
- A large steam pipe rupture has just been reported in the area of the main turbine stop valves.
- The crew has tripped the reactor and is initiating a manual Main Steam Isolation.
- The operator initially depresses the Train A RESET pushbutton in error.
- He then correctly depresses the Train A INITIATE pushbutton.

WHICH ONE of the following describes the Main Steam Isolation Valve (MSIV) response if NO other operator action is taken?

a. Only MSIVs on SGs "A" and "C" will close.

b. NO MSIVs will close.

c. ALL MSIVs will close immediately.

d. MSIVs on SGs "A" and "C" will close immediately; MSIVs on SGs "B" and "D" will close when the LOW Steamline Pressure setpoint is reached.

QUESTION: 081 (1.00)

An automatic safety injection occurred 8 minutes ago from 100% power due to a steam break outside containment that was isolated by shutting all Main Steam Isolation Valves. The following plant conditions currently exist:

| | |
|---|---|
| NC system pressure: | Restored to 2200 psig |
| Steam generator pressures: | All restored to 980 psig |
| ETA & ETB Busses: | Both energized |
| Reactor Trip Breaker "A": | Opened by SI actuation |
| Reactor Trip Breaker "B": | Closed, never opened |
| Safety Injection and Sequencer Reset buttons: | Depressed, both trains |
| Train "A" NI and ND pumps: | Secured |

If NC system pressure rapidly decreases to 1500 psig now, and no operator action is taken, WHICH ONE of the following describes the response of the NI and ND pumps in Train A and Train B?

a. NI and ND pumps in Train B will be load shed by the sequencer.

b. NI and ND pumps will start in both Train A and Train B.

c. Train A NI and ND pumps will start; Train B NI and ND pumps will continue to run.

d. Train B NI and ND pumps will continue to run; Train A NI and ND pumps will NOT start.

QUESTION: 082 (1.00)

Given the following conditions on Unit 1:

- A large LOCA has caused a reactor trip from full power and a safety injection.
- NC pressure decreased rapidly to saturation pressure.
- All safety injection/ECCS components responded properly.
- All actions required by EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," have been completed.
- The crew is currently performing EP/1/A/5000/E-1, "Loss of Reactor or Secondary Coolant."
- The TSC has just reported that the reactor core is beginning to uncover.

WHICH ONE of the following is the RVLIS display that should be used to confirm this report?

a. Normal D/P

b. Reactor Vessel D/P

c. Reactor Vessel Lower Range

d. Reactor Vessel Upper Range

QUESTION: 083 (1.00)

Given the following conditions on Unit 1:

- The plant was operating at 100% power.
- A pressurizer vapor space rupture has occurred to cause a plant trip and safety injection.
- The crew has transitioned to EP/1/A/5000/E-1, "Loss of Reactor Coolant or Secondary Coolant."
- Adverse containment conditions exist.

WHICH ONE of the following parameters checked in EP/E-1 has alternate values specified for use during adverse containment conditions?

a. Pressurizer level

b. NCS wide-range pressure

c. NCS wide-range RTD temperature

d. Core exit thermocouple temperature

QUESTION: 084 (1.00)

The following conditions exist on Unit 1 with a leaking pressurizer PORV:

- The reactor is shutdown.
- Pressurizer pressure is steady at 1985 psig.
- Pressurizer relief tank (PRT) pressure is steady at 15 psig.
- PRT temperature is steady at 110 degrees F.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%.

WHICH ONE of the following will be the approximate temperature indicated on the Relief Valve Discharge monitor (1NCRD5940) due to the leaking pressurizer PORV?

a. 170 F.

b. 220 F.

c. 250 F.

d. 300 F.

QUESTION: 085 (1.00)

Given the following conditions on Unit 1:

- The plant was stable at full power.
- A LOCA has occurred to cause a safety injection.
- Pressurizer pressure is stable at 1350 psig.
- Containment temperature is 155 degrees F.
- Actual pressurizer level is 50%.

Select the combination below that fills in the following blanks concerning the effects of these conditions on the pressurizer level indicated on Channel I.

The pressurizer pressure being below normal tends to make the indicated pressurizer level read ___(X)___ than actual; the containment temperature being above normal tends to make the indicated pressurizer level read ___(Y)___ than actual.

a. (X) Lower; (Y) Lower.

b. (X) Lower; (Y) Higher.

c. (X) Higher; (Y) Lower.

d. (X) Higher; (Y) Higher.

QUESTION: 086 (1.00)

WHICH ONE of the following is the reason EP/1/A/5000/E-0, "Reactor Trip or Safety Injection," requires tripping the NC pumps (NCPs) if containment pressure has exceeded 3 psig?

a. To prevent intake of containment spray water droplets into NCP stator cooling air louvers.

b. To prevent NCP overheating which would eventually result in shaft seizure.

c. To minimize the NC break flow rate to reduce the containment pressure transient.

d. To minimize the time the NCP operates in cavitation if the high containment pressure is due to a LOCA.

QUESTION: 087 (1.00)

Given the following conditions on Unit 1:

- The plant is operating at 100% power.
- EMF-33 (Condenser Air Ejector Monitor) has just alarmed due to a 10 gpm steam generator (SG) tube leak.
- All Automatic actions initiated by EMF-33 have occurred, and have been left in the automatic-actuated condition.

Under these plant conditions, which ONE of the following has the highest likelihood of determining which SG has the leak?

a. Checking feedwater (CF) flow rates

b. Enabling EMF-34 (SG Sample Monitor)

c. Frisking SG sample cation columns

d. Observing EMF-71, 72, 73, 74 (SG Leakage)

QUESTION: 088 (1.00)

Given the following conditions on Unit 1:

- The plant is operating at 100% power.
- Unknown to the operators, one main condenser vacuum detector is failed AS IS at 29 inches Hg vac.
- An extended loss of all offsite power has just occurred.
- Both reactor trip breakers have opened.

WHICH ONE of the following will be the response of the condenser steam dumps to these conditions and events? (Assume NO operator action is taken concerning the condenser steam dumps.)

a. Will NOT open during this event because C-9 is lost when loss of all offsite power occurs.

b. Will open initially and then close when the second condenser vacuum detector decreases below 15 inches Hg vac.

c. Will open and remain open because one condenser vacuum detector is failed at 29 inches Hg vac.

d. Will NOT open initially, but will open when the second condenser vacuum detector decreases below 15 inches Hg vac.

QUESTION: 089 (1.00)

WHICH ONE of the following is the reason the Unit 2 Digital Feedwater Control System (DFCS) reduces each steam generator (SG) level setpoint to 50% after 2 minutes if one Feedwater Pump trips when the plant is operating at full rated power?

a. To reduce NCS cooldown rate.

b. To prevent a Reactor Trip on high pressurizer pressure due to partial loss of feed flow.

c. To prevent subsequent Feedwater Isolation on Hi-Hi SG level.

d. To prevent subsequent Feedwater Isolation due to possible reactor trip and low NCS Tavg.

QUESTION: 090 (1.00)

Given the following plant conditions on Unit 2:

- Reactor and turbine power was stable at 85%.
- Both Main Feed Pumps tripped to initiate the event.
- All steam generator (SG) levels decreased below Lo-Lo level setpoint to cause a plant trip.
- 2A Motor-driven Aux Feed (MDCA) pump started, but is air-bound and NO flow or discharge pressure is indicated.
- 2B MDCA pump and the turbine-driven CA pump are each discharging about 500 gpm flow.

WHICH ONE of the following describes the condition of the MDCA isolation valves to the "B" and "C" SGs if these pump conditions do NOT change?

a. Both "B" and "C" SG isolation valves will close.

b. "B" SG isolation valve will close; "C" SG isolation valve will remain open.

c. "C" SG isolation valve will close; "B" SG isolation valve will remain open.

d. Both "B" and "C" SG isolation valves will remain open.

QUESTION: 091 (1.00)

Given the following conditions on Unit 2:

- Plant power is stable at 80%.
- One AMSAC turbine impulse pressure transmitter has just failed LOW.

WHICH ONE of the following states the resulting effect if the operator immediately depresses and then releases the AMSAC "BYPASS" pushbutton?

a. Bypasses AMSAC due to Loss of Both Feed Pumps.

b. Bypasses AMSAC due to Loss of Both Feed Pumps for 2 minutes.

c. Bypasses AMSAC due to Loss of Feedwater (CF) Flowpaths.

d. Bypasses AMSAC due to Loss of Feedwater (CF) Flowpaths for 2 minutes.

QUESTION: 092 (1.00)

WHICH ONE of the following lineups can be used on the Lower Containment Ventilation System air handling units if it is desired to reduce containment temperature below 100 degrees F for a containment building entry during Mode 3 operations to restore containment integrity?

a. Fans in low speed; Normal cooling water flow control valve failed open.

b. Fans in low speed; cooling water bypass valve failed open and normal cooling water flow control valve on thermostatic control.

c. Fans in high speed; Normal cooling water flow control valve failed open.

d. Fans in high speed; cooling water bypass valve failed open and normal cooling water flow control valve failed open.

QUESTION: 093 (1.00)

Select the combination below that completes the following statement.

The Start/Enable signal for a Containment Air Return (CAR) fan requires ___(X)___ Containment Pressure Control System (CPCS) pressure transmitter(s) to sense a pressure increase to 0.4 psig; the Stop signal for a CAR fan requires ___(Y)___ CPCS pressure transmitter(s) to sense a pressure decrease to 0.3 psig.

a. (X) one; (Y) one

b. (X) one; (Y) two

c. (X) two; (Y) two

d. (X) two; (Y) one

QUESTION: 094 (1.00)

Given the following conditions on Unit 1:

- The plant was operating at 100% power.
- A pipe rupture upstream of a pressurizer safety valve has caused a plant trip and safety injection.
- The crew has transitioned to EP/1/A/5000/E-1, "Loss of Reactor or Secondary Coolant."

WHICH ONE of the following combinations of parameters, if indicating an abnormally large rapid increase, would confirm a RVLIS indication that core uncovery was occurring?

a. Gamma-Metrics flux levels and Pressurizer pressure.

b. Containment radiation levels and Pressurizer pressure.

c. Gamma-Metrics flux levels and Pressurizer level.

d. Containment radiation levels and Pressurizer level.

QUESTION: 095 (1.00)

Given the following plant conditions on Unit 1:

- The reactor was operating at 100% power.
- A loss of all offsite power has occurred.
- The reactor and turbine have tripped.
- After 30 seconds, neither diesel generator has started automatically.

Per EP/1/A/5000/ECA-0.0, "Loss of All AC Power," WHICH ONE of the following combinations is the PREFERRED sequence of methods for attempting to start the diesel generators (D/Gs) if the autostart is NOT successful?

a. Manually initiate SI; THEN manually start from Control Room.

b. Manually initiate SI; THEN locally start from D/G room.

c. Manually start from Control Room; THEN locally start from D/G room.

d. Manually start from Control Room; THEN manually initiate SI.

QUESTION: 096 (1.00)

EP/1/A/5000/ECA-0.0, "Loss of All AC Power," requires depressurization of all intact steam generators (SGs) to 165 psig if AC power CANNOT be regained.

WHICH ONE of the following is the reason for the CAUTION prior to the depressurization step that warns against allowing SG pressures to decrease below 65 psig?

a. To prevent runout of the ND pumps when power is restored.

b. To prevent injection of accumulator nitrogen into the NC system.

c. To ensure T-cold remains above NCS INTEGRITY RED Path criterion.

d. To ensure delta-P across SG tubewalls remains within limits.

QUESTION: 097 (1.00)

Given the following conditions on Unit 1:

- The reactor was operating at 100% power.
- A loss of all offsite power has occurred.
- The reactor and turbine have tripped.
- Both diesel generators (D/Gs) have started automatically, but neither 1ETA or 1ETB has loaded automatically.
- Both Normal feeder breakers from ATC/ATD are open.
- Both Alternate feeder breakers from SATA/SATB are open.
- NO lockouts have occurred on bus 1ETA or 1ETB.

WHICH ONE of the following is the reason that EP/1/A/5000/ECA-0.0, "Loss of All AC Power," directs the diesel generators to be shutdown at this point rather than attempting to manually energize the 1ETA/ETB busses?

a. The time required for manual energizing would cause excessive overheating of the D/Gs.

b. The procedure for manual energizing does NOT cover closing a D/G breaker onto a dead bus.

c. The status of 1ETA/1ETB load shed is uncertain, so manual energizing may cause D/G overloading.

d. The electrical interlocks for manual energizing CANNOT be satisfied under these conditions.

QUESTION: 098 (1.00)

Given the following conditions on Unit 1:

- Reactor is at 100 percent power.
- Power is lost to 120 VAC panelboard 1ERPB.

WHICH ONE of the following will occur?

a. Reactor trip on Power Range High Flux.

b. "B" steam generator level decreases to Lo-Lo trip point.

c. N-42 fails high causing rods to step in initially.

d. Overpower Rod Stop would prevent outward rod motion if attempted.

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

ANSWER: 001 (1.00)

c.

REFERENCE:

LP OP-CN-PS-NC, pg. 29.

KA 010000K401 [2.7/2.9]

010000K401 ..(KA's)

ANSWER: 002 (1.00)

b.

REFERENCE:

LP OP-CN-PSS-KC, pg. 14.

KA 013000A206 [3.7/4.0]

013000A206 ..(KA's)

ANSWER: 003 (1.00)

d.

REFERENCE:

LP OP-CN-PS-ILE, pg. 9.

KA 000028A212 [3.1/3.5]

000028A212 ..(KA's)

ANSWER: 004 (1.00)

b.

REFERENCE:

OP/1/A/6150/10, pg. 1.

KA 028000A101 [3.4/3.8]

028000A101 ..(KA's)

ANSWER: 005 (1.00)

c.

REFERENCE:

OP/1/A/6150/04 Precaution 2.4.

KA 194001K115 [3.4/3.8]

Similar question used on 11/94 NRC exam.

194001K115 ..(KA's)

ANSWER: 006 (1.00)

d.

REFERENCE:

OMP 1-7, pg. 5.

194001K109 [3.4/3.4]

194001K109 ..(KA's)

ANSWER: 007 (1.00)

b.

REFERENCE:

OP-CN-PS-CCM, pg. 10.

KA 194001A101 [3.3/3.4]

194001A101 ..(KA's)

ANSWER: 008 (1.00)

b.

REFERENCE:

NSD 109 pg. 109-5

KA 194001K114 [3.3/3.6]

194001K114 ..(KA's)

ANSWER: 009 (1.00)

b. Ed QA 5/21/96

REFERENCE:

NSD 500, pg. 500-31, OMP 2-18, Attachment 7, pg. 3.

KA 194001K102 [ .7/4.1]

194001K102 ..(KA's)

ANSWER: 010 (1.00)

d.

REFERENCE:

OMP 2-21, pg. 5.

KA 194001A104 [3.0/3.2]

194001A104 ..(KA's)

ANSWER: 011 (1.00)

b.

REFERENCE:

CNS Site Directive 3.1.2, pg. 3 and 5.

KA 194001K105 [3.1/3.4]

194001K105 ..(KA's)

ANSWER: 012 (1.00)

d.

REFERENCE:

OMP 2-33, pg. 4.

KA 194001K101 [3.6/3.7]

194001K101 ..(KA's)

ANSWER: 013 (1.00)

b.

REFERENCE:

OMP 1-8, pg. 4.

KA 194001A111 [2.8/4.1]

[Similar question used on 11/94 NRC exam]

194001A111 ..(KA's)

ANSWER: 014 (1.00)

c.

REFERENCE:

Radiation Worker Training, pg. 33.

KA 194001K103 [2.8/3.4]

194001K103 ..(KA's)

ANSWER: 015 (1.00)

c.

REFERENCE:

OMP 2-16, pg. 4.

KA 194001A102 [4.1/3.9]

194001A102 ..(KA's)

ANSWER: 016 (1.00)

c.

REFERENCE:

OMP 2-17, pg. 2.

KA 194001A106 [3.4/3.4]

194001A106 ..(KA's)

ANSWER: 017 (2.00)

a. 2
b. 1
c. 4
d. 5 (0.5 each)

REFERENCE:

LP OP-CN-IC-IRE, pg. 20.

KA 001010K404 [2.6/2.8]

001010K404 ..(KA's)

ANSWER: 018 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IRX, pg. 13; LRPO 3.

KA 001000A301 [4.1/4.0]

001000A301 ..(KA's)

ANSWER: 019 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IRE, pg. 19.

KA 001050A101 [4.0/4.2]

001050A101 ..(KA's)

ANSWER: 020 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, Page 34; OP/1/A/6150/06 Prec. 2.27.

KA 002000G010 [3.4/3.9]

Similar question used on 10/92 NRC exam.

002000G010 ..(KA's)

ANSWER: 021 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, pg. 41.

KA 002000K410 [4.2/4.4]

002000K410 ..(KA's)

ANSWER: 022 (1.00)

c.

REFERENCE:

LP OP-CN-PS-NCP, pg. 25, 26.

KA 062000K402 [2.5/2.7]

062000K402 ..(KA's)

ANSWER: 023 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NCP, pg. 14.

KA 003000A203 [2.7/3.1]

003000A203 ..(KA's)

ANSWER: 024 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NCP, pg. 19.

KA 003000A201 [3.5/3.9]

003000A201 ..(KA's)

ANSWER: 025 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NV, pg. 19.

KA 003000K104 [2.6/2.9]

003000K104 ..(KA's)

ANSWER: 026 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NV, pg. 13, 14.

KA 004010K403 [3.1/3.6]

004010K403 ..(KA's)

ANSWER: 027 (1.00)

a.

REFERENCE:

LP OP-CN-PS-NV, pg. 17.

KA 004020K504 [2.6/3.1]

004020K504 ..(KA's)

ANSWER: 028 (1.00)

c.

REFERENCE:

LP CN-OP-PS-ND, pg. 10.

KA 005000K203 [2.7/2.8]

005000K203 ..(KA's)

ANSWER: 029 (1.00)

c.

REFERENCE:

LP OP-CN-PS-MD, pg. 10.

KA 005000K407 [3.2/3.5]

005000K407 ..(KA's)

ANSWER: 030 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-CLA, pg. 10.

KA 006020K602 [2.6/2.8]

006020K602 ..(KA's)

ANSWER: 031 (1.00)

d.

REFERENCE:

Tech Spec 3.5.4.

KA 006000G005 [3.5/4.2]

006000G005 ..(KA's)

ANSWER: 032 (1.00)

c.

REFERENCE:

LP OP-CN-PS-NC, page 12.

KA 007000K103 [3.0/3.2]

007000K103 ..(KA's)

ANSWER: 033 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-KC, pg. 16.

KA 008030A301 [3.0/3.1]

008030A301 ..(KA's)

ANSWER: 034 (1.00)

d.

REFERENCE:

LP OP-CN-PSS-KC, pg. 21.

KA 008030A304 [3.6/3.7]

008030A304 ..(KA's)

ANSWER: 035 (1.00)

c.

REFERENCE:

LP OP-CN-PS-IPE, pg. 10, 11.

KA 010000A302 [3.6/3.5]

010000A302 ..(KA's)

ANSWER: 036 (1.00)

b.

REFERENCE:

LP OP-CN-PS-IPE, pg. 17.

KA 062000K301 [3.5/3.9]

062000K301 ..(KA's)

ANSWER: 037 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ILE, pg. 9, 10.

KA 011000K406 [3.3/3.7]

011000K406 ..(KA's)

ANSWER: 038 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ILE, pg. 8.

KA 011000K407 [2.9/3.2]

011000K407 ..(KA's)

ANSWER: 039 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IPX, pg. 12.

KA 012000K401 [3.7/4.0]

012000K401 ..(KA's)

ANSWER: 040 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IPX, pg. 19.

KA 012000K402 [3.9/4.3]

012000K402 ..(KA's)

ANSWER: 041 (1.00)

b.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 17.

KA 013000K401 [3.9/4.3]

013000K401 ..(KA's)

ANSWER: 042 (1.00)

a.

REFERENCE:

LP OP-CN-DG-EQB, pg. 13.

KA 013000K108 [3.6/3.8]

013000K108 ..(KA's)

ANSWER: 043 (1.00)

c.

REFERENCE:

LP OP-CN-IC-EDA, pg. 12.

KA 014000A102 [3.2/3.6]

014000A102 ..(KA's)

ANSWER: 044 (1.00)

b.

REFERENCE:

LP OP-CN-IC-IRE, pg. 19.

KA 014000A103 [3.6/3.8]

014000A103 ..(KA's)

ANSWER: 045 (1.00)

b.

REFERENCE:

LP OP-CN-IC-IPX, pg. 21; LP OP-CN-IC-ENB, pg. 12.

KA 015000A303 [3.9/3.9]

015000A303 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, pg. 22.

KA 016000K101 [3.4/3.4]

016000K101 ..(KA's)

ANSWER: 047 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 12.

KA 026000A301 [4.3/4.5]

026000A301 ..(KA's)

ANSWER: 048 (1.00)

b.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 13.

KA 026000G010 [3.3/3.5]

026000G010 ..(KA's)

ANSWER: 049 (1.00)

d.

REFERENCE:

Technical Specifications 3.4.6.2.

KA 000009G008 [3.2/3.9]

000009G008 ..(KA's)

ANSWER: 050 (1.00)

b.

REFERENCE:

LP OP-CN-IC-ENB, pg. 17.

015020K504 [3.2/3.6]

015020K504 ..(KA's)

ANSWER: 051 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NC, pg. 28.

KA 016000K403 [2.8/2.9]

016000K403 ..(KA's)

ANSWER: 052 (2.00)

a. 4
b. 7
c. 2
d. 5 (0.5 each)

REFERENCE:

LP OP-CN-CH-PC, pg. 15.

KA 004000K401 [2.8/3.3]

004000K401 ..(KA's)

ANSWER: 053 (1.00)

b.

REFERENCE:

LP OP-CN-CNT-VV, pg. 14.

KA 022000K402 [3.1/3.4]

022000K402 ..(KA's)

ANSWER: 054 (1.00)

b.

REFERENCE:

LP OP-CN-CNT-VP, pg. 8, 9.

KA 029000G010 [2.9/3.1]

029000G010 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

LP OP-CN-STM-IDE, pg. 12.

KA 041020K417 [3.7/3.9]

041020K417 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

LP OP-CN-STM-IDE, pg. 12.

KA 041020A408 [3.0/3.1]

041020A408 ..(KA's)

ANSWER: 057 (1.00)

d.

REFERENCE:

LP CN-OP-CF-CM, pg. 14.

KA 056000G015 [2.7/2.9]

056000G015 ..(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CF, pg. 13.

KA 059000G010 [2.9/2.9]

Similar question used on 10/92 NRC exam.

059000G010 ..(KA's)

ANSWER: 059 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CF-IFE, pg. 13.

KA 059000A302 [2.9/3.1]

059000A302 ..(KA's)

ANSWER: 060 (1.00)

c.

REFERENCE:

LP OP-CN-CF-CA, pg. 10.

KA 061000G010 [3.5/3.6]

061000G010 ..(KA's)

ANSWER: 061 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CA, pg. 14; LP OP-CN-ECCS-ISE, pg. 16.

KA 061000K402 [4.5/4.6]

061000K402 ..(KA's)

ANSWER: 062 (1.00)

d.

REFERENCE:

LP OP-CN-CF-CA, pg. 14.

KA 061000A303 [3.9/3.9]

061000A303 ..(KA's)

ANSWER: 063 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IPX, pg. 18.

KA 000007K203 [4.3/4.6]

000007K203 ..(KA's)

ANSWER: 064 (1.00)

a.

REFERENCE:

EP/1/A/5000/E-0, pg. 4.

KA 000007G010 [4.2/4.1]

000007G010 ..(KA's)

ANSWER: 065 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-NS, pg. 14.

KA 000011A113 [4.1/4.2]

000011A113 ..(KA's)

ANSWER: 066 (1.00)

b.

REFERENCE:

LP OP-CN-PS-NCP, pg. 36.

KA 000015K207 [2.9/2.9]

000015K207 ..(KA's)

ANSWER: 067 (1.00)

d.

REFERENCE:

AP/1/A/5500/15, pg. 5.

000001A203 [4.5/4.8]

000001A203 ..(KA's)

ANSWER: 068 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IRE, pg. 14.

KA 000003G009 [3.6/3.6]

000003G009 ..(KA's)

ANSWER: 069 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IRE, pg. 15.

KA 000005G009 [3.4/3.4]

000005G009 ..(KA's)

ANSWER: 070 (1.00)

b.

REFERENCE:

LP OP-CN-IC-ENC, pg. 9, 10.

KA 000022G009 [3.2/3.2]

000022G009 ..(KA's)

ANSWER: 071 (1.00)

d.

REFERENCE:

LP OP-CN-PS-NV, pg. 18.

KA 000022A108 [3.4/3.3]

Similar question used on 11/94 NRC exam.

000022A108 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-RC, pg. 12; LP OP-CN-PS-NV, pg. 27.

KA 000024A206 [3.6/3.7]

000024A206 ..(KA's)

ANSWER: 073 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ND, pg. 14.

KA 000025K101 [3.9/4.3]

000025K101 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

LP OP-CN-PSS-KC, pg. 11.

KA 000026A105 [3.1/3.1]

000026A105 ..(KA's)

ANSWER: 075 (1.00)

a.

REFERENCE:

OP-CN-PS-IPE, pg. 19, 20.

KA 000027A216 [3.6/3.9]

000027A216 ..(KA's)

ANSWER: 076 (1.00)

a.

REFERENCE:

OP-CN-PS-IPE, pg. 16.

KA 000027A218 [3.4/3.5]

000027A218 ..(KA's)

ANSWER: 077 (1.00)

b.

REFERENCE:

LP OP-CN-PS-ILE, pg. 15.

KA 000028A201 [3.4/3.6]

000028A201 ..(KA's)

ANSWER: 078 (1.00)

a.

REFERENCE:

LP OP-CN-IC-ENB, pg. 10; SR Drawer front drawing

KA 000032A209 [2.5/2.9]

000032A209 ..(KA's)

ANSWER: 079 (1.00)

d.

REFERENCE:

LP OP-CN-IC-IPX, pg. 17.

KA 000032A101 [3.1/3.4]

000032A101 ..(KA's)

ANSWER: 080 (1.00)

c.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 21.

KA 000040A101 [4.6/4.6]

000040A101 ..(KA's)

ANSWER: 081 (1.00)

d.

REFERENCE:

LP OP-CN-ECCS-ISE, pg. 16.

KA 000040A101 [4.6/4.6]

000040A101 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

LP OP-CN-PS-CCM, pg. 9, 10.

KA 000074A101 [4.2/4.4]

000074A101 ..(KA's)

ANSWER: 083 (1.00)

a.

REFERENCE:

LP OP-CN-EP-EP1, Obj. 4.2; EP/1/A/5000/E-1.

000008K202 [2.7/2.7]

000008K202 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

Steam Tables

KA 000008K302 [3.6/4.1]

000008K302 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

LP OP-CN-PS-ILE, pg. 16.

KA 000009A204 [3.8/4.0]

000009A204 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

E-0 Bkgd Doc, pg. 12; AP/1/A/5500/21, pg. 3.

KA 000011K314 [4.1/4.2]

Similar question used on 11/94 NRC exam

000011K314 ..(KA's)

ANSWER: 087 (1.00)

d.

REFERENCE:

LP OP-CN-WE-EMF, pg. 10; AP/1/A/5500/10, pg. 7.

KA 000037A104 [3.6/3.9]

000037A104 ..(KA's)

ANSWER: 088 (1.00)

a.

REFERENCE:

LP OP-CN-IC-IPX, pg. 23.

KA 000051K301 [2.8/3.1]

000051K301 ..(KA's)

ANSWER: 089 (1.00)

c.

REFERENCE:

LP OP-CN-CF-IFE, Rev. 19, pg. 21.

KA 000054A202 [4.1/4.4]

000054A202 ..(KA's)

ANSWER: 090 (1.00)

c.

REFERENCE:

LP OP-CN-CF-CA, pg. 17.

KA 000054A204 [4.2/4.3]

000054A204 ..(KA's)

ANSWER: 091 (1.00)

c.

REFERENCE:

CN Exam Bank, CF-CF #9.
LP OP-CN-CF-CF, pg. 35, 36.

KA 000054A204 [4.2/4.3]

000054A204 ..(KA's)

ANSWER: 092 (1.00)

a.

REFERENCE:

LP OP-CN-CNT-VV, pg. 13.

KA 000069A101 [3.5/3.7]

000069A101 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:

LP CN-OP-CNT-VX, pg. 10.

KA 000069A202 [3.9/4.4]

NOTE: Needs facility verification; Training drawing CN-ECCS-NS-04 does not indicate the CPCS transmitter redundancy described in Lesson Plan reference.

000069A202 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

Exam Bank EP-CSF #181.

KA 000074K102 [4.6/4.8]

000074K102 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

EP/1/A/5000/ECA-0.0, Bkgd Doc, pg. 7.

KA 000055A203 [3.9/4.7]

000055A203 ..(KA's)

ANSWER: 096 (1.00)

b.

REFERENCE:

EP/1/A/5000/ECA-0.0 Bkgd Doc, pg. 23.

KA 000055K302 [4.3/4.6]

000055K302 ..(KA's)

ANSWER: 097 (1.00)

c.

REFERENCE:

EP/ECA-0.0 Bkgd Doc, pg. 7.

KA 000056K302 [4.4/4.7]

000056K302 ..(KA's)

ANSWER: 098 (1.00)

d.

REFERENCE:

LP CN-OP-EL-EPL, page 19.
Exam Bank

KA 000057A219 [4.0/4.3]

Similar question used on 11/94 NRC exam.

000057A219 ..(KA's)

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

FACILITY COMMENTS

Enclosure 3