U.S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NO. 50-443/94-10 (OL)

LICENSEE: North Atlantic Energy Service Corporation
Seabrook, New Hampshire

FACILITY: Seabrook Station

DATES: May 2 - 10, 1994

EXAMINERS: Joseph D'Antonio, Operations Engineer
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Steve Johnson, INEL examiner

CHIEF EXAMINER: Joseph D'Antonio, Operations Engineer
PWR & BWR Sections
Division of Reactor Safety

5-26-94
Date

APPROVED BY: Glenn Meyer, Chief
PWR & BWR Sections
Division of Reactor Safety

6/23/94
Date

EXECUTIVE SUMMARY

Inspection Report 50-443/94-10

From May 2-10, 1994, four examiners administered initial licensing examinations to eight reactor operator (RO), five senior reactor operator upgrade (SROU), and three senior reactor operator instant (SROI) candidates at Seabrook.

<u>Operations</u>

One RO candidate and one SROU candidate failed the written portion of the examination; all other candidates passed.

Weaknesses were noted in the following areas:

- SRO candidates tended to overclassify events involving loss of a single 4.16 kV emergency bus due to interpreting references to busses "E5 AND E6" in the emergency plan as "E5 OR E6."

- Some RO candidates had difficulty interpreting technical specifications.

- Some SRO candidates did not prioritize and expedite restoring injection flow once power was regained in a loss of all ac with LOCA scenario.

- Some candidates were unable to locate prints or procedural guidance on operating limits for the RAT, UAT, and GSO transformers.

Overall, communications in the simulator were excellent. However, in one crew, the board operators did not give the SRO any information he didn't explicitly ask for. The SRO is dependent on information from the board operators, and this failure to volunteer significant plant status information hampered his ability to address ongoing problems and hindered his performance.

Operator performance on walkthroughs was good, and the operators carefully checked and verified the appropriate procedure section and components to be manipulated.

DETAILS

1.0 SUMMARY OF RESULTS

	SRO Pass/Fail	RO Pass/Fail
Written	7 / 1	7 / 1
Simulator	8 / 0	8 / 0
Walk-through	8 / 0	8 / 0
Overall	7 / 0	7 / 1

2.0 GENERIC STRENGTHS AND WEAKNESSES

A weakness on a written examination is an item missed by half or more of the candidates presented with the item. Weaknesses on operating tests are areas or items where half or more of the candidates performed unsatisfactorily or with difficulty.

2.1 Simulator Upgrade

Since the last initial examination, the facility had upgraded the simulator modeling and the instructor station. The new instructor station utilizes a graphical, mouse-based interface on a Sun workstation and several auxiliary screens. The ease of use of this new interface greatly facilitated the original validation of the scenarios and enabled scenario modifications in response to unexpected candidate actions.

2.2 Operating Examinations - Simulator

A strength was noted in overall communications. The crews did a generally excellent job of ensuring that communications were clearly delivered and acknowledged. However, in one crew, the board operators did not provide the SRO with any information he did not ask for while reading the EOPs, contributing to his lack of awareness of the fact that the core had become uncovered, with no ac power available to run ECCS pumps.

The examiners noted that previously-existing procedural inconsistencies in regard to references to "local" vs "manual" operation of MSIVs, which contributed to performance weaknesses in prior exams, have been corrected.

Two weaknesses were noted in the execution of ECA-0.0. The first weakness was in prioritization and timely action. These scenarios involved either a small or a large break loss of coolant accident (LOCA) in conjunction with a loss of all ac power. Two candidates recognized the need to proceed to the point of starting injection pumps once power was restored to any bus. The others either allowed themselves to be distracted by calls from outside the control room, or simply took their time reaching these steps. One candidate

appeared to be unaware that the core had become uncovered, despite core exit thermocouples at 1100°F and increasing. Although all candidates accomplished the required actions, the slow progress in some instances allowed substantially higher peak core temperatures and would have increased the extent of core damage.

The second weakness noted in ECA-0.0 performance was that the step to manually start diesels was performed differently by different SROs. One candidate skipped a substep, and two candidates did not give precise orders for local operator actions. All candidates did take sufficient action to get one diesel back, as intended by the scenario.

A minor weakness, noted in both scenario followup questioning and in walkthroughs, was that SRO candidates tended to overclassify events involving a loss of a single 4.16 kV bus. This was apparently due to misinterpreting event classification guide references to a loss of power to busses E5 AND E6 as meaning a loss of power to either bus E5 OR E6.

2.3 Operating Examinations - Plant Walkthrough

Overall walkthrough performance was good. The candidates performed the JPM tasks in a careful manner, checking and verifying the appropriate procedure section and components to be manipulated. Only one candidate missed one JPM due to a performance error.

The candidates were weak on maintenance and operational questions concerning the RAT, UAT, and GSU transformers. Various candidates either could not find appropriate prints to identify power to cooling components, or could not identify operating limits and/or plant response to loss of transformer cooling components.

2.4 Written Examination

The following items were missed by half or more of the candidates tested:

Question# (RO/SRO)	Topic
-/3	Permission for valve operations
-/5	Plant response to MSIV closure
-/16	Locked valve operation
-/22	Cause of open relief valve
-/24	Response to high core temperatures
-/44	Plant transient response
-/58	Applicability of FR-H.1
-/68	Post loss of all AC battery life
-/89	Source Range NI operability requirements
7/-	Temperature instrument failure
16/-	Temporary modifications
18/-	10 CFR 20

Question# (RO/SRO)	Topic
25/-	Automatic response to rad monitor
27/23	Cause of rad monitor alarm
28/-	Auto condensate pump start
29/-	Feedwater flowpath
48/-	Source Range NI failure
77/66	Effect of instrument failure on SG level control
79/67	Condenser steam dump operation
96/84	Greatest H2 source after LOCA

The weaknesses indicated by these questions are predominantly in detailed knowledge of plant behavior, and instrument and control system characteristics or requirements.

3.0 EXAM REVIEW AND POST-EXAM COMMENTS

A facility preexam review and validation was conducted during the week of April 18, 1994. The majority of changes requested by the facility were grammatical, or involved plant specific terminology. Questions with unresolvable technical errors were replaced.

The facility provided post-exam comments for NRC review. These comments and the NRC response are provided as Attachment 2.

4.0 EXIT MEETING ON MAY 10, 1994

The NRC expressed its appreciation for the assistance of the facility reviewers and facility accommodation of the needs of the examination process. Generic strengths and weaknesses observed in the operating test were discussed. The presence of the operations manager or a representative during the conduct of the simulator scenarios was also noted as an aid to the facility in understanding NRC comments.

The following key facility personnel attended the exit meeting.

W. A. DiProfio	Station Manager
B. L. Drawbridge	Exec Director - Nuclear Production
P. M. Richardson	Director of Training
J. M. Grillo	Operations Manager
R. Hanley	Operations Training Manager

Attachments:
1. Written Examination and Answer Keys
2. Facility Comments and NRC Resolution
3. Simulation Facility Report

ATTACHMENT 1

WRITTEN EXAMINATIONS AND ANSWER KEYS

NRC Master RO

NUCLEAR REGULATORY COMMISSION
REACTOR OPERATOR
LICENSING EXAMINATION

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

U.S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR
REGION I

CANDIDATE'S NAME: _____

FACILITY: Seabrook 1

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 94/05/02

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	CANDIDATE'S SCORE
100.00	

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

_____
Candidate's Signature

REACTOR OPERATOR NAME_____

ANSWER SHEET

Multiple Choice (Circle or X your choice)
If you change your answer, write your selection in the blank.

001	a	b	c	d	___	019	a	b	c	d	___
002	DELETED					020	a	b	c	d	___
003	a	b	c	d	___	021	a	b	c	d	___
004	a	b	c	d	___	022	a	b	c	d	___
005	a	b	c	d	___	023	a	b	c	d	___
006	a	b	c	d	___	024	a	b	c	d	___
007	a	b	c	d	___	025	a	b	c	d	___
008	a	b	c	d	___	026	a	b	c	d	___
009	a	b	c	d	___	027	a	b	c	d	___
010	a	b	c	d	___	028	a	b	c	d	___
011	a	b	c	d	___	029	a	b	c	d	___
012	a	b	c	d	___	030	a	b	c	d	___
013	a	b	c	d	___	031	a	b	c	d	___
014	a	b	c	d	___	032	a	b	c	d	___
015	a	b	c	d	___	033	a	b	c	d	___
016	a	b	c	d	___	034	a	b	c	d	___
017	a	b	c	d	___	035	a	b	c	d	___
018	a	b	c	d	___	036	a	b	c	d	___

NAME _____

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NAME _____

080	a	b	c	d	___	091	a	b	c	d	___
081	a	b	c	d	___	092	a	b	c	d	___
082	a	b	c	d	___	093	a	b	c	d	___
083	a	b	c	d	___	094	a	b	c	d	___
084	a	b	c	d	___	095	a	b	c	d	___
085	a	b	c	d	___	096	a	b	c	d	___
086	a	b	c	d	___	097	a	b	c	d	___
087	a	b	c	d	___	098	a	b	c	d	___
088	a	b	c	d	___	099	a	b	c	d	___
089	a	b	c	d	___	100	a	b	c	d	___
090	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. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

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

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

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

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)

The reactor is at full power with A and D service water pumps and A and C condensate pumps running. The UAT breaker to 4.16 kV bus E5, opens for an undetermined reason. Which describes system response?

a. Service water and condensate pumps continue to operate with power from the RAT.

b. The reactor will trip.

c. Service water cooling will be interrupted for a few seconds while the diesel generator starts.

d. Service water and condensate pumps continue to operate with power from the Unit Auxiliary Transformer.

QUESTION: 002 (1.00)

DELETED

QUESTION: 003 (1.00)

The reactor is shutdown with all reactor coolant pumps operating. If a rapid cooldown occurs, into which loop will the pressurizer outsurge?

a. Loop 1.

b. Loop 2.

c. Loop 3.

d. Loop 4.

QUESTION: 004 (1.00)

The reactor is at full power. Containment pressure increases to 4.5 psig. Which of the following describes a plant response?

a. Charging flow to RCP seals is isolated.

b. The VCT will drain to the low-low level.

c. SI pump isolation valve SI-V-93 closes

d. Charging Pump isolation valve CS-V-142 closes.

QUESTION: 005 (1.00)

Which of the following will cause a reactor trip?

a. With reactor trip breaker A in test, the B trip breaker shunt trip coil is deenergized.

b. With reactor trip breaker A in test, the output breaker from vital DC bus, PP-111A is opened.

c. With reactor power at 60 percent, two turbine stop valves are not fully open.

d. With the PZR PRESS LO SI TRAIN A(B) BLOCKED status lamp lit, reactor pressure is 1940 psig.

QUESTION: 006 (1.00)

The reactor is at 70 percent power when a reactor trip switch is actuated. ALL of the following occur EXCEPT:

a. Feedwater isolation valves close if low Tave (564 degrees) occurs.

b. Safety injection signals reset after 60 seconds.

c. Condenser steam dump valves open until T-ave reaches 557 degrees.

d. The EHC mechanical trip solenoid will energize.

QUESTION: 007 (1.00)

The loop 2, cold leg narrow range temperature instrument fails (open circuit). Which of the following occurs?

a. Turbine load increase pushbutton is defeated.

b. Pressurizer programmed level drops.

c. Condenser steam dumps open.

d. The reactor trips on Overpower delta-T.

QUESTION: 008 (1.00)

The plant is at full power when a loop 1 wide range hot leg temperature instrument fails (short circuit). Which of the following occurs?

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a. Over~~pressure~~ power delta-T setpoint drops.

b. Programmed pressurizer level rises.

c. A pressurizer PORV opens.

d. Neutron level drops.

QUESTION: 009 (1.00)

Which of the following routine valve operations is conducted only with prior control room concurrence?

a. Chemistry operates Chemical Addition (CAS) valves.

b. Chemistry operates Sampling (SS) valves.

c. Engineering operates Inservice testing (IST) valves.

d. Radwaste operates Steam Generator Blowdown (SB) demineralizer valves.

QUESTION: 010 (1.00)

A surveillance test is to be conducted at full power. The test strokes individual MSIVs 10 percent from the full open position then returning to full open. If the test were to fail with the MSIV going full shut, which of the following would be a result?

a. Low steam pressure SI.

b. Pressurizer high pressure reactor trip.

c. Steam generator high-high level feedwater isolation.

d. Pressurizer low pressure reactor trip.

QUESTION: 011 (1.00)

ALL of the following have technical specification limits for concentration in the reactor coolant system EXCEPT:

a. Hydrazine.

b. Oxygen.

c. Fluoride.

d. Chloride.

QUESTION: 012 (1.00)

The breaker to the safety injection pump, SI-P-6A, is racked out and danger tagged. Which of the following provides the proper placement of the danger tag for the breaker if it is to be removed from the cubicle for repair?

a. After the breaker is removed from the cubicle, affix a danger tag to the breaker.

b. After the breaker is removed from the cubicle, affix a danger tag to the cubicle door.

c. Prior to removing the breaker, affix a danger tag stating REMOVED to the control room switch.

d. Prior to removing the breaker, remove the control room switch and affix a danger tag stating REMOVED to the switch attachment.

QUESTION: 013 (1.00)

According to the Seabrook Emergency Plan, ER-1.2, which of the following states the MINIMUM (lowest severity) emergency classification that REQUIRES stationing of response personnel in the Technical Support Center?

a. Unusual Event.

b. Alert.

c. Site Area Emergency.

d. General Emergency.

QUESTION: 014 (1.00)

Main steam valve MS-V33, on top of the C steam generator is observed with a yellow component tag. Which of the following specifies the meaning of the yellow tag?

a. The valve position (open or shut) has been independently verified and locked.

b. The valve has been throttled, verified, and locked in place.

c. The valve is a work control boundary.

d. An equipment deficiency has been identified for the valve.

QUESTION: 015 (1.00)

Procedure OS1002.07, ESTABLISH A HYDROGEN ATMOSPHERE IN THE VCT, has a precaution which states;

> When establishing and maintaining a hydrogen atmosphere in the VCT, the oxygen concentration must be maintained below 4 percent in the VCT gas space.

Which of the following is a basis for the precaution?

a. Limit the N-16 activity in the reactor coolant.

b. Minimize the number of required reactor coolant samples when at power.

c. Prevent explosive mixtures of gases in the charging system.

d. Ensure adequate suction pressure for the charging pumps.

QUESTION: 016 (1.00)

Which of the following requires implementation of MA 4.3, TEMPORARY MODIFICATIONS, including completion of a 10CFR 50.59 safety review prior to implementation?

a. Installation of a test pressure gauge during the conduct of a routine RHR pump surveillance.

b. Connection of a portable heater to a welding outlet during maintenance in the circulating pump building.

c. Hanging of a sheet of lead shielding over a letdown system hotspot during maintenance.

d. A hose connected to a feedwater piping drain line during cold shutdown.

QUESTION: 017 (1.00)

The following conditions exist:

A reactor trip from full power occurred 75 minutes ago
RCS pressure is 620 psig
Cold leg loops 1 and 4 temperatures are 245 degrees F
Cold leg loops 2 and 3 temperatures are 255 degrees F
CSF Status Tree F-0.4 is in effect (Attached)

Which of the following states the appropriate CSF color code?

a. Green.

b. Yellow.

c. Orange.

d. Red.

QUESTION: 018 (1.00)

ALL of the following Federal Limits would be found in 10CFR Part 20, EXCEPT:

a. The allowed protection factor for a full face respirator.

b. The whole body exposure limit for a licensed reactor operator.

c. The basis for the reactor coolant gross activity limit.

d. The quantity of radioactive material that can be discharged into the sewer system.

QUESTION: 019 (1.00)

Letdown drain valve CS-V815 is to be placed in the normal system lineup position. Which of the following describes the method for completing the valve positioning? (Component Configuration List Attached)

a. The designated individual opens the valve and places a sealing device in such a way as to limit valve motion to less than one turn. The position is then reported to the control room where the log is completed.

b. The first individual opens and locks the valve while the second individual watches. The first individual then signs the log sheet and the second completes the independent verification.

c. The first individual shuts the valve. A second individual verifies the valve is shut, attaches a lock, and informs control room personnel to complete the independent verification.

d. The first individual shuts the valve and locks the handwheel. A second individual verifies the valve is shut and locked, then control room personnel complete the verification section of the log.

QUESTION: 020 (1.00)

A locked shut valve is to be danger tagged in the open position. Which of the following describes the process for the repositioning?

a. The designated individual opens the valve, leaving the lock in place, unlocked. A second individual verifies the valve is open, places the lock, and affixes the danger tag. Both individuals sign the tagout log.

b. The designated individual opens the valve, leaving the lock in place, unlocked, and affixes the danger tag. The second individual verifies the valve position and reports the result to the control room.

c. The designated individual locks the valve in the open position and affixes the tag to the lock. The second individual verifies the tag is affixed to the lock and reports to the control room.

d. The designated individual opens the valve and affixes the danger tag. The lock is given to maintenance for storage. The second individual verifies the valve is open and signs the tagout log.

QUESTION: 021 (1.00)

Work is to be performed replacing the pressurizer PORV block valve stem. In accordance with MA 4.2, what would be the optimal reactor plant condition to perform the work without special approval, and allow the plant to return to power operations?

a. Mode 2.

b. Mode 3.

c. Mode 4.

d. Mode 5.

QUESTION: 022 (1.00)

The reactor is shutdown and residual heat removal is being placed in service in accordance with OS1013.03. Prior to placing train A in service, the operator opens CS-HCV-128, RHR Flow Control, and RH-V18, RHR Train A to CVCS (Purification). Which of the following is a function served by opening these valves?

a. Ensure adequate cooling flow to the RCPs.

b. Limit positive reactivity additions.

c. Crosstie RHR trains A and B.

d. Prevent overpressurizing of RHR piping.

QUESTION: 023 (1.00)

Which of the following will prevent starting of the B diesel driven fire pump?

a. Previous operation has allowed engine jacket water temperature to reach 210 degrees F.

b. The engine has come to rest following an overspeed trip.

c. A leak has caused engine lubrication oil to drain to the sump.

d. An energized light on panel FP-CP-70A states BATTERY FAILURE.

QUESTION: 024 (1.00)

The following plant conditions exist:

Containment pressure is 15 psig
RWST LOW-LOW LEVEL annunciator has just been received
RWST water volume is 125,000 gallons

Which of the following conditions occurs?

a. Centrifugal Charging Pumps start to cavitate.

b. Spray pump suction valves, CBS-V-8 and 14, open.

c. RHR supply to SI pumps, RH-V-36, opens.

d. RHR discharge to RCS cold legs, RH-V-14, shuts.

QUESTION: 025 (1.00)

Waste Gas Vent valve, FV-1602, (indicated on MCB-CR) has shut. Which of the following states the likely cause of the isolation?

a. Realignment of the WG hydrogen compressors due to a T-signal.

b. High radiation at the outlet of the waste gas dryers.

c. Hydrogen Surge Tank hydrogen is at 90 percent LEL.

d. High radiation at the outlet of the Ambient Carbon Delay Beds.

QUESTION: 026 (1.00)

Hydrogen vent header relief valve VG-V-50, (MCB-CR) indicates open. Which of the following states a cause for the valve to be open?

a. RCDT pressure is 10 psig.

b. WG hydrogen compressor output is 100 psig.

c. Hydrogen detonation has occurred at the outlet of the WG dryers.

d. WG dryer inlet pressure is 6 psig.

QUESTION: 027 (1.00)

The following conditions exist:

Reactor is in Mode 6
Core offload is in progress
Spent Fuel Pool Temperature is 105 degrees F
Containment sump pump is running

A containment high airborne radiation alarm is received and containment ventilation isolates. Which of the following has occurred?

a. A spent fuel assembly has been dropped.

b. The refueling cavity level has dropped below technical specification minimum.

c. Spent fuel pool cooling has failed.

d. A spent fuel assembly has been lifted above the water surface.

QUESTION: 028 (1.00)

The plant is operating at full power with condensate pumps,P-30A and P-30B in operation. Which of the following will cause condensate pump P-30C to start?

a. The control switch for P-30C is taken out of Pull-To-Lock.

b. A steam generator feed pump trips.

c. Hotwell level drops to the auto-makeup setpoint.

d. Clogging lowers the P-30A air cooler SCC flow to 15 gpm.

QUESTION: 029 (1.00)

The plant is at full power. Which of the following states the correct feedwater flowpath for feed to D steam generator, starting at the main feedwater header and ending at the steam generator?

a. FW regulating block valve, FK-55; FW regulating valve, FCV-540; Chemical feed line; EFW supply; FW isolation valve, FW-V-57; steam generator.

b. FW isolation valve, FW-V-57; FW regulating valve, FCV-540; Chemical feed line; FW regulating block valve, FK-55; EFW supply; steam generator.

c. FW regulating block valve, FK-55; Chemical feed line; FW regulating valve, FCV-540; FW isolation valve, FW-V-57; EFW supply; steam generator.

d. FW regulating block valve, FK-55; FW regulating valve, FCV-540; Chemical feed line; FW isolation valve, FW-V-57; EFW supply; steam generator.

QUESTION: 030 (1.00)

The plant is operating at full power when instrument air is isolated to charging flow control valve HCV-182. Which of the following states the effect of the air isolation on the 1A reactor coolant pump?

a. Motor bearing temperatures will increase

b. Seal injection flow will decrease.

c. Seal injection flow will increase.

d. Motor bearing temperatures will decrease.

QUESTION: 031 (1.00)

Which of the following engineered safety features uses P-4 as an input?

a. Emergency feedwater actuation.

b. Loss of flow reactor trip.

c. Feedwater isolation.

d. Main steam line isolation.

QUESTION: 032 (1.00)

The following plant conditions exist:

The unit is at 12 percent power during a transient
Rods are in automatic
N-41 Power Range Channel is tripped
T-ave is 4 degrees below program

Which of the following states the response of the rod control system?

a. Rods will not move because of insufficient temperature error.

b. Rods will not move because of C-5, Low Turbine Power Rod Stop.

c. Rods will not move due to C-2, High Power Range Flux Rod Stop.

d. Rods step out to restore T-ave to program.

QUESTION: 033 (1.00)

Core Exit Thermocouple Temperature is an input to which Critical Safety Function Status Tree?

a. Subcriticality.

b. Core Cooling.

c. Heat Sink.

d. Inventory.

QUESTION: 034 (1.00)

A LOCA has occurred. Incore Thermocouples indicate 1600 degrees. Which of the following is an action required by FRC-1?

a. Place RHR in service.

b. Verify pressurizer safety valves have lifted.

c. Reset RVLIS PLASMA display

d. Place containment hydrogen monitors in service.

QUESTION: 035 (1.00)

ALL of the following will cause auto-start of the Emergency Feedwater pumps EXCEPT?

a. SG 1A narrow range level is 10 percent.

b. The main turbine is at 50 percent and all four steam generators are at 4 percent narrow range level.

c. Undervoltage on 13.8 buses 1 and 2.

d. Containment pressure is 4 psig.

QUESTION: 036 (1.00)

The plant is operating at full power when a steam line break occurs in the B steam generator steam line. Steam pressure in the B steam line drops instantaneously to 400 psig and containment pressure rises to 3 psig. Which one of the following components, if operating at the time of the event, will continue to operate?

a. B Moisture separator-reheater.

b. B Steam generator feedpump.

c. Turbine driven emergency feedwater pump.

d. Letdown heat exchanger.

QUESTION: 037 (1.00)

The reactor is operating at full power and the A emergency diesel generator is operating for a surveillance test. A steam generator fault occurs causing the A steam generator to depressurize and dryout. The A diesel generator then trips. Which of the following could have caused the diesel trip?

a. One A diesel generator emergency shutdown pushbutton is depressed.

b. The A diesel jacket water reaches 185 degrees F.

c. The diesel backup protection, reverse power relay fails.

d. A leak causes engine lube oil pressure to fall to 0.2 psi.

QUESTION: 038 (1.00)

The reactor is in Mode 6 and core offload is in progress. Which of the following will stop venting of containment air?

a. A flange seal leak causes refueling cavity water level to drop 2 feet in one hour.

b. The reactor operator manually initiates containment spray.

c. Containment air purge radiation monitor RM-6527B1 fails high.

d. An inservice containment pressure detector is tested at 42 psi.

QUESTION: 039 (1.00)

Which of the following states how charging pump (CCP) miniflow protection operates during safety injection? (NOTE; CS-V-196 AND CS-V-197 are the miniflow recirculation valves)

a. When CCP discharge pressure increases to 2250 psig, the miniflow recirculation valves will automatically open.

b. When CCP flow falls below 80 gpm, the miniflow recirculation valves will automatically open.

c. Cool water from the RWST prevents CCP bearings from overheating during safety injection.

d. If CCP discharge pressure increases to 2250 psig, an operator manually throttles the miniflow recirculation valves.

QUESTION: 040 (1.00)

The following conditions exist:

Reactor is at 70 percent power
A RCP shaft vibration is 8 mils
RCP seal injection temperature is 160 degrees F

The A RCP trips. Which of the following states the proper operator response?

a. Verify reactor trip and enter E-0.

b. Throttle CS-TK-130 to lower seal injection temperature to less than 130 degrees F then restart the pump.

c. Isolate seal injection to the A pump and slowly restore flow so that temperatures drop at no greater than one degree per minute.

d. Defeat the A loop delta-T and T-ave protection, then shutdown to Mode 3 within 6 hours.

QUESTION: 041 (1.00)

A condenser leak causes main condenser vacuum to degrade. The standby vacuum pump starts. Which of the following states the next automatic action as vacuum continues to degrade?

a. Main feed pumps trip.

b. Reactor trip breakers open.

c. Steam dump arming is blocked.

d. Main turbine control valves shut.

QUESTION: 042 (1.00)

Which of the following fuel assembly locations will remain covered, with radiation levels less than 1000 Rem/hr, on loss of refueling cavity level?

a. In the RCCA change fixture.

b. In the fuel transfer car, horizontal, in containment.

c. In the upender, vertical.

d. In the transfer canal, with the refueling mast fully extended.

QUESTION: 043 (1.00)

The following conditions exist:

Pressurizer level is 61 percent
Pressurizer pressure is 1970 psig
Containment pressure is 2.4 psig

Busses E5 and E6 are deenergized. Which of the following states the response of the emergency diesel generator electrical system?

a. E5 and E6 are stripped. Emergency loads such as Containment enclosure emergency exhaust filter fan and Control room emergency cleanup filter fans are sequenced on after the EDG output breaker shuts.

b. E5 and E6 are stripped. Emergency loads such as a Primary Component Cooling pump and a service water pump are sequenced on after the EDG output breaker shuts.

c. Equipment previously running on E5 and E6 restarts when the EDG output breaker shuts.

d. Equipment running on E5 and E6 restarts within 10 seconds after the EDG output breaker shuts. Additionally, a containment spray pump will start 8 seconds after the EDG breaker shuts.

QUESTION: 044 (1.00)

Which of the following area radiation monitors will prevent the starting of the containment refueling purge exhaust fan AND provide an input to generate a Containment Ventilation Isolation (CVI) signal?

a. R-6551, Waste gas processing area monitor.

b. R-6518, Spent fuel pool high range area monitor.

c. R-6535-A, Fuel manipulator crane Train A monitor.

d. R-6566 Containment enclosure emergency exhaust monitor.

QUESTION: 045 (1.00)

Which of the following process radiation monitors will provide an isolation?

a. PCCW loop activity (RM-6515).

b. Auxiliary steam condensate tanks discharge (RM-6490).

c. RC letdown high range activity (RM-6520).

d. Condenser air evacuator discharge (RM-6505).

QUESTION: 046 (1.00)

With the reactor in Mode 1, which of the following requires shutdown to hot standby within 6 hours?

a. 30 gpm RCP seal water flow.

b. 0.4 gpm leakage through SI-V81, SI to RCS Hot Leg Injection valve.

c. 0.4 gpm leakage through the spray valve stem packing.

d. A S/G leakage is .36 gpm, B SG leakage is .24 gpm, C and D SG leakage is .21 gpm each.

QUESTION: 047 (1.00)

Following a reactor trip from full power, reactor power steadies at 5 x 10 E-9 amps and source range detectors fail to energize. Which of the following would cause this power level indication?

a. Compensating current in the source range detectors is too high.

b. Compensating current in the intermediate range detectors is too high.

c. Compensating current in the source range detectors is too low.

d. Compensating current in the intermediate range detectors is too low.

QUESTION: 048 (1.00)

A reactor startup is in progress with power below P-6. Source range channel N-31 fails. Which is an appropriate operator response?

a. Prevent reactor cooldown and drive rods to reduce power.

b. Clear P-6 using rods and dilution while monitoring N-32.

c. Place Source Range channel N-31 level trip in bypass and continue startup.

d. Stop rod withdrawal and clear P-6 by dilution.

QUESTION: 049 (1.00)

With the reactor at 50 percent power, the rod bottom lights for two control rods energize. Which states the operator response?

a. Place rod control in manual and reduce turbine load. When rods are recovered, resume normal operations.

b. Trip the reactor and enter E-0

c. Notify reactor engineering and verify adequate shutdown margin

d. Notify reactor engineering and take actions to clear urgent failure alarms

QUESTION: 050 (1.00)

Which of the following determines the rod insertion limits?

a. Auctioneered high loop delta-T.

b. Auctioneered high Power Range NI power.

c. Turbine first stage pressure from PT-505.

d. Process computer online calorimetric.

QUESTION: 051 (1.00)

What is the reason for having rod insertion limits?

a. To ensure core exit thermocouples accurately measure peak core temperatures.

b. To ensure adequate shutdown margin when the plant is critical.

c. To prevent "flux popover" at low power levels.

d. To ensure rod worth is sufficient for the rod control system to accommodate its design transients.

QUESTION: 052 (1.50)

MATCH the plant parameter/condition in column A with the associated rod stop IF ANY in column B. Each answer in column B may be used once, more than once, or not at all

column A		column B
a. Power Range overpower	____	1. Block AUTO WITHDRAWAL only
b. Turbine first stage pressure low	____	2. Block AUTO & MANUAL WITHDRAWAL only
c. Overpower delta T	____	3. Block ALL AUTO/MANUAL rod motion
d. Rod Control Urgent Failure alarm	____	4. No associated rod block
e. Rod Control Non Urgent Failure alarm	____	
f. Intermediate Range overpower	____	

QUESTION: 053 (1.00)

What protects the charging and safety injection pumps from failing due to damage from runout conditions during a large break LOCA?

a. The fluid being pumped is provides enough cooling to prevent damage.

b. Backpressure from the RCS is sufficient to prevent runout.

c. Throttle valves in the injection lines limit flow to below runout.

d. Minimum flow recirculation valves will be closed to prevent exceeding runout flow.

QUESTION: 054 (1.00)

A large break LOCA is in progress. All ECCS pumps are running and injecting. What discharge pressure would be indicated for the SI pumps?

a. Less than 50 psig.

b. 100 - 200 psig.

c. 350 - 450 psig.

d. 700 - 800 psig.

QUESTION: 055 (1.00)

Why is there a need for a hot leg recirc flowpath following a LOCA?

a. To prevent loss of shutdown margin due to boron precipitation on uncovered reactor vessel and RCS surfaces.

b. To facilitate full vessel reflood by flushing noncondensible gasses from the loops and vessel head.

c. To prevent degradation of core cooling capability due to boron crystallizing on fuel pins and blocking flow channels.

d. To prevent degradation of core cooling capability by quenching steam voids in the loops which may impede natural circulation.

QUESTION: 056 (1.00)

Why is there a 28 second delay in opening MS-V-395 after either MS-V-393 or 394 is open?

a. To ensure adequate steam pressure accumulation to break MS-V-395 off of its closed seat.

b. To allow water in the steam supply lines to be blown into the drain system.

c. To allow time for one of MS-V-393 or 394 to stroke fully open.

d. To ensure sufficient steam pressure to prevent hydraulic lock of the pump.

QUESTION: 057 (1.00)

The plant is operating normally at 100% power. One condenser steam dump valve fails full open. What is the final reactor power with no operator action?

a. zero

b. 100%

c. 102.5%

d. 103.3%

QUESTION: 058 (1.00)

Your shift is responding to a safety injection. CSFTs have just been implemented, and the STA reports core exit thermocouples are indicating 1300 deg F. Which of the following actions would be performed first?

a. Open pressurizer PORVs.

b. Depressurize intact steam generators.

c. Start RCPs.

d. Open reactor vessel head vents.

QUESTION: 059 (1.00)

What is the reason for the RCP trip criteria in E-0?

a. To remove the RCPs as a heat load on the EFW system.

b. To drop fluid level below the break elevation in a small break LOCA, thus conserving vessel inventory.

c. To allow the RCPs to remain in service for core cooling until cavitation damage potential reaches FSAR limits.

d. To allow the RCPs to remain in service during a large LOCA until blowdown is complete so the pump motor may prevent overspeed.

QUESTION: 060 (1.00)

How is plant pressure controlled with the plant in Mode 5 and the pressurizer filled solid?

a. Increase charging to raise pressure; increase letdown flow to lower pressure.

b. Throttle PCV-131 shut to raise pressure; throttle open to lower pressure.

c. Start pressurizer heaters to raise pressure; secure heaters or use aux spray to lower pressure.

d. Charge to raise pressure; adjust LTOP setpoint to lower pressure.

QUESTION: 061 (1.00)

Which of the following problems would result from allowing VCT pressure to drop below the minimum allowable pressure?

a. Excessive RCP #1 seals leakoff flow.

b. RCP trip on low standpipe level.

c. Inadequate flow to RCP #2 seals.

d. Excessive seal delta-P and potential cocking of #1 seals.

QUESTION: 062 (1.00)

What is the purpose of maintaining level in a ruptured SG greater than 5% NR?

a. Prevent dryout of tubes leading to further tube failures.

b. Promote thermal stratification to prevent ruptured SG depressurization.

c. Assure adequate secondary heat sink

d. Provide backpressure to minimize leakrate and ensure adequate SG inventory for backfill.

QUESTION: 063 (1.00)

What should be done with the ASDV on a ruptured SG?

a. It should be placed in MANUAL and CLOSED.

b. It should be placed in AUTO, BELOW the first safety setpoint.

c. It should be placed in AUTO, 100 psid above ruptured SG pressure.

d. It should initially be CLOSED in MANUAL; place to AUTO for cooldown.

QUESTION: 064 (1.00)

The plant trips from 100% power. The CST is at technical specification minimum volume, and is the ONLY available source for EFW. No CST makeup is available. What is the lowest temperature to which the RCS can be cooled by steaming?

a. To 557 deg F, and maintained there for 8 hours.

b. Low enough to place RHR in service.

c. Low enough to require accumulator isolation.

d. To saturation temperature for SW pump discharge pressure.

QUESTION: 065 (1.00)

A loss of all AC power has occurred and ECA-0.0 is in effect. ALL of the following are placed in pull-to-lock when initial attempts to restore emergency bus power are unsuccessful, EXCEPT:

a. RCPs.

b. SW pumps.

c. Motor driven EFW pump.

d. PDP charging pump.

QUESTION: 066 (1.00)

With the plant in hot leg recirc following a LOCA, into what loops are the RHR pumps and the SI pumps injecting?

a. RHR: loops 1 & 4
SI: all four loops

b. RHR: loops 1 & 4
SI: loops 1 & 4

c. RHR: all four loops
SI: all four loops

d. RHR: loops 1 & 3
SI: loops 2 & 4

QUESTION: 067 (1.00)

Which of the following describes the worst case effects on the plant of an extended loss of all AC?

a. Depletion of the CST, leading to core uncovery after 8 hours due to loss of inventory through pressurizer PORVs or safeties.

b. Loss of inventory due to RCP seal degradation, with a potential 1200 gpm maximum leakrate leading to core uncovery within 2 hours.

c. Depletion of the station batteries, leading to an inability to remotely monitor plant parameters after approximately 2 hours.

d. Potential EDG failure upon start after 4 hours without prelube, resulting in inability to recover even if diesels become available.

QUESTION: 068 (1.00)

ECA-0.0 is in effect due to a loss of all AC power. Depressurization of the steam generators is in progress. A procedural caution states that the depressurization should be stopped if WR or NR levels cannot be maintained greater than specified levels. What is the concern behind this caution?

a. PTS due to excesive cooldown.

b. Loss of adequate heat sink due to uncovered heat transfer area.

c. RCS voiding due to rapid depressurization.

d. Loss of natural circulation due to accumulator nitrogen injection

QUESTION: 069 (1.00)

What action is required if a PORV lifts while emergency borating during the performance of FR-S.1?

a. Verify the PORV shuts when pressure drops below the lift setpoint; if not, then shut the associated block valve.

b. Initiate safety injection.

c. Maintain the PORV and block valve open until pressure reduces to 2185 psig.

d. Initiate safety injection and open the second PORV to establish feed and bleed cooling.

QUESTION: 070 (1.00)

Why are RCPs tripped during FR-H.1?

a. To remove them as a heat input to the RCS.

b. To provide additional margin to the PORV setpoint by lowering core delta-P.

c. To prevent pumping inventory out open PORVs if bleed and feed is necessary.

d. To allow the Thermal Barrier Heat Exchangers to help cool the RCS.

QUESTION: 071 (1.00)

When establishing bleed and feed cooling as directed by FR-H.1, why are the PORVs manually opened rather than allowing the RCS to ride their setpoint?

a. RCP damage may occur due to inadequate seal injection at PORV setpoint.

b. Maintaining both PORVs fully open is necessary to provide adequate core cooling flow.

c. A water solid RCS at NOP/NOT has a high potential to challenge the RCS pressure safety limit.

d. Depressurizing an SG for condensate feed with the RCS at the PORV setpoint will exceed U-tube delta-P limits.

QUESTION: 072 (1.00)

A main steamline rupture has occurred, but all MSIVs have failed open. What should be done with EFW?

a. Establish 500 total flow to all SGs until any one SG level > 5% NR, then throttle flow back to 25 gpm to each SG.

b. Establish 500 gpm flow to one SG, isolate flow to all others.

c. Feed all hot, dry SGs at a minimum rate of 100 gpm.

d. Maintain 25 gpm flow to all SGs < 5% NR.

QUESTION: 073 (1.00)

What is a hot, dry steam generator?

a. T-hot > 550 deg F and WR < 5%(30% adverse).

b. T-hot > 350 deg F and WR < 26%(50% adverse).

c. T-hot > 220 deg F and WR < 5%.

d. T-hot > 220 deg F and SG pressure > RCS pressure.

QUESTION: 074 (1.00)

The plant is in Mode 5 with T-ave 150 deg F. The shift is in the process of drawing a bubble in the pressurizer, and pressurizer level has just started to come on scale. A complete loss of instrument air occurs. WHICH of the following describes plant response with NO operator action?

a. The plant slowly depressurizes.

b. The plant will maintain pressure until the heaters trip.

c. Plant pressure will increase to approximately 415 psig.

d. Plant pressure will increase to approximately 2385 psig.

QUESTION: 075 (1.50)

MATCH the events in column "A" with the pressure at which it occurs in column "B". Each answer in column "B" may be used once, more than once, or not at all.

column A		column B
a. PORV close after lift	_____	1. 2385 psig
b. Presssurizer pressure Hi alarm	_____	2. 2365 psig
c. Pressurizer Hi press PORV interlock	_____	3. 2335 psig
d. Pressurizer spray fully open	_____	4. 2310 psig
e. Hi pressure Rx trip	_____	5. 2275 psig
f. MS SI Block possible	_____	6. 2100 psig
		7. 1950 psig
		8. 1865 psig

QUESTION: 076 (1.00)

The plant is operating normally at 100% power. The main steam header pressure transmitter PT-507 fails low. What effect does this have on the plant with no operator action?

a. SG levels control below program.

b. SG levels control above program.

c. Turbine/Reactor trip due to high SG levels.

d. Reactor/Turbine trip due to low SG levels.

QUESTION: 077 (1.00)

The plant is operating at full power.
The controlling main steam pressure channel for one steam generator has failed as is. An EHC failure causes the main turbine to run itself back to 70% load. What effect does this have on level control in the affected SG?

a. Level stabilizes above program; hi level trip is not reached.

b. Level stabilizes below program if lo-lo level trip not reached.

c. Level initially controls below program, but returns to program over several minutes.

d. Level initially controls above program, but returns to program over several minutes.

QUESTION: 078 (1.00)

Which of the following is the most severe load reduction the plant can withstand without either a reactor trip or ASDV lifting?

a. 10% step.

b. 10% per minute ramp to P-9.

c. 10% per minute ramp to 50%.

d. 50% step.

QUESTION: 079 (1.00)

A load reduction is commenced from 100% power at 5 1/2 percent per minute. Five minutes into the load reduction, a rod control urgent failure annunciates. When do the condenser steam dumps open to control temperature?

a. They should have already started to open.

b. 2 minutes after the urgent failure.

c. 8 to 10 minutes after the downpower commences.

d. Steam dumps will not actuate.

QUESTION: 080 (1.00)

How long can the station batteries supply emergency DC loads following a loss of all AC <u>with no DC load shedding</u>?

a. 1 hour.

b. 2 hours.

c. 4 hours.

d. 8 hours.

QUESTION: 081 (1.00)

What effect does a loss of 125 VDC control power have on a 4.16KV breaker?

a. A breaker that is INITIALLY OPEN can be LOCALLY CLOSED, but cannot be reopened prior to manual spring charging.

b. A breaker that is INITIALLY OPEN can be LOCALLY CLOSED, then LOCALLY REOPENED, one time prior to manual spring charging.

c. A breaker that is INITIALLY CLOSED can be OPENED from the CONTROL ROOM, but can ONLY be RECLOSED LOCALLY; further operation requires manual spring charging.

d. Any breaker can LOCALLY be cycled OPEN-CLOSE-OPEN or CLOSE-OPEN-CLOSE, one time prior to manual spring charging.

QUESTION: 082 (1.00)

A large break LOCA has occurred. Containment spray is still in service. Shortly after aligning the ECCS for cold leg recirculation, you notice that containment pressure is trending up from its low point. What is the reason for this?

a. Containment spray source is now hot containment sump water instead of cold RWST water.

b. NaOH injection is complete, so spray droplets are less effective at removing heat from the containment atmosphere.

c. Iodine laden spray droplets are less effective at removing heat from the containment atmosphere due to heat from iodine decay.

d. Containment spray flow is reduced in the cold leg recirc lineup.

QUESTION: 083 (1.00)

The plant is operating at 100% power. An RCP Thermal Barrier Heat Exchanger leak of 75 gpm develops. Which of the following is the method by which overpressurization of low pressure CC system piping is prevented?

a. AUTO isolation of all Thermal Barrier Heat Exchangers.

b. AUTO isolation of the affected Thermal Barrier Heat Exchangers.

c. MANUAL isolation of all Thermal Barrier Heat Exchangers.

d. MANUAL isolation of the affected Thermal Barrier Heat Exchanger.

QUESTION: 084 (1.00)

It is January. The plant is being restarted after a trip that occurred one week ago. Which of the following states the lowest acceptable PCCW supply temperature?

a. 40 deg F - maintain oil viscosity in cooled components.

b. 50 deg F - running current limit for PCCW pumps.

c. 60 deg F - prevent brittle fracture of certain components.

d. 70 deg F - maintain solubility of boron in cooled components.

QUESTION: 085 (1.00)

Which of the following describes the operation of fans in containment during a large break LOCA?

a. Containment structure cooling fans operate to assist and backup containment spray in controlling containment pressure.

b. Containment recirc fans operate in filter mode to reduce containment volatile iodine concentration.

c. Containment structure cooling fans operate in high flow mode to supply required flow to the H2 recombiners.

d. Containment recirc fans operate in recirc mode to prevent H2 pockets in the containment.

QUESTION: 086 (1.00)

The main turbine has just been manually tripped due to increasing vibration, and is slowly coasting down. Upon completing E-0 immediate actions, you observe that vibration is still increasing. What action should be taken?

a. Start standby EHC and lube oil pumps.

b. Break condenser vacuum.

c. Maximize exhaust hood spray.

d. Troubleshoot faulty vibration monitor.

QUESTION: 087 (1.00)

Which of the following is NOT isolated by a HELB actuation?

a. Normal Letdown

b. RCP seal return

c. SG blowdown

d. Aux steam to the PAB

QUESTION: 088 (1.00)

The shift has decided to trip an RCP due to increasing vibration. Plant power is just below P-8. What action should be taken to prevent a reactor trip when the RCP is tripped?

a. Shut the spray valve associated with the affected RCP.

b. Lower reactor power below 45% since T-ave increase following the trip will cause Power Range NIs to read abut 2% high.

c. Insert rods in manual to reduce T-ave in anticipation of post RCP trip RCS heatup.

d. Manually raise affected loop SG level to approximately 60%.

QUESTION: 089 (1.00)

The plant is at 80% power during a load increase and holding while I&C troubleshoots a pressurizer level channel. The control rods are in auto and begin withdrawing at maximum speed. What is the FIRST action that should be performed?

a. Place rods in manual and restore T-ave.

b. Trip the reactor.

c. Verify electrical load stable.

d. Depress the rod control urgent failure pushbutton.

QUESTION: 090 (1.00)

In which of the following circumstances is E-0 NOT entered in response to a reactor trip?

a. The reactor trips following control room evacuation.

b. The reactor trips due to a loss of DC power.

c. The reactor trips due to a loss of offsite power.

d. The reactor is manually tripped below P-8 due to an RCP failure.

QUESTION: 091 (1.00)

The plant was shutdown 7 days ago to repair a steam generator tube leak. The RCS is in mid loop operation with T-hot at 140 deg F. A loss of RHR pumps due to cavitation occurs. When will the core start to boil?

a. within 5 minutes.

b. within 30 minutes.

c. 1-2 hours.

d. after 4 hours.

QUESTION: 092 (1.00)

Why is it necessary to maintain a hot leg vent path during reduced inventory operations?

a. To allow feed and bleed core cooling if RHR cooling is lost.

b. To prevent RCS pressurization and rapid core uncovery if RHR cooling is lost.

c. To provide an escape path for gas bubbles in the RCS so natural circulation is not hampered if RHR cooling is lost.

d. To prevent a D/P between RCS and containment atmosphere from causing a false level indication and a possible loss of RHR.

QUESTION: 093 (1.00)

How are the RCP lower radial bearings cooled during normal pump operation?

a. Seal injection flow passes through the bearing.

b. Air flow through the motor also cools the bearings.

c. PCCW cooled oil cools the bearings.

d. The Thermal Barrier Heat Exchanger coils extend to and cool the bearings.

QUESTION: 094 (1.00)

What is the difference between overpower delta-T (OPDT) and overtemperature delta-T (OTDT)?

a. OPDT is a simple calculation and is safety grade;
OTDT is an anticipatory trip which is not safety grade.

b. OPDT generates a reactor trip only;
OTDT generates a rod stop as well as a trip.

c. OPDT protects against excessive kw/ft of fuel rod heat generation;
OTDT provides protection against DNB.

d. OPDT uses rate compensated Power Range NI power as an input;
OTDT uses pressure and temperature inputs only.

QUESTION: 095 (1.00)

The plant is initially at 30% power. Compare the ACTUAL SG PRESSURE at which an SI would be generated, and why, for the following two events:

(1) The reactor trips, and one SG safety valve fails open.

(2) The reactor trips, but the turbine fails to trip.

a. SI signal would occur at the same SG pressure for both events due to lead-lag compensation.

b. SI signal would occur at a lower pressure for event (2) due to the faster depressurization rate and signal processing delays.

c. SI signal would occur at a lower pressure for event (1) due to PI compensation of pressure error.

d. SI signal would occur at a higher pressure for event (2) due to rate compensation of the setpoint.

QUESTION: 096 (1.00)

Which of the following is the greatest long term contributor to H2 in containment following a design basis LOCA?

a. Radiolysis in the core and containment sump.

b. H2 formerly in solution in the now depressurized coolant.

c. Corrosion of certain metals in containment.

d. Zirc - water reaction in the core.

QUESTION: 097 (1.00)

You have just completed a plant shutdown for a refueling outage. One source range channel has failed to energize. An I&C technician requests that the reactor trip breakers be cycled for P-4 testing. What is the appropriate response?

a. An ECP must be completed before you can reclose the trip breakers.

b. The RCS must be borated for adequate shutdown margin in the hot xenon free condition before you can reclose the trip breakers.

c. The faulty Source Range NI must be repaired OR the RCS must be borated to greater than 2000 ppm before you can reclose the trip breakers.

d. The rod control system must be disabled by shutting down Motor Generator or some other means before you can reclose the trip breakers.

QUESTION: 098 (1.00)

Which of the following meets an entry condition for OS1210.06, "Misaligned Control Rod"?

a. One rod in group C is at 225 steps and one rod in group D is at 210 steps.

b. One rod in group C is at 210 steps while the group C demand height is 225 steps.

c. One rod in group D is at 225 steps and another group D rod is at 220 steps.

d. Only as directed by OS1210.05, "Dropped Rod".

QUESTION: 099 (1.00)

Containment pressure is 8.5 psig. In which of the following will component cooling be isolated?

a. RCP A thermal barrier heat exchanger.

b. Pressurizer relief tank heat exchanger.

c. Excess letdown heat exchanger.

d. Spent fuel pool heat exchanger.

QUESTION: 100 (1.00)

Which of the following conditions would lead to entry into ON1233.01, "Loss of Condenser Vacuum"?

a. Increase in generator electrical output.

b. Increasing turbine exhaust hood temperature.

c. Increasing steam pressure to the gland seal system.

d. Trip of a running condensate pump.

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

ANSWER: 001 (1.00)
a

REFERENCE:

4.16 KV Distribution, pg.2, L1093IO3R0

[2.8/3.1]

062000K403 ..(KA's)

ANSWER: 002 (1.00)

a Deleted

REFERENCE:

4.16 KV Distribution, pg14, L1093IO6RO

[2.8/3.1]

062000K403 ..(KA's)

ANSWER: 003 (1.00)

c

REFERENCE:

PID-1-RC-B20843

[4.1/4.1]

002000K109 ..(KA's)

ANSWER: 004 (1.00)

d

REFERENCE:

Detailed Systems Text-ECC, L1116I10RO

[4.1/4.2]

013000A302 ..(KA's)

ANSWER: 005 (1.00)

d

REFERENCE:

RP-25, L1400I3

[4.3/4.4]

012000G015 ..(KA's)

ANSWER: 006 (1.00)

b

REFERENCE:

RP-28, L1400I6&7
EHC-31

[4.5/4.5]

012000A401 ..(KA's)

ANSWER: 007 (1.00)

a

REFERENCE:

Temperature Indication, pg.26; C-16 actuated as rods lower Tave.

[3.0/3.1]

016000A201 ..(KA's)

ANSWER: 008 (1.00)

c

REFERENCE:

TI-26, Only LTOP is affected by wide range indication.

[3.4/3.4]

016000K108 ..(KA's)

ANSWER: 009 (1.00)

c

REFERENCE:

OPMM 3-1.18.

[2.7/3.9]

194001A110 ..(KA's)

ANSWER: 010 (1.00)

a

REFERENCE:

LER 50-443/94-01

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 011 (1.00)

a

REFERENCE:

TS 3/4 4-26, Table 3.4-2.

[2.5/2.9]

194001A114 ..(KA's)

ANSWER: 012 (1.00)

b

REFERENCE:

MA 4.2, pg 8

194001A112

[3.1/4.1]

194001A112 ..(KA's)

ANSWER: 013 (1.00)

b

REFERENCE:

ER 1.2B

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 014 (1.00)

a

REFERENCE:

Standing Order 93-009

[2.8/3.9]

194001A110 ..(KA's)

ANSWER: 015 (1.00)

c

REFERENCE:

OS1002.07

[3.4/3.8]

194001K115 ..(KA's)

ANSWER: 016 (1.00)

c

REFERENCE:

MA4.3, pg.21

[4.3/4.1]

194001A113 ..(KA's)

ANSWER: 017 (1.00)

c

REFERENCE:

F-0.4

[2.6/3.1]

194001A108 ..(KA's)

ANSWER: 018 (1.00)

c

REFERENCE:

10CFR 20, 10 CFR 100

[2.8/3.4]
194001K103 ..(KA's)

ANSWER: 019 (1.00)

d

REFERENCE:

OS1090.05, pg11, OS1002.02

[3.6/3.7]

194001K101 ..(KA's)

ANSWER: 020 (1.00)

b

REFERENCE:

OS1090.05, pg8 MA 4.2

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 021 (1.00)

c

REFERENCE:

MA 4.2

[3.5/3.4]

194001K108 ..(KA's)

ANSWER: 022 (1.00)

b

REFERENCE:

OS1013.03, RH-9

[2.9/3.1]

005000K104 ..(KA's)

ANSWER: 023 (1.00)

b

REFERENCE:

OXO443.01

[2.9/3.3]

086000A301 ..(KA's)

ANSWER: 024 (1.00)

b

REFERENCE:

ECC-40

[4.1/4.3]

026020K403 ..(KA's)

ANSWER: 025 (1.00)

d

REFERENCE:

WG-39

[3.1/3.1]

071000K106 ..(KA's)

ANSWER: 026 (1.00)

a

REFERENCE:

WG-36

[2.8/2.8]

071000A302 ..(KA's)

ANSWER: 027 (1.00)

a

REFERENCE:

OS1215.06

[3.4/3.6]

072000G015 ..(KA's)

ANSWER: 028 (1.00)

b

REFERENCE:

CO-28

[2.6/2.6]

056000K103 ..(KA's)

ANSWER: 029 (1.00)

d

REFERENCE:

FW-52

[3.1/3.2]

059000G007 ..(KA's)

ANSWER: 030 (1.00)

c

REFERENCE:

CS-67

[3.3/3.2]

004000K405 ..(KA's)

ANSWER: 031 (1.00)

c

REFERENCE:

RP-29

[3.7/3.9]

013000A301 ..(KA's)

ANSWER: 032 (1.00)

b

REFERENCE:

CP-31

[3.7/3.9]

015000K402 ..(KA's)

ANSWER: 033 (1.00)

b

REFERENCE:

F-0.2, Core Cooling

[3.8/4.0]

017000G015 ..(KA's)

ANSWER: 034 (1.00)

d

REFERENCE:

FR-C.1

[3.6/4.1]

017020A202 ..(KA's)

ANSWER: 035 (1.00)

c

REFERENCE:

EFW-17

[4.2/4.2]

061000A301 ..(KA's)

ANSWER: 036 (1.00)

c

REFERENCE:

MS-38

[3.2/3.5]

039000K303 ..(KA's)

ANSWER: 037 (1.00)

d

REFERENCE:

OX1426.18

[3.9/4.2]

064000K402 ..(KA's)

ANSWER: 038 (1.00)

b

REFERENCE:

CHV-42

[3.8/4.0]

029000A301 ..(KA's)

ANSWER: 039 (1.00)

b

REFERENCE:

CS-17

[4.1/4.1]

006000A302 ..(KA's)

ANSWER: 040 (1.00)

a

REFERENCE:

OS1201.01

[3.5/3.6]

015000G011 ..(KA's)

ANSWER: 041 (1.00)

c

REFERENCE:

ON1233.01

[2.8/3.1]

000051K301 ..(KA's)

ANSWER: 042 (1.00)

b

REFERENCE:

LP L1142I, Objective 2 and 3
L1192I, Objective 6

[2.9/3.5]

000036K201 ..(KA's)

ANSWER: 043 (1.00)

b

REFERENCE:

EDE-41

[3.8/3.9]

000056A247 ..(KA's)

ANSWER: 044 (1.00)

c

REFERENCE:

RM-44

[3.6/3.6]

000061A101 ..(KA's)

ANSWER: 045 (1.00)

b

REFERENCE:

RM-44

[3.7/4.2]

000060A205 ..(KA's)

ANSWER: 046 (1.00)

d

REFERENCE:

TS 3.4.6.2

[3.2/4.1]

000037A210 ..(KA's)

ANSWER: 047 (1.00)

d

REFERENCE:

NI-53

[3.1/3.4]

000033A211 ..(KA's)

ANSWER: 048 (1.00)

a

REFERENCE:

TS Table 3.3.1

[2.8/3.3]

000032G008 ..(KA's)

ANSWER: 049 (1.00)

a

REFERENCE:

OS1210.05

[3.4/3.6]

000003G007 ..(KA's)

ANSWER: 050 (1.00)

a.

REFERENCE:

rod control sys desc pg 14
L1113I1RO

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 051 (1.00)

b.

REFERENCE:

rod control sys desc pg 14
L1113I1RO

[3.9/4.4]

001000K508 ..(KA's)

ANSWER: 052 (1.50)

2,1,2,3,4,2

REFERENCE:

rod control sys desc pg 19-22
L1113I15RO

[3.5/3.8]

001000K403 ..(KA's)

ANSWER: 053 (1.00)

c.

REFERENCE:

ECCS sys desc
L1116I08RO

[4.1/4.3]

006050K402 ..(KA's)

ANSWER: 054 (1.00)

d.

REFERENCE:

ECCS sys desc pg 12 (runout backpressure from inj line throttle valves)
L1116I09RO

[4.2/4.3]
006020A301 ..(KA's)

ANSWER: 055 (1.00)

c.

REFERENCE:

ECCS sys desc
L1116I17RO

[3.8/4.2]

000011K313 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

EFW sys desc

[3.5/3.9]

061000K103 ..(KA's)

ANSWER: 057 (1.00)

d.

REFERENCE:

main steam sys desc pg 11
L1129I01RO

[3.6/3.9]

041020A202 ..(KA's)

ANSWER: 058 (1.00)

b.

REFERENCE:

FR-C.1
L1206I05RO

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

ERG executive volume: LP L1200I
L1200I03RO

[4.2/4.3]

000009K323 ..(KA's)

ANSWER: 060 (1.00)

b.

REFERENCE:

CS sys desc pg 7

[3.4/3.9]

004010K101 . (KA's)

ANSWER: 061 (1.00)

c.

REFERENCE:

CS sys desc pg 12

[2.8/3.1]

004020K108 ..(KA's)

ANSWER: 062 (1.00)

b.

REFERENCE:

L1205I05RO

[3.4/3.4]

000038A141 ..(KA's)

ANSWER: 063 (1.00)

b.

REFERENCE:

L1205I02RO
E-3

[4.4/4.5]

000038K302 ..(KA's)

ANSWER: 064 (1.00)

b.

REFERENCE:

T.S. basis
L1127I01RO

[3.6/3.8]

061000G004 ..(KA's)

ANSWER: 065 (1.00)

b.

REFERENCE:

L1201I11RO, ECA-0.0 LP

[3.9/4.7]

000055A203 ..(KA's)

ANSWER: 066 (1.00)

a.

REFERENCE:

L1203I pg 15
LL1101I02RO

[4.5/4.6]

002000K108 ..(KA's)

ANSWER: 067 (1.00)

b.

REFERENCE:

L1210I02RO

[3.6/3.7]

000055G007 ..(KA's)

ANSWER: 068 (1.00)

b.

REFERENCE:

L1201I03RO

[3.6/3.7]

000055G007 ..(KA's)

ANSWER: 069 (1.00)

c.

REFERENCE:

L1200I10RO

[4.2/4.4]

000024K302 ..(KA's)

ANSWER: 070 (1.00)

a.

REFERENCE:

L1211I06RO

[4.4/4.6]

000054K304 ..(KA's)

ANSWER: 071 (1.00)

b.

REFERENCE:

L1211I07RO

[4.6/4.7]

000054K305 ..(KA's)

ANSWER: 072 (1.00)

d.

REFERENCE:

L1207I05RO

[3.4/4.2]

000040K107 ..(KA's)

ANSWER: 073 (1.00)

a.

REFERENCE:

FR-H.1

[3.3/3.6]

000040G007 ..(KA's)

ANSWER: 074 (1.00)

c.

REFERENCE:

PPLC sys desc LTOP description
L1108I06,07RO

[2.9/3.3]

000065A208 ..(KA's)

ANSWER: 075 (1.50)

2,4,3,4,1,7

REFERENCE:

PPLC sys desc
L1108I06RO

[4.0/3.8]

010000A403 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

SGWLC sys desc
L1144I07RO
L1128I05RO

[3.0/3.3]

059000A211 ..(KA's)

ANSWER: 077 (1.00)

c.

REFERENCE:

SGWLC sys desc
L1128I02RO

[3.6/3.8]

035010K401 ..(KA's)

ANSWER: 078 (1.00)

d.

REFERENCE:

Steam Dumps sys desc
L1129I01RO

[2.7/2.9]

041020K603 ..(KA's)

ANSWER: 079 (1.00)

c.

REFERENCE:

SD sys desc
L1129I13RO

[2.7/2.9]

041020K603 ..(KA's)

ANSWER: 080 (1.00)

b.

REFERENCE:

EDC sys desc

[2.7/3.4]

000055K301 ..(KA's)

ANSWER: 081 (1.00)

b.

REFERENCE:

[3.5/3.7]

063000K302 ..(KA's)

ANSWER: 082 (1.00)

a.

REFERENCE:

CBS sys desc pg 4

[4.2/4.3]

026000K401 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

CC sys desc
L1118I09RO

[3.3/3.3]

008000K104 ..(KA's)

ANSWER: 084 (1.00)

c.

REFERENCE:

CCW sys desc
L1118I09RO

[3.1/3.2]

008000G010 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

Cont HVAC sys desc

[4.1/4.3]

022000A301 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

ON1231.01 turbine high vibs

[2.6/2.8]

045000G001 ..(KA's)

ANSWER: 087 (1.00)

b.

REFERENCE:

OS1290.01

[3.7/3.8]

000040K106 ..(KA's)

ANSWER: 088 (1.00)

d.

REFERENCE:

L1181I03RO

[3.1/3.2]

015000G007 ..(KA's)

ANSWER: 089 (1.00)

a.

REFERENCE:

L1184I04RO

[3.5/4.8]

000001A203 ..(KA's)

ANSWER: 090 (1.00)

a.

REFERENCE:

OS1247.01 control room evac

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 091 (1.00)

b.

REFERENCE:

OS1000.12

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 092 (1.00)

b.

REFERENCE:

OS1000.12, NRC GL 88-17

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 093 (1.00)

a.

REFERENCE:

RCP sys desc

[2.8/3.1]

003000K404 ..(KA's)

ANSWER: 094 (1.00)

c.

REFERENCE:

RPS sys desc

[3.9/4.3]

012000K402 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

RPS sys desc

[3.9/4.3]

012000K402 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

CHV sys desc pg 22.

[2.9/3.6]

028000K503 ..(KA's)

ANSWER: 097 (1.00)

d.

REFERENCE:

T.S. 3.3.1

[2.8/3.3]

000032G008 ..(KA's)

ANSWER: 098 (1.00)

b

REFERENCE:

0S1210.06

[3.5/3.6]

000005G011 ..(KA's)

ANSWER: 099 (1.00)

d

REFERENCE:

CC-23

[3.6/3.9]

026062K302 ..(KA's)

ANSWER: 100 (1.00)

b

REFERENCE:

ON1233.01

[2.7/2.9]

000051G011 ..(KA's)

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

NRC
MASTER
SRO

Nuclear Regulatory Commission
Operator Licensing
Examination

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

CANDIDATE'S NAME:

FACILITY: Seabrook 1

REACTOR TYPE: PWR-WEC4

DATE ADMINISTERED: 94/05/02

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.

CANDIDATE'S TEST VALUE	SCORE
100.00	

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

_____
Candidate's Signature

SENIOR REACTOR OPERATOR NAME_____

ANSWER SHEET

Multiple Choice (Circle or X your choice)
If you change your answer, write your selection in the blank.

001	a	b	c	d	___	019	a	b	c	d	___
002	a	b	c	d	___	020	a	b	c	d	___
003	a	b	c	d	___	021	a	b	c	d	___
004	a	b	c	d	___	022	a	b	c	d	___
005	a	b	c	d	___	023	a	b	c	d	___
006	a	b	c	d	___	024	a	b	c	d	___
007	a	b	c	d	___	025	a	b	c	d	___
008	a	b	c	d	___	026	a	b	c	d	___
009	a	b	c	d	___	027	a	b	c	d	___
010	a	b	c	d	___	028	a	b	c	d	___
011	a	b	c	d	___	029	a	b	c	d	___
012	a	b	c	d	___	030	a	b	c	d	___
013	a	b	c	d	___	031	a	b	c	d	___
014	a	b	c	d	___	032	a	b	c	d	___
015	a	b	c	d	___	033	a	b	c	d	___
016	a	b	c	d	___	034	a	b	c	d	___
017	a	b	c	d	___	035	a	b	c	d	___
018	a	b	c	d	___	036	a	b	c	d	___

NAME_____

037 a b c d ___

038 a b c d ___

039 a____ b____ c____ d____ e____ f____

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 a b c d ___

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____ e____ f____

065 [illegible] 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 ___

NAME_____

080	a	b	c	d	___	090	a	b	c	d	___
081	a	b	c	d	___	091	a	b	c	d	___
082	a	b	c	d	___	092	a	b	c	d	___
083	a	b	c	d	___	093	a	b	c	d	___
084	a	b	c	d	___	094	a	b	c	d	___
085	a	b	c	d	___	095	a	b	c	d	___
086	a	b	c	d	___	096	a	b	c	d	___
087	a	b	c	d	___	097	a	b	c	d	___
088	a	b	c	d	___	098	a	b	c	d	___
089	a	b	c	d	___	099	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. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

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

9. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.

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

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

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

18. 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)

In which of the following conditions is it permissible to start a reactor coolant pump?

a. The only operating reactor coolant pump has just tripped and the reactor is in the solid condition.

b. Residual heat removal cooling is in service, cold leg temperature is 280 degrees and steam pressure is 180 psig.

c. Residual heat removal cooling in service at 300 degrees and the pressurizer block valves are shut and electrically isolated.

d. The only operating reactor coolant pump has just tripped and cold leg temperature is 320 degrees with reactor pressure at 300 psig.

QUESTION: 002 (1.00)

Using Figure 1, in which area is the Senior Operator in the Control Room allowed during reactor operations?

a. Area 1 to issue a tagout.

b. Area 2 to receive permission to change an operating procedure.

c. Area 3 to coordinate the response to a fire alarm.

d. Area 4 to verify turbine control oil pressure.

QUESTION: 003 (1.00)

Which of the following routine valve operations is conducted only with prior control room concurrence?

a. Chemistry operates Chemical Addition (CAS) valves.

b. Chemistry operates Sampling (SS) valves.

c. Engineering operates Inservice testing (IST) valves.

d. Radwaste operates Steam Generator Blowdown (SB) demineralizer valves.

QUESTION: 004 (1.00)

During an initial emergency response, which of the following individuals assumes a position in which protective action recommendations (PARs) can be approved for offsite authorities?

a. Operations Manager.

b. Health Physics Manager.

c. Shift Superintendent (STED).

d. Response Manager.

QUESTION: 005 (1.00)

A surveillance test is to be conducted at full power. The test strokes individual MSIVs 10 percent from the full open position then returning to full open. If the test were to fail with the MSIV going full shut, which of the following would be a result?

a. Low steam pressure SI.

b. Pressurizer high pressure reactor trip.

c. Steam generator high-high level feedwater isolation.

d. Pressurizer low pressure reactor trip.

QUESTION: 006 (1.00)

ALL of the following have technical specification limits for concentration in the reactor coolant system EXCEPT:

a. Hydrazine.

b. Oxygen.

c. Fluoride.

d. Chloride.

QUESTION: 007 (1.00)

The breaker to the safety injection pump, SI-P-6A, is racked out and danger tagged. Which of the following provides the proper placement of the danger tag for the breaker if it is to be removed from the cubicle for repair?

a. After the breaker is removed from the cubicle, affix a danger tag to the breaker.

b. After the breaker is removed from the cubicle, affix a danger tag to the cubicle door.

c. Prior to removing the breaker, affix a danger tag stating REMOVED to the control room switch.

d. Prior to removing the breaker, remove the control room switch and affix a danger tag stating REMOVED to the switch attachment.

QUESTION: 008 (1.00)

According to the Seabrook Emergency Plan, which of the following states the MINIMUM (lowest severity) emergency classification that REQUIRES stationing of response personnel in the Technical Support Center?

a. Unusual Event.

b. Alert.

c. Site Area Emergency.

d. General Emergency.

QUESTION: 009 (1.00)

Main steam valve MS-V33, on top of the C steam generator is observed with a yellow component tag. Which of the following specifies the meaning of the yellow tag?

a. The valve position (open or shut) has been independently verified and locked.

b. The valve has been throttled, verified, and locked in place.

c. The valve is a work control boundary.

d. An equipment deficiency has been identified for the valve.

QUESTION: 010 (1.00)

Procedure OS1C02.07, ESTABLISH A HYDROGEN ATMOSPHERE IN THE VCT, has a precaution which states;

> When establishing and maintaining a hydrogen atmosphere in the VCT, the oxygen concentration must be maintained below 4 percent in the VCT gas space.

Which of the following is a basis for the precaution?

a. Limit the N-16 activity in the reactor coolant.

b. Minimize the number of required reactor coolant samples when at power.

c. Prevent explosive mixtures of gases in the charging system.

d. Ensure adequate suction pressure for the charging pumps.

QUESTION: 011 (1.00)

Which of the following requires implementation of MA 4.3, TEMPORARY MODIFICATIONS, including completion of a 10CFR 50.59 safety review prior to implementation?

a. Installation of a test pressure gauge during the conduct of a routine RHR pump surveillance.

b. Connection of a portable heater to a welding outlet during maintenance in the circulating pump building.

c. Hanging of a sheet of lead shielding over a letdown system hotspot during maintenance.

d. A hose connected to a feedwater piping drain line during cold shutdown.

QUESTION: 012 (1.00)

The following conditions exist:

A reactor trip from full power occurred 75 minutes ago
RCS pressure is 620 psig
Cold leg loops 1 and 4 temperatures are 245 degrees F
Cold leg loops 2 and 3 temperatures are 255 degrees F
CSF Status Tree F-0.4 is in effect (Attached)

Which of the following states the appropriate CSF color code?

a. Green.

b. Yellow.

c. Orange.

d. Red.

QUESTION: 013 (1.00)

A work request is being implemented that will require 11 man-rem of exposure. Who provides final ALARA approval for the work?

a. Shift SRO.

b. Health Physics Supervisor - Operations.

c. Job Supervisor.

d. Radiation Safety Committee - Chairman.

QUESTION: 014 (1.00)

ALL of the following Federal Limits would be found in 10CFR Part 20, EXCEPT:

a. The allowed protection factor for a full face respirator.

b. The whole body exposure limit for a licensed reactor operator.

c. The basis for the reactor coolant gross activity limit.

d. The quantity of radioactive material that can be discharged into the sewer system.

QUESTION: 015 (1.00)

Letdown drain valve CS-V815 is to be placed in the normal system lineup position. Which of the following describes the method for completing the valve positioning? (Component Configuration List Attached)

a. The designated individual opens the valve and places a sealing device in such a way as to limit valve motion to less than one turn. The position is then reported to the control room where the log is completed.

b. The first individual opens and locks the valve while the second individual watches. The first individual then signs the log sheet and the second completes the independent verification.

c. The first individual shuts the valve. A second individual verifies the valve is shut, attaches a lock, and informs control room personnel to complete the independent verification.

d. The first individual shuts the valve and locks the handwheel. A second individual verifies the valve is shut and locked, then control room personnel complete the verification section of the log.

QUESTION: 016 (1.00)

A locked shut valve is to be danger tagged in the open position. Which of the following describes the process for the repositioning?

a. The designated individual opens the valve, leaving the lock in place, unlocked. A second individual verifies the valve is open, places the lock, and affixes the danger tag. Both individuals sign the tagout log.

b. The designated individual opens the valve, leaving the lock in place, unlocked, and affixes the danger tag. The second individual verifies the valve position and reports the result to the control room.

c. The designated individual locks the valve in the open position and affixes the tag to the lock. The second individual verifies the tag is affixed to the lock and reports to the control room.

d. The designated individual opens the valve and affixes the danger tag. The lock is given to maintenance for storage. The second individual verifies the valve is open and signs the tagout log.

QUESTION: 017 (1.00)

Work is to be performed replacing the pressurizer PORV block valve stem. In accordance with MA 4.2, what would be the optimal reactor plant condition to perform the work without special approval, and allow the plant to return to power operations?

a. Mode 2.

b. Mode 3.

c. Mode 4.

d. Mode 5.

QUESTION: 018 (1.00)

Which of the following will prevent starting of the B diesel driven fire pump?

a. Previous operation has allowed engine jacket water temperature to reach 210 degrees F.

b. The engine has come to rest following an overspeed trip.

c. A leak has caused engine lubrication oil to drain to the sump.

d. An energized light on panel FP-CP-70A states BATTERY FAILURE.

QUESTION: 019 (1.00)

Which of the following is used as normal makeup to the fire protection tanks?

a. Service water.

b. Potable water.

c. Demineralized water.

d. Circulating water.

QUESTION: 020 (1.00)

The following plant conditions exist:

Containment pressure is 15 psig
RWST LOW-LOW LEVEL annunciator has just been received
RWST water volume is 125,000 gallons

Which of the following conditions occurs?

a. Centrifugal Charging Pumps start to cavitate.

b. Spray pump suction valves, CBS-V-8 and 14, open.

c. RHR supply to SI pumps, RH-V-36, opens.

d. RHR discharge to RCS cold legs, RH-V-14, shuts.

QUESTION: 021 (1.00)

Waste Gas Vent valve, FV-1602, (indicated on MCB-CR) has shut. Which of the following states the likely cause of the isolation?

a. Realignment of the WG hydrogen compressors due to a T-signal.

b. High radiation at the outlet of the waste gas dryers.

c. Hydrogen Surge Tank hydrogen is at 90 percent LEL.

d. High radiation at the outlet of the Ambient Carbon Delay Beds.

QUESTION: 022 (1.00)

Hydrogen vent header relief valve VG-V-50, (MCB-CR) indicates open. Which of the following states a cause for the valve to be open?

a. RCDT pressure is 10 psig.

b. WG hydrogen compressor output is 100 psig.

c. Hydrogen detonation has occurred at the outlet of the WG dryers.

d. WG dryer inlet pressure is 6 psig.

QUESTION: 023 (1.00)

The following conditions exist:

Reactor is in Mode 6
Core offload is in progress
Spent Fuel Pool Temperature is 105 degrees F
Containment sump pump is running

A containment high airborne radiation alarm is received and containment ventilation isolates. Which of the following has occurred?

a. A spent fuel assembly has been dropped.

b. The refueling cavity level has dropped below technical specification minimum.

c. Spent fuel pool cooling has failed.

d. A spent fuel assembly has been lifted above the water surface.

QUESTION: 024 (1.00)

A LOCA has occurred. Incore Thermocouples indicate 1600 degrees. Which of the following is an action required by FRC-1?

a. Place RHR in service.

b. Verify pressurizer safety valves have lifted.

c. Reset RVLIS PLASMA display

d. Place containment hydrogen monitors in service.

QUESTION: 025 (1.00)

ALL of the following will cause auto-start of the Emergency Feedwater pumps EXCEPT?

a. SG 1A narrow range level is 10 percent.

b. The main turbine is at 50 percent and all four steam generators are at 4 percent narrow range level.

c. Undervoltage on 13.8 buses 1 and 2.

d. Containment pressure is 4 psig.

QUESTION: 026 (1.00)

The plant is operating at full power when a steam line break occurs in the B steam generator steam line. Steam pressure in the B steam line drops instantaneously to 400 psig and containment pressure rises to 3 psig. Which one of the following components, if operating at the time of the event, will continue to operate?

a. B Moisture separator-reheater.

b. B Steam generator feedpump.

c. Turbine driven emergency feedwater pump.

d. Letdown heat exchanger.

QUESTION: 027 (1.00)

The reactor is operating at full power and the A emergency diesel generator is operating for a surveillance test. A steam generator fault occurs causing the A steam generator to depressurize and dryout. The A diesel generator then trips. Which of the following could have caused the diesel trip?

a. One A diesel generator emergency shutdown pushbutton is depressed.

b. The A diesel jacket water reaches 185 degrees F.

c. The diesel backup protection, reverse power relay fails.

d. A leak causes engine lube oil pressure to fall to 0.2 psi.

QUESTION: 028 (1.00)

The reactor is in Mode 6 and core offload is in progress. Which of the following will stop venting of containment air?

a. A flange seal leak causes refueling cavity water level to drop 2 feet in one hour.

b. The reactor operator manually initiates containment spray.

c. Containment air purge radiation monitor RM-6527B1 fails high.

d. An inservice containment pressure detector is tested at 42 psi.

QUESTION: 029 (1.00)

Which of the following states how charging pump (CCP) miniflow protection operates during safety injection? (NOTE; CS-V-196 AND CS-V-197 are the miniflow recirculation valves)

a. When CCP discharge pressure increases to 2250 psig, the miniflow recirculation valves will automatically open.

b. When CCP flow falls below 80 gpm, the miniflow recirculation valves will automatically open.

c. Cool water from the RWST prevents CCP bearings from overheating during safety injection.

d. If CCP discharge pressure increases to 2250 psig, an operator manually throttles the miniflow recirculation valves.

QUESTION: 030 (1.00)

The following conditions exist:

Reactor is at 70 percent power
A RCP shaft vibration is 8 mils
RCP seal injection temperature is 160 degrees F

The A RCP trips. Which of the following states the proper operator response?

a. Verify reactor trip and enter E-0.

b. Throttle CS-TK-130 to lower seal injection temperature to less than 130 degrees F then restart the pump.

c. Isolate seal injection to the A pump and slowly restore flow so that temperatures drop at no greater than one degree per minute.

d. Defeat the A loop delta-T and T-ave protection, then shutdown to Mode 3 within 6 hours.

QUESTION: 031 (1.00)

A condenser leak causes main condenser vacuum to degrade. The standby vacuum pump starts. Which of the following states the next automatic action as vacuum continues to degrade?

a. Main feed pumps trip.

b. Reactor trip breakers open.

c. Steam dump arming is blocked.

d. Main turbine control valves shut.

QUESTION: 032 (1.00)

Reactor power has been increased to 95 percent using bank rod control and dilution. Two hours later, an operator determines that two of five rods in group D are at 112 steps (DRPI) with the other three rods and the group counter reading 146 steps. Which of the following states the operator action?

a. Reduce power to less than 50 percent within 8 hours and inform reactor engineering.

b. Inform reactor engineering and within 2 hours, Trip the reactor. Borate to restore shutdown margin.

c. Inform reactor engineering and at their direction, Place the 2 rods in ROD DISCONNECT, Select BANK D, and drive the group (M12) to 112 steps.

d. Reduce reactor power to HOT STANDBY within 6 hours and inform reactor engineering. Ensure an engineering evaluation of the mis-alignment is completed.

QUESTION: 033 (1.00)

Which of the following fuel assembly locations will remain covered, with radiation levels less than 1000 Rem/hr, on loss of refueling cavity level?

a. In the RCCA change fixture.

b. In the fuel transfer car, horizontal, in containment.

c. In the upender, vertical.

d. In the transfer canal, with the refueling mast fully extended.

QUESTION: 034 (1.00)

The following conditions exist:

Pressurizer level is 61 percent
Pressurizer pressure is 1970 psig
Containment pressure is 2.4 psig

Busses E5 and E6 are deenergized. Which of the following states the response of the emergency diesel generator electrical system?

a. E5 and E6 are stripped. Emergency loads such as Containment enclosure emergency exhaust filter fan and Control room emergency cleanup filter fans are sequenced on after the EDG output breaker shuts.

b. E5 and E6 are stripped. Emergency loads such as a Primary Component Cooling pump and a service water pump are sequenced on after the EDG output breaker shuts.

c. Equipment previously running on E5 and E6 restarts when the EDG output breaker shuts.

d. Equipment running on E5 and E6 restarts within 10 seconds after the EDG output breaker shuts. Additionally, a containment spray pump will start 8 seconds after the EDG breaker shuts.

QUESTION: 035 (1.00)

With the reactor in Mode 1, which of the following requires shutdown to hot standby within 6 hours?

a. 30 gpm RCP seal water flow.

b. 0.4 gpm leakage through SI-V81, SI to RCS Hot Leg Injection valve.

c. 0.4 gpm leakage through the spray valve stem packing.

d. A S/G leakage is .36 gpm, B SG leakage is .24 gpm, C and D SG leakage is .21 gpm each.

QUESTION: 036 (1.00)

With the reactor at 50 percent power, the rod bottom lights for two control rods energize. Which states the operator response?

a. Place rod control in manual and reduce turbine load. When rods are recovered, resume normal operations.

b. Trip the reactor and enter E-0.

c. Notify reactor engineering and verify adequate shutdown margin.

d. Notify reactor engineering and take actions to clear urgent failure alarms.

QUESTION: 037 (1.00)

EOP E-3, Steam Generator Tube Rupture, Step 13 states, "Check Ruptured SG Pressure Greater than 225 PSIG" Subsequent steps direct the operator to dump steam from intact steam generators as rapidly as possible. Which of the following describes the reason for checking ruptured SG pressure greater than 225 psig:

a. To ensure that depressurization will not cause isolation of MSIVs

b. To ensure that the cooldown rate will not cause PTS concerns

c. To ensure that primary to secondary leakage is stopped following the cooldown

d. To ensure that the pressurizer is used to control reactor pressure during the cooldown

QUESTION: 038 (1.00)

Which of the following determines the rod insertion limits?

a. Auctioneered high loop delta-T.

b. Auctioneered high Power Range NI power.

c. Turbine first stage pressure from PT-505.

d. Process computer online calorimetric.

QUESTION: 039 (1.50)

MATCH the plant parameter/condition in column A with the associated rod stop IF ANY in column B. Each answer in column B may be used once, more than once, or not at all

column A		column B
a. Power Range overpower	_____	1. Block AUTO WITHDRAWAL only
b. Turbine first stage pressure low	_____	2. Block AUTO & MANUAL WITHDRAWAL only
c. Overpower delta T	_____	3. Block ALL AUTO/MANUAL rod motion
d. Rod Control Urgent Failure alarm	_____	4. No associated rod block
e. Rod Control Non Urgent Failure alarm	_____	
f. Intermediate Range overpower	_____	

QUESTION: 040 (1.00)

What protects the charging and safety injection pumps from failing due to damage from runout conditions during a large break LOCA?

a. The fluid being pumped is provides enough cooling to prevent damage.

b. Backpressure from the RCS is sufficient to prevent runout.

c. Throttle valves in the injection lines limit flow to below runout.

d. Minimum flow recirc valves will be closed to prevent exceeding runout flow.

QUESTION: 041 (1.00)

A large break LOCA is in progress. All ECCS pumps are running and injecting. What discharge pressure would be indicated for the SI pumps?

a. Less than 50 psig.

b. 100 - 200 psig.

c. 350 - 450 psig.

d. 700 - 800 psig.

QUESTION: 042 (1.00)

Why is there a need for a hot leg recirc flowpath following a LOCA?

a. To prevent loss of shutdown margin due to boron precipitation on uncovered reactor vessel and RCS surfaces.

b. To facilitate full vessel reflood by flushing noncondensible gasses from the loops and vessel head.

c. To prevent degradation of core cooling capability due to boron crystallizing on fuel pins and blocking flow channels.

d. To prevent degradation of core cooling capability by quenching steam voids in the loops which may impede natural circulation.

QUESTION: 043 (1.00)

Why is there a 28 second delay in opening MS-V-395 after either MS-V-393 or 394 is open?

a. To ensure adequate steam pressure accumulation to break MS-V-395 off of its closed seat.

b. To allow water in the steam supply lines to be blown into the drain system.

c. To allow time for one of MS-V-393 or 394 to stroke fully open.

d. To ensure sufficient steam pressure to prevent hydraulic lock of the pump.

QUESTION: 044 (1.00)

The main turbine trips from approximately 15% power during a plant startup. Rods are in manual. The main steam dumps fail to operate. Assume the plant stabilizes with all the ASDVs fully open and the lowest setpoint safety on each SG briefly lifting every few minutes; steam pressure is essentially constant at the safety setpoint. What is T-ave?

a. 557-558 deg F

b. 562-563 deg F

c. 567-568 deg F

d. 571-572 deg F

QUESTION: 045 (1.00)

Your shift is responding to a safety injection. CSFTs have just been implemented, and the STA reports core exit thermocouples are indicating 1300 deg F. Which of the following actions would be performed first?

a. Open pressurizer PORVs.

b. Depressurize intact steam generators.

c. Start RCPs.

d. Open reactor vessel head vents.

QUESTION: 046 (1.00)

What is the reason for the RCP trip criteria in E-0?

a. To remove the RCPs as a heat load on the EFW system.

b. To drop fluid level below the break elevation in a small break LOCA, thus conserving vessel inventory.

c. To allow the RCPs to remain in service for core cooling until cavitation damage potential reaches FSAR limits.

d. To allow the RCPs to remain in service during a large LOCA until blowdown is complete so the pump motor may prevent overspeed.

QUESTION: 047 (1.00)

How is plant pressure controlled with the plant in Mode 5 and the pressurizer filled solid?

a. Increase charging to raise pressure; increase letdown flow to lower pressure.

b. Throttle PCV-131 shut to raise pressure; throttle open to lower pressure.

c. Start pressurizer heaters to raise pressure; secure heaters or use aux spray to lower pressure.

d. Charge to raise pressure; adjust LTOP setpoint to lower pressure.

QUESTION: 048 (1.00)

A steam generator tube rupture has occurred. The RCS has been cooled down in accordance with E-3, but has not been depressurized below ruptured steam generator pressure. Ruptured SG pressure is 1000 psig. The STA recommends shutting down RCPs before commencing RCS pressure reduction. Which of the following is a proper response?

a. Yes, the depressurization will reduce RCS pressure below the RCP trip point, and trip is required due to possible misdiagnosis.

b. No, RCP trip is not required due to the depressurization being under the control of the operators.

c. Yes, tripping RCPs will help prevent SG overfill while waiting for pressure equalization.

d. No, RCP trip based on RCS pressure only applies during a LOCA.

QUESTION: 049 (1.00)

Why does the ruptured SG remain pressurized when the RCS is cooled down in accordance with E-3?

a. Natural circulation maintains ruptured SG temperature above saturation.

b. Ruptured SG level is maintained above the U-tubes, insulating the steam space from the cooler tubes.

c. The ruptured SG RCP is not in service, greatly slowing heat transfer from the affected SG.

d. Hot RCS flow from the ruptured tube transfers thermal and mechanical energy to the secondary side, holding pressure up.

QUESTION: 050 (1.00)

What action taken during the response to a steam generator tube rupture helps to minimize potential iodine release?

a. Level in the ruptured SG is maintained above the U-tubes.

b. Secondary chemistry parameters are monitored and controlled within the limits of technical specifications to preclude exceeding offsite dose limits.

c. The setpoint for the ASDV on the ruptured SG is adjusted so that it will not lift until the first safety lifts.

d. The preferred backfill/feed and bleed cooldown method for the ruptured SG will adsorb steam space iodine back into solution and then back into the RCS.

QUESTION: 051 (1.00)

The plant trips from 100% power. The CST is at technical specification minimum volume, and is the ONLY available source for EFW. No CST makeup is available. What is the lowest temperature to which the RCS can be cooled by steaming?

a. To 557 deg F, and maintained there for 8 hours.

b. Low enough to place RHR in service.

c. Low enough to require accumulator isolation.

d. To saturation temperature for SW pump discharge pressure.

QUESTION: 052 (1.00)

A loss of all AC power has occurred and ECA-0.0 is in effect. ALL of the following are placed in pull-to-lock when initial attempts to restore emergency bus power are unsuccessful, EXCEPT:

a. RCPs.

b. SW pumps.

c. Motor driven EFW pump.

d. PDP charging pump.

QUESTION: 053 (1.00)

With the plant in hot leg recirc following a LOCA, into what loops are the RHR pumps and the SI pumps injecting?

a. RHR: loops 1 & 4
SI: all four loops

b. RHR: loops 1 & 4
SI: loops 1 & 4

c. RHR: all four loops
SI: all four loops

d. RHR: loops 1 & 3
SI: loops 2 & 4

QUESTION: 054 (1.00)

Which of the following describes the worst case effects on the plant of an extended loss of all AC?

a. Depletion of the CST, leading to core uncovery after 8 hours due to loss of inventory through pressurizer PORVs or safeties.

b. Loss of inventory due to RCP seal degradation, with a potential 1200 gpm maximum leakrate leading to core uncovery within 2 hours.

c. Depletion of the station batteries, leading to an inability to remotely monitor plant parameters after approximately 2 hours.

d. Potential EDG failure upon start after 4 hours without prelube, resulting in inability to recover even if diesels become available.

QUESTION: 055 (1.00)

ECA-0.0 is in effect due to a loss of all AC power. Depressurization of the steam generators is in progress. A procedural caution states that the depressurization should be stopped if WR or NR levels cannot be maintained greater than specified levels. What is the concern behind this caution?

a. PTS due to excessive cooldown.

b. Loss of adequate heat sink due to uncovered heat transfer area.

c. RCS voiding due to rapid depressurization.

d. Loss of natural circulation due to accumulator nitrogen injection

QUESTION: 056 (1.00)

A loss of all AC power has just occurred. When you attempt to verify a reactor trip, the STA informs you that you have an ORANGE path on subcriticality due to a positive intermediate range startup rate. The RO then informs you that he has no DRPI indication. Which of the following is the appropriate response?

a. Attempt a manual reactor trip; manually insert rods; verify turbine trip; verify adequate auxiliary feedwater flow.

b. Attempt a manual reactor trip; verify turbine trip; verify RCS isolated; verify adequate auxiliary feedwater flow

c. Attempt a manual reactor trip; transition to and perform FR-S.1 "Response to Nuclear Power Generation/ATWS"

d. Attempt a manual reactor trip; dispatch an operator to verify reactor trip breakers open; attempt emergency boration; verify pressurizer PORVs open if RCS pressure exceeds 2385 psig.

QUESTION: 057 (1.00)

What action is required if a PORV lifts while emergency borating during the performance of FR-S.1?

a. Verify the PORV shuts when pressure drops below the lift setpoint; if not, then shut the associated block valve.

b. Initiate safety injection.

c. Maintain the PORV and block valve open until pressure reduces to 2185 psig.

d. Initiate safety injection and open the second PORV to establish feed and bleed cooling.

QUESTION: 058 (1.00)

A safety injection initiated 20 minutes ago. The following plant conditions now exist:

RCS pressure:	80 psig
RCS hot legs:	260-280 deg F
RCS cold legs:	240-250 deg F
RVLIS:	60%
CETs	320 deg F
Containment pressure:	24 psig, decreasing
SG pressures:	750-800 psig, stable
SG levels:	45-48% WR
EFW flow	300 gpm

What procedure should be performed to completion at this point? (attachments provided)

a. FR-H.1

b. E-1

c. FR-P.1

d. FR-Z.1

QUESTION: 059 (1.00)

When establishing bleed and feed cooling as directed by FR-H.1, why are the PORVs manually opened rather than allowing the RCS to ride their setpoint?

a. RCP damage may occur due to inadequate seal injection at PORV setpoint.

b. Maintaining both PORVs fully open is necessary to provide adequate core cooling flow.

c. A water solid RCS at NOP/NOT has a high potential to challenge the RCS pressure safety limit.

d. Depressurizing an SG for condensate feed with the RCS at the PORV setpoint will exceed U-tube delta-P limits.

QUESTION: 060 (1.00)

A main steamline rupture has occurred, but all MSIVs have failed open. What should be done with EFW?

a. Establish 500 total flow to all SGs until any one SG level > 5% NR, then throttle flow back to 25 gpm to each SG.

b. Establish 500 gpm flow to one SG, isolate flow to all others.

c. Feed all hot, dry SGs at a minimum rate of 100 gpm.

d. Maintain 25 gpm flow to all SGs < 5% NR.

QUESTION: 061 (1.00)

What is a hot, dry steam generator?

a. T-hot > 550 deg F and WR < 5%(30% adverse).

b. T-hot > 350 deg F and WR < 26%(50% adverse).

c. T-hot > 220 deg F and WR < 5%.

d. T-hot > 220 deg F and SG pressure > RCS pressure.

QUESTION: 062 (1.00)

The plant is in Mode 5 with T-ave 150 deg F. The shift is in the process of drawing a bubble in the pressurizer, and pressurizer level has just started to come on scale. A complete loss of instrument air occurs. WHICH of the following describes plant response with NO operator action?

a. The plant slowly depressurizes.

b. The plant will maintain pressure until the heaters trip.

c. Plant pressure will increase to approximately 415 psig.

d. Plant pressure will increase to approximately 2385 psig.

QUESTION: 063 (1.00)

A rapid load reduction is being performed from 100% power. Shortly after the downpower is commenced, the pressurizer backup heaters energize even though spray valves are open. What is the cause of this?

a. The controlling pressure channel has failed high.

b. The controlling pressure channel has failed low.

c. The pressurizer pressure controller is responding to the rate/lag compensated pressure channel inputs.

d. The pressurizer level controller is responding to a greater than 5% insurge from the downpower.

QUESTION: 064 (1.50)

MATCH the events in column "A" with the pressure at which it occurs in column "B". Each answer in column "B" may be used once, more than once, or not at all.

column A		column B
a. PORV close after lift	_____	1. 2385 psig
b. Presssurizer pressure Hi alarm	_____	2. 2365 psig
c. Pressurizer Hi press PORV interlock	_____	3. 2335 psig
d. Pressurizer spray fully open	_____	4. 2310 psig
e. Hi pressure Rx trip	_____	5. 2275 psig
f. MS SI Block possible	_____	6. 2100 psig
		7. 1950 psig
		8. 1865 psig

QUESTION: 065 (1.00)

The plant is operating normally at 100% power. The main steam header pressure transmitter PT-507 fails low. What effect does this have on the plant with no operator action?

a. SG levels control below program.

b. SG levels control above program.

c. Turbine/Reactor trip due to high SG levels.

d. Reactor/Turbine trip due to low SG levels.

QUESTION: 066 (1.00)

The plant is operating at full power.
The controlling main steam pressure channel for one steam generator has failed as is. An EHC failure causes the main turbine to run itself back to 70% load. What effect does this have on level control in the affected SG?

a. Level stabilizes above program; hi level trip is not reached.

b. Level stabilizes below program if lo-lo level trip not reached.

c. Level initially controls below program, but returns to program over several minutes.

d. Level initially controls above program, but returns to program over several minutes.

QUESTION: 067 (1.00)

A load reduction is commenced from 100% power at 5 1/2 percent per minute. Five minutes into the load reduction, a rod control urgent failure annunciates. When do the condenser steam dumps open to control temperature?

a. They should have already started to open.

b. 2 minutes after the urgent failure.

c. 8 to 10 minutes after the downpower commences.

d. Steam dumps will not actuate.

QUESTION: 068 (1.00)

How long can the station batteries supply emergency DC loads following a loss of all AC with no DC load shedding?

a. 1 hour.

b. 2 hours.

c. 4 hours.

d. 8 hours.

QUESTION: 069 (1.00)

What effect does a loss of 125 VDC control power have on a 4.16KV breaker?

a. A breaker that is INITIALLY OPEN can be LOCALLY CLOSED, but cannot be reopened prior to manual spring charging.

b. A breaker that is INITIALLY OPEN can be LOCALLY CLOSED, then LOCALLY REOPENED, one time prior to manual spring charging.

c. A breaker that is INITIALLY CLOSED can be OPENED from the CONTROL ROOM, but can ONLY be RECLOSED LOCALLY; further operation requires manual spring charging.

d. Any breaker can LOCALLY be cycled OPEN-CLOSE-OPEN or CLOSE-OPEN-CLOSE, one time prior to manual spring charging.

QUESTION: 070 (1.00)

A large break LOCA has occurred. Containment spray is still in service. Shortly after aligning the ECCS for cold leg recirculation, you notice that containment pressure is trending up from its low point. What is the reason for this?

a. Containment spray source is now hot containment sump water instead of cold RWST water.

b. NaOH injection is complete, so spray droplets are less effective at removing heat from the containment atmosphere.

c. Iodine laden spray droplets are less effective at removing heat from the containment atmosphere due to heat from iodine decay.

d. Containment spray flow is reduced in the cold leg recirc lineup.

QUESTION: 071 (1.00)

The plant is operating at 100% power. An RCP Thermal Barrier Heat Exchanger leak of 75 gpm develops. Which of the following is the method by which overpressurization of low pressure CC system piping is prevented?

a. AUTO isolation of all Thermal Barrier Heat Exchangers.

b. AUTO isolation of the affected Thermal Barrier Heat Exchangers.

c. MANUAL isolation of all Thermal Barrier Heat Exchangers.

d. MANUAL isolation of the affected Thermal Barrier Heat Exchanger.

QUESTION: 072 (1.00)

It is January. The plant is being restarted after a trip that occurred one week ago. Which of the following states the lowest acceptable PCCW supply temperature?

a. 40 deg F - maintain oil viscosity in cooled components.

b. 50 deg F - running current limit for PCCW pumps.

c. 60 deg F - prevent brittle fracture of certain components.

d. 70 deg F - maintain solubility of boron in cooled components.

QUESTION: 073 (1.00)

Which of the following describes the operation of fans in containment during a large break LOCA?

a. Containment structure cooling fans operate to assist and backup containment spray in controlling containment pressure.

b. Containment recirc fans operate in filter mode to reduce containment volatile iodine concentration.

c. Containment structure cooling fans operate in high flow mode to supply required flow to the H2 recombiners.

d. Containment recirc fans operate in recirc mode to prevent H2 pockets in the containment.

QUESTION: 074 (1.00)

The main turbine has just been manually tripped due to increasing vibration, and is slowly coasting down. Upon completing E-0 immediate actions, you observe that vibration is still increasing. What action should be taken?

a. Start standby EHC and lube oil pumps.

b. Break condenser vacuum.

c. Maximize exhaust hood spray.

d. Troubleshoot faulty vibration monitor.

QUESTION: 075 (1.00)

Which of the following is NOT isolated by a HELB actuation?

a. Normal Letdown

b. RCP seal return

c. SG blowdown

d. Aux steam to the PAB

QUESTION: 076 (1.00)

The shift has decided to trip an RCP due to increasing vibration. Plant power is just below P-8. What action should be taken to prevent a reactor trip when the RCP is tripped?

a. Shut the spray valve associated with the affected RCP.

b. Lower reactor power below 45% since T-ave increase following the trip will cause Power Range NIs to read about 2% high.

c. Insert rods in manual to reduce T-ave in anticipation of post RCP trip RCS heatup.

d. Manually raise affected loop SG level to approximately 60%.

QUESTION: 077 (1.00)

The plant is at 80% power during a load increase and holding while I&C troubleshoots a pressurizer level channel. The control rods are in auto and begin withdrawing at maximum speed. What is the FIRST action that should be performed?

a. Place rods in manual and restore T-ave.

b. Trip the reactor.

c. Verify electrical load stable.

d. Depress the rod control urgent failure pushbutton.

QUESTION: 078 (1.00)

In which of the following circumstances is E-0 NOT entered in response to a reactor trip?

a. The reactor trips following control room evacuation.

b. The reactor trips due to a loss of DC power.

c. The reactor trips due to a loss of offsite power.

d. The reactor is manually tripped below P-8 due to an RCP failure.

QUESTION: 079 (1.00)

The plant was shutdown 7 days ago to repair a steam generator tube leak. The RCS is in mid loop operation with T-hot at 140 deg F. A loss of RHR pumps due to cavitation occurs. When will the core start to boil?

a. within 5 minutes.

b. within 30 minutes.

c. 1-2 hours.

d. after 4 hours.

QUESTION: 080 (1.00)

Why is it necessary to maintain a hot leg vent path during reduced inventory operations?

a. To allow feed and bleed core cooling if RHR cooling is lost.

b. To prevent RCS pressurization and rapid core uncovery if RHR cooling is lost.

c. To provide an escape path for gas bubbles in the RCS so natural circulation is not hampered if RHR cooling is lost.

d. To prevent a D/P between RCS and containment atmosphere from causing a false level indication and a possible loss of RHR.

QUESTION: 081 (1.00)

How are the RCP lower radial bearings cooled during normal pump operation?

a. Seal injection flow passes through the bearing.

b. Air flow through the motor also cools the bearings.

c. PCCW cooled oil cools the bearings.

d. The Thermal Barrier Heat Exchanger coils extend to and cool the bearings.

QUESTION: 082 (1.00)

What is the difference between overpower delta-T (OPDT) and overtemperature delta-T (OTDT)?

a. OPDT is a simple calculation and is safety grade;
OTDT is an anticipatory trip which is not safety grade.

b. OPDT generates a reactor trip only;
OTDT generates a rod stop as well as a trip.

c. OPDT protects against excessive kw/ft of fuel rod heat generation;
OTDT provides protection against DNB.

d. OPDT uses rate compensated Power Range NI power as an input;
OTDT uses pressure and temperature inputs only.

QUESTION: 083 (1.00)

The plant is initially at 30% power. Compare the ACTUAL SG PRESSURE at which an SI would be generated, and why, for the following two events:

(1) The reactor trips, and one SG safety valve fails open.

(2) The reactor trips, but the turbine fails to trip.

a. SI signal would occur at the same SG pressure for both events due to lead-lag compensation.

b. SI signal would occur at a lower pressure for event (2) due to the faster depressurization rate and signal processing delays.

c. SI signal would occur at a lower pressure for event (1) due to PI compensation of pressure error.

d. SI signal would occur at a higher pressure for event (2) due to rate compensation of the setpoint.

QUESTION: 084 (1.00)

Which of the following is the greatest long term contributor to H2 in containment following a design basis LOCA?

a. Radiolysis in the core and containment sump.

b. H2 formerly in solution in the now depressurized coolant.

c. Corrosion of certain metals in containment.

d. Zirc - water reaction in the core.

QUESTION: 085 (1.00)

A safety injection actuation has occurred. Why is adequate pressurizer level not sufficient justification to terminate SI?

a. A large LOCA will significantly cooldown the RCS, and there is only one cold calibrated level channel.

b. Flashing in the pressurizer reference legs causes large errors in indicated level.

c. Adequate core cooling may be achieved by reflux flow even without indicated pressurizer level.

d. Steam voids in the RCS can cause high pressurizer level indications despite inadequate inventory.

QUESTION: 086 (1.00)

A pressurizer PORV has been open for several minutes.
What would be the expected downstream tailpipe temperature?

a. less than 220 deg F

b. 230 - 260 deg F

c. 300 - 400 deg F.

d. greater than 400 deg F.

QUESTION: 087 (1.00)

The plant is at 100% power. You are performing special testing of emergency feedwater pumps due to suspected design flaws.
The turbine driven pump trips and cannot be relatched;
the motor driven pump trips with indications of motor damage; and the SUFP shaft shears. What would be the appropriate action?

a. Trip the reactor and enter FR-H.1.

b. Commence a reactor shutdown, be in cold shutdown or at lowest attainable temperature within 30 hours.

c. Fix at least one pump within one hour or be in Mode 4 within 6 hours; align the EFW system for feed from the fire pumps.

d. Immediately initiate corrective action to repair at least one EFW pump as soon as possible.

QUESTION: 088 (1.00)

A reactor trip occurs from 100% power, but the B reactor trip breaker fails to open. What effect does this have on plant behavior after the trip?

a. The steam dumps will not operate automatically.

b. The steam dumps will operate, but will control temperature 2 deg high.

c. The turbine will not trip when the reactor trips.

d. Low T-ave feedwater isolation will not occur.

QUESTION: 089 (1.00)

You have just completed a plant shutdown for a refueling outage. One source range channel has failed to energize. An I&C technician requests that the reactor trip breakers be cycled for P-4 testing. What is the appropriate response?

a. An ECP must be completed before you can reclose the trip breakers.

b. The RCS must be borated for adequate shutdown margin in the hot xenon free condition before you can reclose the trip breakers.

c. The faulty Source Range NI must be repaired OR the RCS must be borated to greater than 2000 ppm before you can reclose the trip breakers.

d. The rod control system must be disabled by shutting down Motor Generators or similar means before you can reclose the trip breakers.

QUESTION: 090 (1.00)

Why is there both an intermediate range NI high power trip and a power range NI low power trip?

a. Power Range NI trip operability is required by the Technical Specifications; Intermediate Range NI trip operability is not.

b. Power Range NI trip is safety grade, Intermediate Range NI trip is not.

c. Intermediate Range NI trip is rate compensated for faster response; Power Range NI trip is lag compensated for noise suppression.

d. Intermediate Range NIs and Source Range NIs are both required to meet required 4 channel degree of redundancy; the Power Range NI channels are a stand alone system.

QUESTION: 091 (1.00)

A liquid radwaste release is in progress. The waste release monitor (RM-6509) alarms and terminates the release. I&C determines the detector is faulty. What must be done to continue the release?

a. Flush the monitor with demineralized water; if the alarm clears, re-initiate the release.

b. Allow the tank to sit until either the monitor is repaired or activity levels decay below levels of regulatory concern, then release can be re-initiated.

c. Refill the tank with demineralized water if this would reduce activity concentration by at least 20%, then re-perform release calculation and perform the release without the monitor.

d. Perform two independent samples of the tank and verify release calculations; if results are acceptable the release can continue with independent verifications of the discharge valving despite the inoperable monitor.

QUESTION: 092 (1.00)

What action should the RO take in response to a dropped rod?

a. Verify turbine runback to 75%.

b. Verify auto rod motion to restore T-ave.

c. Manually reduce turbine load to control T-ave.

d. Verify no more than one rod dropped or else trip the reactor.

QUESTION: 093 (1.00)

The plant is at 75% power. A single PCCW loop is lost due to a large leak. What action is required?

a. Reduce power below P-8 within 30 minutes and trip the affected RCP.

b. Verify maximum seal injection flow to all RCPs.

c. Trip the reactor and RCPs within 2 minutes or if any temperature alarm annunciates.

d. Trip the reactor and affected RCPs within 10 minutes.

QUESTION: 094 (1.00)

If RCS specific activity cannot be maintained within Technical Specification limits, the required action is to place the plant in hot standby with T-ave less than 500 deg F. What is the significance of 500 deg F?

a. This temperature maximizes the solubility of volatile fission products in the RCS, minimizing the formation of a radioactive "hard Bubble" in the pressurizer.

b. This temperature minimizes the post LOCA peak containment pressure, thus ensuring that offsite doses remain within 10CFR100 limits due to assumed containment leakage despite the high RCS activity.

c. This temperature is a compromise between reducing further fission product washout from fuel pin defects and reducing further deposition on RCS surfaces.

d. This temperature prevents a release from lifting a secondary relief or safety should a steam generator tube rupture occur.

QUESTION: 095 (1.00)

ON1233.01 "Loss of Condenser Vacuum" limits how LOW power can be reduced if vacuum cannot be recovered. Why?

a. To ensure that the turbine and reactor are tripped while the steam dumps are still available to dispose of decay heat.

b. If the specified limits are reached, further load reduction will increase the rate of vacuum loss by reducing air absorption in condensing steam.

c. The specified limits are worse than the worst case loss of vacuum pumps, and imply an unrecoverable loss of condenser capability.

d. Low power with loss of vacuum may cause turbine damage due to unstable steam flow in the rotor blades.

QUESTION: 096 (1.00)

The plant is at 100% power with all systems in AUTO. Which of the following will occur as a result of the controlling pressurizer level instrument failing high with no operator action?

a. The reactor will trip on high pressurizer level.

b. The reactor will trip on low pressurizer pressure.

c. Level will control below program.

d. Level will initially control below program, but returns to program value over approximately 15 minutes.

QUESTION: 097 (1.00)

The plant is at 100% power with all systems in AUTO. Which of the following describes the effect of a loss of 120VAC PP-1A with no operator action?

a. ATWS due to multiple tripped instrument bistables with simultaneous loss of the associated RPS train.

b. Turbine/reactor trip due to high SG levels.

c. Reactor trip due to indicated RCP breaker open for the associated RCS loop.

d. All pressurizer heaters energize fully; plant remains essentially stable

QUESTION: 098 (1.00)

Which of the following meets an entry condition for OS1210.06, "Misaligned Control Rod"?

a. One rod in group C is at 225 steps and one rod in group D is at 210 steps.

b. One rod in group C is at 210 steps while the group C demand height is 225 steps.

c. One rod in group D is at 225 steps and another group D rod is at 220 steps.

d. Only as directed by 0S1210.05, "Dropped Rod".

QUESTION: 099 (1.00)

ALL of the following will allow 4.16kV Bus 5 to be supplied from the RAT EXCEPT:

a. Bus 5 experiences 2.7 kV for 1.2 seconds.

b. Bus 5 voltage drops to 1.0 kV.

c. Generator/transformer overall protection lockout (Device 86GT) actuates.

d. The disabling switch on the RSS disabling panel is in NORMAL.

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

ANSWER: 001 (1.00)

a

REFERENCE:

OS1001.05, PG3 (note that in mode 4, only one train of RHR is allowed),
It is ok to restart a pump within 5 minutes in the solid condition. b.
D-t too high c. inadequate overpressure protection, d. below min press
RCP ops. steam tables L1101I13RO
L1046I08RO

[3.4/3.7]

002000A105 ..(KA's)

ANSWER: 002 (1.00)

d

REFERENCE:

OPMM 3.1.3

[2.7/3.9]

194001A109 ..(KA's)

ANSWER: 003 (1.00)

c

REFERENCE:

OPMM 3-1.18.

[2.7/3.9]

194001A170 ..(KA's)

ANSWER: 004 (1.00)

c

REFERENCE:

ER 1.2, Section 2.0

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 005 (1.00)

a

REFERENCE:

LER 50-443/94-01

[2.8/4.1]

194001A111 ..(KA's)

ANSWER: 006 (1.00)

a

REFERENCE:

TS 3/4 4-26, Table 3.4 2

[2.5/2.9]

194001A114 ..(KA's)

ANSWER: 007 (1.00)

b

REFERENCE:

MA 4.2, pg 8

194001A112

[3.1/4.1]

194001A112 ..(KA's)

ANSWER: 008 (1.00)

b

REFERENCE:

ER 1.2B

[3.1/4.4]

194001A116 ..(KA's)

ANSWER: 009 (1.00)

a

REFERENCE:

Standing Order 93-009

[2.8/3.9]

194001A110 ..(KA's)

ANSWER: 010 (1.00)

c

REFERENCE:

OS1002.07

[3.4/3.8]

194001K115 ..(KA's)

ANSWER: 011 (1.00)

c

REFERENCE:

MA4.3, pg.21

[4.3/4.1]

194001A113 ..(KA's)

ANSWER: 012 (1.00)

c

REFERENCE:

F-0.4

[2.6/3.1]

194001A108 ..(KA's)

ANSWER: 013 (1.00)

d

REFERENCE:

RP 15.1, pg 5

[3.3/3.5]

194001K104 ..(KA's)

ANSWER: 014 (1.00)

c

REFERENCE:

10CFR 20, 10 CFR 100

[2.8/3.4]

194001K103 ..(KA's)

ANSWER: 015 (1.00)

d

REFERENCE:

OS1090.05, pg11, OS1002.02

[3.6/3.7]

194001K101 ..(KA's)

ANSWER: 016 (1.00)

b

REFERENCE:

OS1090.05, pg8 MA 4.2

[3.7/4.1]

194001K102 ..(KA's)

ANSWER: 017 (1.00)

c

REFERENCE:

MA 4.2

[3.5/3.4]

194001K108 ..(KA's)

ANSWER: 018 (1.00)

b

REFERENCE:

OXO443.01

[2.9/3.3]

086000A301 ..(KA's)

ANSWER: 019 (1.00)

b

REFERENCE:

1-FP-B20266 (Please provide reference)

[3.1/3.7]

086000K401 ..(KA's)

ANSWER: 020 (1.00)

b

REFERENCE:

ECC-40

[4.1/4.3]

026020K403 ..(KA's)

ANSWER: 021 (1.00)

d

REFERENCE:
WG-39

[3.1/3.1]

071000K106 ..(KA's)

ANSWER: 022 (1.00)

a

REFERENCE:

WG-36

[2.8/2.8]

071000A302 ..(KA's)

ANSWER: 023 (1.00)

a

REFERENCE:

OS1215.06

[3.4/3.6]

072000G015 ..(KA's)

ANSWER: 024 (1.00)

d

REFERENCE:

FR-C.1

[3.6/4.1]

017020A202 ..(KA's)

ANSWER: 025 (1.00)

c

REFERENCE:

EFW-17

[4.2/4.2]

061000A301 ..(KA's)

ANSWER: 026 (1.00)

c

REFERENCE:

MS-38

[3.2/3.5]

039000K303 ..(KA's)

ANSWER: 027 (1.00)

d

REFERENCE:

OX1426.18

[3.9/4.2]

064000K402 ..(KA's)

ANSWER: 028 (1.00)

b

REFERENCE:

CHV-42

[3.8/4.0]

029000A301 ..(KA's)

ANSWER: 029 (1.00)

b

REFERENCE:

CS-17

[4.1/4.1]

006000A302 ..(KA's)

ANSWER: 030 (1.00)

a

REFERENCE:

OS1201.01

[3.5/3.6]

015000G011 ..(KA's)

ANSWER: 031 (1.00)

c

REFERENCE:

ON1233.01

[2.8/3.1]

000051K301 ..(KA's)

ANSWER: 032 (1.00)

d

REFERENCE:

TS3.1.3.6, OS1210.06

[3.1/3.3]

000005G012 ..(KA's)

ANSWER: 033 (1.00)

b

REFERENCE:

LP L1142I, Objective 2 and 3
L1192I, Objective 6

[2.9/3.5]

000036K201 ..(KA's)

ANSWER: 034 (1.00)

b

REFERENCE:

EDE-41

[3.8/3.9]

000056A247 ..(KA's)

ANSWER: 035 (1.00)

d

REFERENCE:

TS 3.4.6.2

[3.2/4.1]

000037A210 ..(KA's)

ANSWER: 036 (1.00)

a

REFERENCE:

OS1210.05

[3.4/3.6]

000003G007 ..(KA's)

ANSWER: 037 (1.00)

b

REFERENCE:

Lesson Plan L1205I, pg. 7; E-3

[4.2/4.4]

000038A215 ..(KA's)

ANSWER: 038 (1.00)

a.

REFERENCE:

rod control sys desc pg 14
L1113I1RO

[4.3/4.7]

001000K504 ..(KA's)

ANSWER: 039 (1.50)

2,1,~~2~~,3,4,2
4

REFERENCE:

rod control sys desc pg 19-22
L1113I15RO

[3.5/3.8]

001000K403 ..(KA's)

ANSWER: 040 (1.00)

c.

REFERENCE:

ECCS sys desc
L1116I08RO

[4.1/4.3]

006050K402 ..(KA's)

ANSWER: 041 (1.00)

d.

REFERENCE:

ECCS sys desc pg 12 (runout backpressure from inj line throttle valves)
L1116I09RO

[4.2/4.3]

006020A301 ..(KA's)

ANSWER: 042 (1.00)

c.

REFERENCE:

ECCS sys desc
L1116I17RO

[3.8/4.2]

000011K313 ..(KA's)

ANSWER: 043 (1.00)

b.

REFERENCE:

EFW sys desc

[3.5/3.9]

061000K103 ..(KA's)

ANSWER: 044 (1.00)

d.

REFERENCE:

main steam and rod control sys desc
(T-sat for 1185 psig + .10*[100% pri to sec delta T] = 567.2+4 = 571.2)
L1123I04RO
L1405I EO1

[3.3/3.6]

039000A205 ..(KA's)

ANSWER: 045 (1.00)

b.

REFERENCE:

FR-C.1
L1206I05RO

[4.0/4.4]

000074K311 ..(KA's)

ANSWER: 046 (1.00)

b.

REFERENCE:

ERG executive volume; LP L1200I
L1200I03RO

[4.2/4.3]

000009K323 ..(KA's)

ANSWER: 047 (1.00)

b.

REFERENCE:

CS sys desc pg 7

[3.4/3.9]

004010K101 ..(KA's)

ANSWER: 048 (1.00)

b.

REFERENCE:

L1205I PG 4
L1205I03RO

[4.1/4.2]

000038K308 ..(KA's)

ANSWER: 049 (1.00)

b.

REFERENCE:

L1205I05RO

[4.1/4.5]

000038K308 ..(KA's)

ANSWER: 050 (1.00)

a.

REFERENCE:

L1205I05RO

[3.4/3.4]

000038A144 ..(KA's)

ANSWER: 051 (1.00)

b.

REFERENCE:

T.S. basis
L1127I01RO

[3.6/3.8]

061000G004 ..(KA's)

ANSWER: 052 (1.00)

b.

REFERENCE:

L1201I11RO, ECA-0.0 LP

[3.9/4.7]

000055A203 ..(KA's)

ANSWER: 053 (1.00)

a.

REFERENCE:

L1203I pg 15
LL1101I02RO

[4.5/4.6]

002000K108 ..(KA's)

ANSWER: 054 (1.00)

b.

REFERENCE:

L1210I02RO

[3.6/3.7]

000055G007 ..(KA's)

ANSWER: 055 (1.00)

b.

REFERENCE:

L1201I03RO

[3.6/3.7]

000055G007 ..(KA's)

ANSWER: 056 (1.00)

b.

REFERENCE:

ECA-0.0
L1201I10RO

[4.1/4.1]

000055G011 ..(KA's)

ANSWER: 057 (1.00)

c.

REFERENCE:

L1200I10RO

[4.2/4.4]

000024K302 ..(KA's)

ANSWER: 058 (1.00)

c.

REFERENCE:

CSFTs, FR-H.1 step 1
LI208I03RO

[3.4/3.3]

000054G011 ..(KA's)

ANSWER: 059 (1.00)

b.

REFERENCE:

L1211I07RO

[4.6/4.7]

000054K305 ..(KA's)

ANSWER: 060 (1.00)

d.

REFERENCE:

L1207I05RO

[3.4/4.2]

000040K107 ..(KA's)

ANSWER: 061 (1.00)

a.

REFERENCE:

FR-H.1

[3.3/3.6]

000040G007 ..(KA's)

ANSWER: 062 (1.00)

c.

REFERENCE:

PPLC sys desc LTOP description
L1108I06,07RO

[2.9/3.3]

000065A208 ..(KA's)

ANSWER: 063 (1.00)

d.

REFERENCE:

PPLC sys desc
L1108I06RO

[2.9/3.3]

011000K603 ..(KA's)

ANSWER: 064 (1.50)

2,4,3,4,1,7

REFERENCE:

PPLC sys desc
L1108I06RO

[4.0/3.8]

010000A403 ..(KA's)

ANSWER: 065 (1.00)

d.

REFERENCE:

SGWLC sys desc
L1144I07RO
L1128I05RO

[3.0/3.3]

059000A211 ..(KA's)

ANSWER: 066 (1.00)

c.

REFERENCE:

SGWLC sys desc
L1128I02RO

[3.6/3.8]

035010K401 ..(KA's)

ANSWER: 067 (1.00)

c.

REFERENCE:

SD sys desc
L1129I13RO

[2.7/2.9]

041020K603 ..(KA's)

ANSWER: 068 (1.00)

b.

REFERENCE:

EDC sys desc

[2.7/3.4]

000055K301 ..(KA's)

ANSWER: 069 (1.00)

b.

REFERENCE:

[3.5/3.7]

063000K302 ..(KA's)

ANSWER: 070 (1.00)

a.

REFERENCE:

CBS sys desc pg 4

[4.2/4.3]

026000K401 ..(KA's)

ANSWER: 071 (1.00)

d.

REFERENCE:

CC sys desc
L1118I09RO

[3.3/3.3]

008000K104 ..(KA's)

ANSWER: 072 (1.00)

c.

REFERENCE:

CCW sys desc
L1118I09RO

[3.1/3.2]

008000G010 ..(KA's)

ANSWER: 073 (1.00)

d.

REFERENCE:

Cont HVAC sys desc

[4.1/4.3]

022000A301 ..(KA's)

ANSWER: 074 (1.00)

b.

REFERENCE:

ON1231.01 turbine high vibs

[2.6/2.8]

045000G001 ..(KA's)

ANSWER: 075 (1.00)

b.

REFERENCE:

OS1290.01

[3.7/3.8]

000040K106 ..(KA's)

ANSWER: 076 (1.00)

d.

REFERENCE:

L1181I03RO

[3.1/3.2]

015000G007 ..(KA's)

ANSWER: 077 (1.00)

a.

REFERENCE:

L1184I04RO

[4.5/4.8]

000001A203 ..(KA's)

ANSWER: 078 (1.00)

a.

REFERENCE:

OS1247.01 control room evac

[4.1/4.2]

000068G010 ..(KA's)

ANSWER: 079 (1.00)

b.

REFERENCE:

OS1000.12

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 080 (1.00)

b.

REFERENCE:

OS1000.12, NRC GL 88-17

[3.9/4.3]

000025K101 ..(KA's)

ANSWER: 081 (1.00)

a.

REFERENCE:

RCP sys desc

[2.8/3.1]

003000K404 ..(KA's)

ANSWER: 082 (1.00)

c.

REFERENCE:

RPS sys desc

[3.9/4.3]

012000K402 ..(KA's)

ANSWER: 083 (1.00)

d.

REFERENCE:

RPS sys desc

[3.9/4.3]

012000K402 ..(KA's)

ANSWER: 084 (1.00)

a.

REFERENCE:

CHV sys desc pg 22.

[2.9/3.6]

028000K503 ..(KA's)

ANSWER: 085 (1.00)

d.

REFERENCE:

ERG background documents

[3.7/4.4]

000008K301 ..(KA's)

ANSWER: 086 (1.00)

b.

REFERENCE:

steam tables

[3.2/3.7]

000008K101 ..(KA's)

ANSWER: 087 (1.00)

d.

REFERENCE:

T.S. 3.7.1.2

[2.4/2.8]

000054G008 ..(KA's)

ANSWER: 088 (1.00)

b.

REFERENCE:

RP sys desc

[2.6/2.8]

000007K202 ..(KA's)

ANSWER: 089 (1.00)

d.

REFERENCE:

T.S. 3.3.1

[2.8/3.3]

000032G008 ..(KA's)

ANSWER: (90 (1.00)

b.

REFERENCE:

RP sys desc

[2.6/3.3]

000033G004 ..(KA's)

ANSWER: 091 (1.00)

d.

REFERENCE:

T.S. 3.3-12

[2.4/2.9]

068000G005 ..(KA's)

ANSWER: 092 (1.00)

c.

REFERENCE:

L1185I02RO

[4.1/4.3]

000003A105 ..(KA's)

ANSWER: 093 (1.00)

d.

REFERENCE:

L1188I06RO

[2.8/3.1]

000026A206 ..(KA's)

ANSWER: 094 (1.00)

d.

REFERENCE:

T.S. basis

[2.1/3.7]

000076G004 ..(KA's)

ANSWER: 095 (1.00)

d.

REFERENCE:

L1180I09RO

[3.9/4.1]

000051A202 ..(KA's)

ANSWER: 096 (1.00)

a.

REFERENCE:

PPLC sys desc

[3.6/3.7]

000028G010 ..(KA's)

ANSWER: 097 (1.00)

b.

REFERENCE:

OS1247.01

[4.0/4.3]

000057A219 ..(KA's)

ANSWER: 098 (1.00)

b

REFERENCE:

0S1210.06

[3.5/3.6]

000005G011 ..(KA's)

QUESTION 099

*ANSWER
a
*REFERENCE
4.16 KV Distribution, pg14, L1093IO6RO

[2.8/3.1]

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

ATTACHMENT 2

FACILITY COMMENTS AND NRC RESOLUTION

NRC RESOLUTION OF FACILITY POST-EXAM COMMENTS

RO #8

Facility provided reference material was reviewed; the comment is correct and the question was deleted.

RO #30

Typographical error in answer key; answer revised.

RO #14, SRO #9

Facility provided reference material was reviewed; NRC concurs with the comment and accepts both selections "a" and "d" as correct.

RO #21, SRO #17

The facility comment is correct, therefore, the correct answer is selection "d," and will be accepted as the only correct answer.

RO #49, SRO #36

Facility comment accepted; question deleted.

RO #52, SRO #39

Facility comment accepted for the technical error in Item "C"; selection 4 will be accepted as the correct answer for this item.

RO #83, SRO #71

Facility provided reference material was reviewed; NRC concurs with the comment, and will accept both "b" and "d" as correct answers.

SRO #1

Facility provided reference material was reviewed; NRC concurs with the comment, and the question is deleted.

SRO #44

Comment not accepted. The facility challenge to this question is based on the assumption that reactor power remains at 15% following the turbine trip. This is not correct because the plant must heat up to transfer steam load to the ASDVs, inserting negative reactivity and resulting in a final power less than the original. To determine an actual final power requires values for initial T-ave, moderator temperature coefficient, and doppler only power coefficient.

The conditions in the question are approximated by a cycle burnup of 6 GWD/MTU. By interpolation of graphs RE-6 for 15% power and RE-7 for slightly earlier than MOL, MTC = -6.0 pcm/deg F and DPC = -16 pcm/ %. If T-ave is initially on program for 15% at 558.5 deg, the 13 deg heatup required to fully open the ASDVs and just reach the first safety setpoint inserts (-6.0)(13)= -78 pcm, which reduces power by -78/16 = 4.8%. At BOL with MTC near zero, final power would stay near 15%; at EOL with MTC approximately -18 pcm/deg F, final power would be 8-9%.

The question does not ask the candidates to perform such a calculation. Rather, the candidates are given postulated final conditions of steam pressure (at the first safety setpoint) and steam demand (all ASDVs fully open). T-ave under these conditions is then 567.19+.1*(44)=571.69, and selection "d" remains the correct answer.

ATTACHMENT 3

SIMULATION FACILITY REPORT

FACILITY LICENSEE: North Atlantic Energy Service Corporation

FACILITY DOCKET NO: 50-443

Operating Tests administered: 5/2 - 5/10 1994

This form is to be used only to report observations. These observations do not constitute 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, which may be used in future evaluations. No licensee action is required in response to these observations.

During the validation and performance of the simulator examination scenarios and Job Performance Measures, the following items were observed.

- The simulator cannot directly model a Three Mile Island style pressurizer steam space break. When the pressurizer fills, pressure increases towards the setpoint for the safeties despite any breaks. In order to simulate this type of event, it is necessary for the simulator operator to initiate a LOCA when the pressurizer fills, and adjust it as necessary to simulate presumed plant response.

- During a scenario involving a large break LOCA and loss of recirc capability, steam pressure decreased in one SG for no apparent reason, giving the crew indication of a steam break coincident with the LOCA. Later in the scenario, the SI flow indicators continued to indicate SI flow after the RHR pump supplying suction had tripped.