Southern Nuclear Operating Company J. M. Farley Nuclear Plant P. O. Drawer 470 Astriord, Alabama 36312 Telephone 205 839-5156

ENCLOSURE 3



October 21, 1993 FNP-93-0381-TRN

The Regional Administrator, Region II United States Nuclear Regulatory Commission 101 Marietta Street, N.W. Atlanta, GA 30323

ATTN: Mr. Ron Aiello Chief Examiner

Dear Mr. Aiello:

Enclosed are Southern Nuclear Operating Company's comments concerning the written examination for senior reactor operator given at Farley Nuclear Plant on October 19, 1993.

The courteous and professional manner which your staff displayed in preparing and administering this exam is appreciated.

For further clarification or discussion of these comments, please contact Mr. Wayne VanLandingham at (205) 899-5156, extension 6113.

Sincerely,

R. D. Hill " Nuclear Plant General Manager

Enclosures

RDH/BWV:mgr

cc: File

WP-MISC DISK #24

9312140079 931'17 PDR ADDCK 050 10348 V 2DR

#### COMMENTS CONCERNING THE SRO EXAM

### QUESTION: 082 (1.00)

Which one of the following 600V LC load centers may be supplied from 4160V Bus F through 600V load center F?

- a. P b. R c. M
- d. U

ANSWER: 082 (1.00)

a.

COMMENT:

Question 82 has two correct answers a. and c. Both load centers P and M may be supplied from load center F through 4160V Bus F. Load center M, which normal supply is 4160V Bus D, is key interlocked to align normally to load center F via 4160V Bus G. The bus may be supplied through load center (LC) 1F via 4160V Bus 1G through the use of two "B1" interlock keys. While this is not a normal alignment, it is an alignment that may be utilized during outages. Had the question stated "normally supplied" or "in accordance with SOP-36.3" answer a. would have been the only valid choice.

#### SUGGESTION:

Accept answer a. or c. for Question 82.

FNP-1-SOP-36.3

4.10 600 V LC 1F operation.

4.10.1 Energizing 600 V LC 1F to supply 600 V LC 1A (C, D, E, GPQ, BMN).

NOTE

Refer to Table below to determine key numbers for respective interlocks.

INTERLOCK KEY NUMBERS

Interlock	Key Number
A1	RE-14211
A2	RE-14253
B1	RE-14212
В2	RE-11135
<b>S</b> 1	RE-14210

4.10.1.1 Remove 600 V LC 1F from service per section 4.10.2.

4.10.1.2 Obtain key S1 from Shift Foreman.

4.10.1.3 Insert circuit breaker in the cubicle required to supply the desired 600 V LC as follows:

Cubicle	600 V LC Supplied
EF-03	18
EF-04	11
EF-05	1G,1P,1Q
EF-06	1D
EF-07	10
EF-08	1E
EF-09	18,1M,1N

4.10.1.4 Close the circuit breaker.

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- 4.10.1.5 Insert key S1 in interlock on selected cubicle and turn to lock closed. Remove key A1 (B1).
- 4.10.1.6 Insert key A1 (B1) in disconnect switch 1A (B) and turn to unlock.
- 4.10.1.7 Close disconnect switch 1A (B) and turn key A2 (B2) to locked closed. Remove key A2 (B2).
- 4.10.1.8 Insert key A2 (B2) in feeder to station service transformer 1F breaker DF-12 (DG-12) and turn to uslock.
- 4.10.1.9 Close feeder to station service transformer 1F breaker DF-12 (DG-12).
- 4.10.2 Removing 600 V LC 1F from service.

NOTE

Refer to table below to determine key numbers for respective interlocks.

INTERLOCK KEY NUMBERS

Interlock	Key Number
A1	RE-14211
A2	RE-14253
B1	RE-14212
B2	RE-11135
S1	RE-14210

- 4.10.2.1 Open and rack out feeder to station service transformer 1F breaker DF-12 (DG-12).
- 4.10.2.2 Turn key A2 (B2) to locked closed and remove key A2 (B2).
- 4.10.2.3 Insert key A2 (B2) in interlock on disconnect switch 1A (B) and turn to unlock.

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- 4.10.2.4 Open disconnect switch 1A (B) and turn key A1 (B1) to locked closed. Remove key A1 (B1).
- 4.10.2.5 Insert key Al (B1) in interlock on selected breaker cubicle and turn key S1 to unlock. Remove key S1.
- 4.10.2.6 Open circuit breaker in selected cubicle.
- 4.10.2.7 Return key S1 to Shift Foreman.
- 4.11 600-480-208/120 volt motor control center (MCC) operation.
  - 4.11.1 Energizing 600-208 V MCC 1F (G) from normal supply.
    - 4.11.1.1 Open alternate feeder to MCC 1F (G) breaker ED-05-2 (EE-09-2).
    - 4.11.1.2 Open alternate supply to MCC 1F
       (G) breaker FF-B2 (FG-B2).
    - 4.11.1.3 Close normal supply to MCC 1F (G) breaker FF-A2 (FG-A2).
    - 4.11.1.4 Close normal feeder to MCC 1F (G) breaker ED-05-1 (EE-11-1).
    - 4.11.1.5 Verify closed 600/208 V tie breaker FF-LF5 (FG-LF5).
  - 4.11.2 Energizing 600-208 V MCC 1F (G) from alternate supply.

### NOTE

Refer to Precautions and Limitations section 3.2 when energizing 600-208 V MCC 1F from alternate supply.

- 4.11.2.1 Open normal feeder to MCC 1F (G) breaker ED-05-1 (EE-11-1).
- 4.11.2.2 Open normal supply to MCC lF
   (G) breaker FF-A2 (FG-A2).

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### ENCLOSURE 4

### NRC RESPONSE AND RESOLUTION TO THE FACILITY COMMENTS

Reject facility comment; SRO Question O82 and answer should stand as written.

#### Justification for Facility Comment Rejection:

The facility did not provide adequate reference information to support the contention that answer "c" is a possible correct answer to SRO Question 082. Attachment 3 to ES-402 of NUREG-1021, "Operator Licensing Examiner Standards," states, "The NRC will not change the examination without a reference to support the facility comment."

#### Technical Response to Facility Comment:

The fourth statement of the facility comment states, "The bus may be supplied through load center (LC) 1F via 4160V Bus 1G through the use of two "B1" interlock keys." Supplying 600V LC M from 4160V Bus 1G is not the subject of Question 082. The contention of the facility is that the 600V LC M can physically be supplied from 4160V Bus 1F through 600V LC 1F using a substitute A1 key to override the train separation interlock system for 600V LC 1F.

There are two problems associated with accepting answer "c" as an additional correct answer to Question 082:

- No procedure could be found by the NRC or the facility to detail the process for aligning 600V LC M to be supplied from 4160V Bus 1F. A special procedure would have to be written to detail the process for overriding the key interlock system for 600V LC 1F to perform this alignment.
- 2. If a special procedure can be written to detail how 600V LC M can be supplied from 4160V Bus 1F through 600V LC 1F, then it is also feasible to write a special procedure to supply the other answer choices, 600V LC 1R and 600V LC 1U, from 4160V Bus 1F through 600V LC 1F. For instance, a special breaker and heavy-duty emergency cabling could be used. Therefore, under special conditions answers "b" and "d" could also be correct.

Since question 082 does not mention any special conditions, a correct answer already exists, answer "a." No questions were asked by any applicants during the examination concerning the existence of special conditions for Question 082. Without the existence of special conditions, no ther answers are correct. Therefore, answer "a" is the single correct answer to SRO Question 082.

Master Forley 93-301

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

CANDIDATE'S NAME:	
FACILITY:	Farley 1 & 2
REACTOR TYPE:	PWR-WEC3
DATE ADMINISTERED:	93/10/19

### 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 effect 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	o)p	
100.00			TOTAL
	FINAL GRADE		10171

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

Candidate's Signature

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

MU	LTIP	LE C	HOIC	E			017	MAT	CHIN	G		
001	a	b	С	đ				a				
002	a	b	С	đ	-			b				
003	а	b	С	d	<u></u>			с				
004	а	b	С	đ				đ				
005	a	b	С	đ			MU	ULTIP	LE C	HOIC	Е	
006	а	b	С	d	-		018	а	b	с	d	
007	TAM	CHIN	IG				019	а	b	С	d	
	а						020	а	b	с	d	
	b		190				021	MAT	CHIN	G		
	с	24						a				
	d		19.					b				
MUI	LTIP	LE C	HOIC	E				С				
008	а	b	C	d				d				
009	a	b	с	đ			MU	ULTIP	LE C	HOIC	Ξ	
010	a	b	c	d			022	а	b	C	d	
011	a	b	c	đ			023	â	b	с	d	
012	a	b	с	d			024	MAT	CHIN	G		
013	а	b	с	đ				а				
014	а	b	с	â				b				
015	a	b	С	d				с				
016	а	b	c	đ				đ				

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# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

	MULTI	PLE	CHOI	CE			047	a	b	С	d	
025	а	b	с	d			048	а	b	с	đ	
026	a	b	C	d			049	а	b	С	đ	
027	a	b	С	d			050	а	b	С	d	
028	а	b	С	đ			051	а	b	С	d	
029	а	b	С	đ			052	а	b	С	đ	
030	a	b	C	đ	-		053	а	b	с	đ	
031	a	b	с	d			054	а	b	С	đ	
03.2	а	b	C	d			055	а	b	С	đ	-
033	a	b	c	d			056	а	b	С	đ	
034	a	b	С	d	-		057	а	b	С	đ	
035	а	b	С	đ			058	a	b	С	đ	
036	а	b	C	đ			059	a	b	С	đ	
037	а	b	С	d			060	a	b	С	d	
038	a	b	С	d			061	a	b	C	đ	
039	a	b	С	d			062	а	b	С	đ	
040	a	b	С	d			063	а	b	C	đ	
041	a	b	С	đ			064	a	b	С	đ	
042	a	b	C	d			065	a	b	С	đ	
043	a	b	C	d			066	а	D	С	đ	
044	а	b	С	d			067	а	b	С	d	
045	ä	b	с	đ			068	а	b	C	đ	
046	a	b	с	d			069	а	b	С	d	

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

070	а	b	С	đ			088	а	b	С	d	-
071	а	b	С	d			089	a	b	С	đ	
072	a	b	с	đ			090	a	b	С	d	
073	а	b	с	d			091	a	b	С	d	
074	a	b	с	đ			092	а	b	с	d	
075	а	b	С	d			093	a	b	С	d	
076	a	b	С	đ			094	a	b	С	đ	
077	a	b	с	d			095	а	b	С	đ	
078	а	b	C	đ								
079	MAT	CHING	3									
	a											
	b	-										
	C											
	d											
MUI	LTIP	LE CI	IOICI	3								
080	а	b	C	đ								
081	a	b	С	đ								
082	a	b	С	d								
083	a	b	Ċ	d								
084	a	b	С	d								
085	а	b	с	đ								
086	а	ь	с	đ								
087	a	b	С	d	<u> </u>							
				(***	******	END OF	EXAMIN	ATION	***	* * * * *	**)	

#### NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

- Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
- 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.
- 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.
- Mark your answers on the answer sheet provided. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.
- 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. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.
- The point value for each question is indicated in parentheses after the question.
- Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.
- Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
- 12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.
- 13. If the intent of a question is unclear, ask questions of the examiner only.

- 14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
- Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
- 16. 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)

Given the following:

- The unit is in Mode 5 operations.
- Solid plant conditions have been established.
- RCS pressure is being maintained at 360 psig.
- PCV-145 (Low pressure letdown) is in AUTOMATIC.
- FCV-122 (Charging flow control valve) is in AUTOMATIC.

Which one of the following ameters will INITIALLY DECREASE if instrument air is lost to F<sub>2</sub> -122? ASSUME no operator action is taken.

- a. VCT level.
- b. Pressurizer level.
- c. Letdown flow.
- d. Charging flow.

QUESTION: 002 (1.00)

Which one of the following describes how the position of a locked throttle valve should be verified during a system valve lineup verification?

- a. Verify the valve locking device is locked. Without operating the valve, visually verify the valve stem position.
- b. Verify the valve locking device is locked. Attempt to operate the valve to ensure stem movement is not possible.
- c. Unlock and close the valve while counting the number of turns. Reopen the valve the same number of turns and relock.
- d. Unlock and open the valve while counting the number of turns. Reclose the valve the same number of turns and relock.

QUESTION: 003 (1.00)

Which one of the following positions is responsible for performing the tag removal actions of a safety tag order that mechanically isolated a boric acid transfer pump for maintenance?

- a. Journeyman mechanic.
- b. Individual accepting the tag order.
- c. Individual requesting the tag order.
- d. Operations group designated operator.

QUESTION: 004 (1.00)

A hypothetical centrifugal pump that transfers water from an open tank to a pressurized accumulator has a local handswitch and a remote breaker. The following tagging actions must be taken to isolate this pump for impeller maintenance.

1. Open the remote breaker.

- 2. Close the pump suction valve.
- 3. Close the pump discharge valve.
- 4. Position the local handswitch to OFF.

Which one of the following is the proper sequence for accomplishing the above isolation actions when executing a tag order for this pump?

a. 1, 4, 2, 3.
b. 2, 3, 4, 1.
c. 3, 2, 1, 4.
d. 4, 1, 3, 2.

#### QUESTION: 005 (1.00)

Which one of the following is the system pressure above which double boundary valve isolation should be used to protect a pipe-breach work area in a cold-water piping system?

- a. 200 psig.
- b. 600 psig.
- c. 800 psig.
- d. 1000 psig.

#### QUESTION: 006 (1.00)

With the plant in Mode 5, a small accessible area in containment has a general area dose rate of 1250 mrem/hr. The top of this area CANNOT be enclosed. Other than appropriate posting, what are the MINIMUM additional protective measures that must be executed for this area?

- a. Must be roped off, and a flashing light must be activated.
- b. Must be fenced off, and the entrance to containment must be kept locked.
- c. Must be roped off, and an appropriate radiation monitor must be placed inside the area.
- d. A flashing light must be activated, and the entrance to containment must be kept locked.

#### QUESTION: 007 (2.00)

Match each radiation area description in Column A with the associated radiation area classification from Column B. (0.5 each)

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

Column A (DESCRIPTION)

- \_a. A room that contains bags of radioactively contaminated material.
- \_\_\_b. A room where dose rate to the whole body is 20 mrem/hr.
  - \_c. A room where dose rate to the whole body is 120 mrem/hr.
  - a A room that contains significant removable surface radioactivity.

Column B (CLASSIFICATION)

- 1. Radiation Area
- 2. Contaminated Area
- 3. High Radiation Area
- 4. Locked High Radiation Area
- 5. Radioactive Materials Area
- 6. Radiation Controlled Area

### QUESTION: 008 (1.00)

Which one of the following National Fire Protection Association classifications of fire extinguishers should be applied to a fire involving energized electrical equipment?

- a. Class A
- t. Class B
- c. Class C
- d. Class D

QUESTION: 009 (1.00)

Revision 5 of a safety-related procedure contains two temporary changes, TCN 5A and TCN 5B.

Which one of the following describes the correct use of this procedure?

- a. TCN 5A should be used because only one temporary change may be written for a safety-related procedure.
- b. NEITHER TCN should be used because Revision 5 is the only controlled document.
- c. TCN 5B should be used because the latest temporary change supersedes all previous temporary changes.
- d. BOTH TCN's should be used unless TCN 5B states that TCN 5A is superseded.

QUESTION: 010 (1.00)

Which one of the following controlled documents must be printed on BLUE paper?

- a. Shared Procedures.
- b. Unit 1 Temporary Changes.
- c. Unit 2 Temporary Changes.
- d. Shared Temporary Changes.

Technical Specifications require that the Nuclear Instrumentation Power Range functional test be accomplished on a MONTHLY basis. The last three dates on which this surveillance was performed are 0600 on August 15, 0600 on September 19, and 0600 on October 18.

Which one of the following date/time combinations is the latest date on which this surveillance can be accomplished without exceeding the maximum interval requirements of Technical Specifications?

a. By 2359 on November 19b. By 2359 on November 24c. By 2359 on November 25d. By 2359 on November 26

### QUESTION: 012 (1.00)

Select the combination below that completes the following statement.

Technical Specifications limit overtime for reactor operators such that an individual shall NOT work more than (X) hours in any 48-hour period nor more than (Y) hours in any 7-day period (all excluding turnover time).

- a. (X) 24; (Y) 56
- b. (X) 24; (Y) 72
- c. (X) 32; (Y) 84
- d. (X) 32; (Y) 96

QUESTION: 013 (1.00)

A PCB spill area is defined as the area encompassing all visible traces of PCB oil plus a \_\_\_\_\_ lateral zone around the entire spill.

- a. 1-foot
- b. 2-foot
- c. 3-foot (1-yard)
- d. 5-foot

### QUESTION: 014 (1.00)

Given the following conditions on Unit 2:

- CCW pump 2B is aligned to 4160V bus 2G.
- All CCW local/remote selector switches are in "REMOTE".
- All CCW pump handswitches on the MCB are in "AUTO".

Which one of the following describes a condition that will automatically start CCW pump 2B?

- a. CCW pump 2C trips on overload.
- 5. CCW pump 2A is stopped from the hot shutdown panel.
- c. CCW pump 2C local/remote selector switch is taken to "LOCAL".
- d. An "S" signal occurs after CCW pump 2A breaker has been racked out.

#### QUESTION: 015 (1.00)

Which one of the following is an action that must be taken prior to aligning the "B" CCW heat exchanger as the on-service "A" train CCW heat exchanger in order to satisfy 10CFR50 Appendix R requirements for a safe plant shutdown with a fire in the cable spreading room?

- a. Place "B" CCW heat exchanger service water FCV on its manual handjack.
- b. Lock open the manual valves between "B" CCW heat exchanger and the "A" train ESF loads.
- c. Lock closed the manual valves between "B" CCW heat exchanger and the "B" train ESF loads.
- d. Manually position MOV-3047, CCW to secondary heat exchangers isolation valve, to mid-position.

#### QUESTION: 016 (1.00)

At high reactor power levels, which one of the following automatic rod control system components causes the power mismatch error signal gain to be decreased as power level is increased, thus preventing power overshoots?

- a. Variable gain unit.
- b. Non-linear gain unit.
- c. Overpower rod stop circuit.
- d. Power mismatch rate comparator.

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### QUESTION: 017 (2.00)

Match the Bank Selector Switch (BSS) position/plant condition in Column A with the associated rod speed in Column B. (0.5 each)

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

Column A (BSS POSITION/PLANT CONDITION)		Column B (ROD SPEED)
a. AUTO with a 4 degree F temperature mismatch.	1.	0 steps/minute
b. AUTO with a 10 degree F temperature	2.	8 steps/minute
mismatch.	3.	32 steps/minute
C. MANUAL with a 10 degree F temperature mismatch.	4.	40 steps/minute
d. SBB during plant startup.	5.	48 steps/minute
	ΰ.	62 steps/minute
	7.	72 steps/minute

### QUESTION. 018 (1.00)

Which one of the following describes the amount of bank overlap the Bank Overlap Unit (BOU) is set up to maintain, and in which Bank Selector Switch (BSS) positions the BOU is enabled.

- a. Maintains 96-step overlap, with the BSS in MANUAL or AUTO.
- b. Maintains 100-step overlap, with the BSS in AUTO or CBA/CBB/CBC/CBD.
- c. Maintains 103-step overlap, with the BSS in AUTO or MANUAL.
- d. Maintains 128-step overlap, with the BSS in MAN or CBA/CBB/CBC/CBD.

### QUESTION: 019 (1.00)

Which one of the following combinations correctly lists the reactor coolant leakage detection systems that must be OPERABLE during Mode 3 operations?

- a. R-11 (containment atmosphere particulate rad monitor) OR R-12 (containment atmosphere gaseous rad monitor).
- b. R-11, R-12, AND the containment air cooler condensate level monitoring system (ALL 3).
- c. R-11, AND R-12 OR the containment air cooler condensate level monitoring system.
- d. R-11 OR R-12, AND the containment air cooler condensate level monitoring system.

QUESTION: 020 (1.00)

Which one of the following combinations describes the penetration arrangement of the flow detectors that are used to determine RCS loop flow?

- a. One high-pressure tap on the outside of the elbow; three lowpressure taps on the inside of the elbow.
- b. One low-pressure tap on the outside of the elbow; three highpressure taps on the inside of the elbow.
- c. Three high-pressure taps on the outside of the elbow; one lowpressure tap on the inside of the elbow.
- d. Three low-pressure taps on the outside of the elbow; one highpressure tap on the inside of the elbow.

#### QUESTION: 021 (2.00)

Match each Chemical/Volume Control System (CVCS) penetration listed in Column A with the associated RCS loop segment in Column B. (0.5 each)

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

Column A (CVCS PENETRATION)	Column B (RCS LOOP SEGMENT)
a. Excess letdown	1. Loop A intermediate leg
b. Normal letdown	2. Loop A cold leg
c. Normal charging path	3. Loop B intermediate leg
d. Alternate charging path	4. Loop B cold leg
	5. Loop C intermediate leg
	6. Loop C cold leg

### QUESTION: 022 (1.00)

Which one of the following is the reason that the RCPs have an antireverse rotation device installed on the pump rotor?

- Prevent stator winding damage due to excessive pump starting current.
- b. Prevent backleakage through a tripped RCP when other RCPs are running.
- c. Prevent damage to the pump thrust bearing due to reverse thrust direction.
- d. Prevent overheating of pump bearings due to a tripped RCP rotating without normal internal cooling flow.

### QUESTION: 023 (1.00)

If Unit 1 is conducting long-term (more than 1 hour) Mode 3 operations with the rod control system operational (reactor trip breakers closed and rod drive motor/generator sets operating), which one of the following RCS loop operating conditions must be established?

- a. One loop OPERABLE and in operation.
- b. Two OPERABLE loops with one loop in operation.
- c. Two OPERABLE loops with two loops in operation.
- d. Three OPERABLE loops with two loops in operation.

### QUESTION: 024 (2.00)

Match each precaution for an operating RCP in Column A with the associated reason from Column B. (0.5 each)

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

Column A (PRECAUTIONS)

- a. Maintain 6 gpm seal water injection flow OR CCW flow to the thermal barrier.
- \_\_\_\_b. Maintain at least 18 psig in the VCT.
  - \_\_\_\_c. Maintain at least 200 psid across the #1 seal.
    - \_d. If CCW flow to the oil coolers is lost, RCP operation must stop when temperature limits are reached.

(REASONS)

- Prevents damage to the RCP motor bearings.
  - 2. Ensures #1 seal is not riding on the runner.
  - Ensures cooling for the lower radial bearing and the seal package.
  - Prevents overheating of motor stator windings.
  - Ensures adequate seal water flow to the #2 seal.
  - Ensures proper #1 seal leakoff flow is maintained.
  - Prevents excessive delta-P across #2 seal.

#### QUESTION: 025 (1.00)

Which one of the following conditions will automatically cause AT LEAST one VCT outlet isolation valve, LCV-115C OR LCV-115E, to close?

- a. VCT Lo-Lo level detected by LT-112 OR LT-115.
- b. VCT Lo-Lo level detected by LT-112 AND LT-115.
- c. VCT Lo-Lo level detected by LT-112 OR LT-115, and both RWST to charging pump suction valves (LCV-115B AND LCV-115D) fully open.
- d. VCT Lo-Lo level detected by LT-112 AND LT-115, and one RWST to charging pump suction valve (LCV-115B OR LCV-115D) fully open.

QUESTION: 026 (1.00)

Given the following Unit 1 plant conditions:

- 100% power, steady-state
- 1A charging pump running with FCV-122 in automatic control
- Letdown flow (FI-150) = 60 gpm

Which one of the following will occur if VCT level transmitter LT-112 fails HIGH? (Assume NO operator action is taken and all associated systems are in AUTOMATIC.)

a. VCT level cycles between 20% and 40%.

b. Letdown isolates due to low VCT level.

c. 1A charging pump cavitates and trips on overcurrent.

d. Charging pump suction shifts to the RWST at 5% actual level.

### QUESTION: 027 (1.00)

Given the following Unit 1 conditions:

- The plant is in Mode 5.
- Solid plant conditions have been established.
- Tavg is being maintained at 160 F by operation of the "B" RCP. - RHR train "A" is in service with "A" RHR pump running in the
- cooldown mode - Low pressure letdown is established on RHR train "A" and the
- orifice isolation valves are closed.
- Seal injection to each RCP is established at 8 gpm.

With letdown flow at 90 gpm, charging flow at 85 gpm, and RCS pressure at 370 psig, letdown pressure control valve PCV-145 is placed in manual. Which one of the following will occur if NO further operator action is taken?

- a. RCS pressure will remain constant.
- b. PRT level and pressure will increase.
- c. "B" RCP #1 seal differential pressure will fall below minimum.
- d. VCT level will increase until VCT level control valve LCV-115A diverts.

QUESTION: 028 (1.00)

Which one of the following is a Technical Specifications requirement for the refueling water storage tank (RWST)?

- a. Water temperature greater than 35 F.
- b. Volume greater than 417,000 gallons.
- c. Boron concentration greater than 2000 ppm.
- d. Dissolved oxygen concentration less than 0.1 ppm.

Select the combination below that completes the following statements.

To prevent overpressurization of either the residual heat removal (RHR) system or the reactor coolant system (RCS) at low temperatures, the LOW pressure signal that allows opening C loop RHR inlet isolation valves, 8701A and 8701B, is (X) \_\_\_\_\_; and the HIGH pressure signal that automatically closes 8701A and 8701B is (Y) \_\_\_\_\_.

- a. (X) Supplied to both valves from a C loop pressure detector;(Y) Supplied to both valves from a C loop pressure detector.
- b. (X) Supplied to both valves from a C loop pressure detector;
   (Y) Split between A and C loop pressure detectors.
- c. (X) Split between A and C loop pressure detectors;(Y) Split between A and C loop pressure detectors.
- d. (X) Split between A and C loop pressure detectors;(Y) Supplied to both valves from a C loop pressure detector.

QUESTION: 030 (1.00)

The plant is operating at 100% power when a ramped 70% load reduction causes plant pressure to increase steadily, faster than the spray valves can accommodate. Which one of the following explains why PORV PCV-444B will open in advance of PORV PCV-445A opening to mitigate the pressure transient?

- a. PCV-444B is physically lower and closer to the pressurizer.
- b. PCV-444B is controlled by a proportional-integral controller.
- c. PCV-444B is a quicker-acting valve with a larger air operator.
- d. PCV-444B nominal lift setpoint is lower than the PCV-445A nominal lift setpoint.

OUESTION: 031 (1.00)

Select the combination below that completes the following statements.

In preparation for a plant startup after Mode 5 operations, the plant and pressurizer have been heated up, and a bubble has been drawn in the pressurizer. As the plant heatup and pressurization to normal operating conditions are continued, the indicated level from pressurizer level detector LT-459 (Channel I) will (X) \_\_\_\_\_\_ the actual pressurizer level, and the indicated level from cold-calibrated pressurizer level detector LT-462 will (Y) \_\_\_\_\_\_ the actual pressurizer level.

- a. (X) Converge upon; (Y) converge upon
- b. (X) Converge upon; (Y) diverge from
- c. (X) Diverge from; (Y) diverge from
- d. (X) Diverge from; (Y) converge upon

#### QUESTION: 032 (1.00)

Select the combination below that completes the following statements.

Due to the available positions of the pressurizer level selector switch, letdown isolation valve LCV-459 CANNOT receive a low level closure signal from pressurizer level transmitter (X) \_\_\_\_\_; and LCV-460 CANNOT receive a low level closure signal from pressurizer level transmitter (Y) \_\_\_\_\_.

a. (X) 459 (Channel I); (Y) 460 (Channel II)
b. (X) 460 (Channel II); (Y) 459 (Channel I)
c. (X) 461 (Channel III); (Y) 459 (Channel I)
d. (X) 460 (Channel II); (Y) 461 (Channel III)

QUESTION: 033 (1.00)

Given the following conditions:

- The off-site grid has been lost on both units with NO safety
- injection on either unit.
- The Unit Selector Switch for the swing diesels is in 1/2.
- Diesel generator 1-2A will NOT start.

If Unit 1 pressurizer heaters are needed to restore plant pressure during the transient, which one of the following group(s) of heaters should the Unit 1 operators work on restoring first?

- a. Group A only.
- b. Group B only.
- c. Group A or B operator's choice.
- d. Group D or E operator's choice.

#### QUESTION: 034 (1.00)

Given the following:

- Unit 1 is at 100% power.
- Reactor protection system (RPS) testing is in progress.
- Train "B" reactor trip breaker (RTB) is OPEN.
- Train "B" bypass breaker is CLOSED.
- Train "A" RTB is CLOSED.
- Train "A" bypass breaker is OPEN.

Which one of the following is the Train "A" RTB response immediately after Train "A" Bypass Breaker is manually taken to CLOSE?

- a. Its shunt coil and undervoltage coil will be energized.
- b. Its shunt coil and undervoltage coil will be deenergized.
- c. Its shunt coil will be deenergized and its undervoltage coil will be energized.
- d. Its shunt coil will be energized and its undervoltage coil will be deenergized.

#### QUESTION: 035 (1.00)

Which one of the following is prevented if 2 of 3 pressurizer pressure instruments increase above the P-11 setpoint?

- a. Manual opening of pressurizer PORVs.
- b. Manual block of pressurizer low pressure SI signal.
- c. Automatic opening of closed SI accumulator valves.
- d. Automatic pressurizer low pressure SI capability.

QUESTION: 036 (1.00)

Which one of the following reactor protection system input circuits contains energize-to-actuate components?

- a. RCP breaker trip.
- b. RCP bus underfrequency trip.
- c. Reactor coolant loop low flow rate.
- d. Reactor coolant loop overtemperature delta-T.

QUESTION: 037 (1.00)

Given the following conditions:

- Reactor startup is in progress
- Source range channel N31 indicates 1E5 cps Source range channel N32 indicates 9.5E4 cps
- Intermediate range channel N35 indicates 1.5E-11 amps
- Intermediate range channel N36 indicates 4E-10 amps

Which one of the following statements describes the condition of the nuclear instruments?

- a. N35 is overcompensated.
- b. N35 is undercompensated.
- c. N36 is overcompensated.
- d. N36 is undercompensated.

### OUESTION: 038 (1.00)

Given the following conditions:

- Reactor startup is in progress
- All NI switches are in their normal lineup
- Intermediate Range (IR) Channel N35 indicates 3E-10
- IR Channel N36 indicates 9E-11
- No manual blocks have been inserted
- Power is lost to Source Range (SR) Channel N31
- Power is maintained to SR Channel N32

Which one of the following describes the plant response to the SR Channel N31 power loss?

- a. A reactor trip signal is generated resulting in a reactor trip.
- b. A reactor trip signal i. generated, but no trip occurs since one IR channel is above P-6.
- c. No reactor trip signal is generated since only one IR channel is above P-6.
- d. No reactor trip signal is generated, but the level trip switch must be taken to bypass as soon as N36 indicates above 1E-10.

### QUESTION: 039 (1.00)

Which one of the following states the alarm function of the Detector Current Comparator section of the Miscellaneous Control and Indication Panel (top panel) in the Excore Nuclear Instrumentation system?

- a. Actuates an alarm at 2% deviation between any two power range channels.
- b. Actuates an alarm when any one detector input is 2% greater than the average of the other detectors.
- c. Actuates an alarm at 4% deviation between the upper and lower detector of any power range channel.
- d. Act ates an alarm when the difference between channels in the selected range (source or intermediate) exceeds 4%.

QUESTION: 040 (1.00)

Which one of the following circuits uses Loop Tavg as an input, vice Median Tavg?

- a. Rod control circuitry.
- b. Rod insertion limit programmer.
- c. Pressurizer level control circuitry.
- d. Low Tavg feedwater isolation circuitry.

Within five minutes after an "S" signal is caused by a large-break LOCA, which we of the following valve actuations will occur in the RHR-LHSI system with NO operator action?

- a. RHR pump miniflow valves (FCV-602A/B) go closed.
- b. RWST to RHR pump suction valves (MOV-8809A/B) go open.
- c. RHR to RCS hot legs cross-connect valves (MOV-8887A/B) go closed.
- d. RHR supply to charging pump suction valves (MOV-8706A/B) go open.

QUESTION: 042 (1.06)

When the Digital Rod Position Indication (DRPI) system experiences a failure of the "A" Data Cabinet, the accuracy range of the DRPI system becomes +10 to -4 steps.

Which one of the following is the accuracy range of the DRPI system if the "B" Data Cabinet fails, instead of the "A" Data Cabinet?

a. +4 to -10 steps
b. +10 to -4 steps
c. +10 to -10 steps
d. +4 to -4 steps

#### QUESTION: 043 (1.00)

Which one of the following describes a condition that will to actuate the "ROD AT BOTTOM" annunciator?

- a. Any shutdown bank rod below 206 steps.
- b. Any control bank A rod below 10 steps.
- c. Any control bank B rod below 6 steps with any control bank B rod above 6 steps.
- d. Any control bank C rod below 12 steps with any control bank D rod above 6 steps.

#### QUESTION: 044 (1.00)

Given the following:

- Channel "B" of the subcooled margin monitor (SMM) is selected to the "CETC" mode.
- Hottest RTD = 630 degrees F.
- Hottest core exit T/C = 612 degrees F.
- Hottest upper head T/C = 616 degrees F.
- PT-402 = 2255 psig.
- PT-403 = 2260 psig.
- PT-455 = 2210 psig.
- PT-457 = 2240 psig.

Which one of the following values should be displayed on the SMM?

a. +37

b. +39

- C. +41
- d. +43

#### QUESTION: 045 (1.00)

During the performance of a surveillance test, the mode selector switch on the B train output relay test panel is placed in the TEST position. If an actual plant condition calling for an automatic safety injection (SI) occurs, which one of the following will occur?

- a. No SI actuation or reactor trip will occur on either train.
- b. No SI actuation will occur on either train, but the reactor will trip.
- c. SI actuation will occur on A train only, and the reactor will trip.
- d. SI actuation will occur on both A and B trains, and the reactor will trip.

#### QUESTION: 046 (1.00)

Given the following conditions for containment cooling fan A:

- Local/Remote selector switch in REMOTE.
- Both remote handswitches in AUTO.
- Containment cooling fan A stopped.
- Containment cooling fan B running in FAST.

Which one of the following will cause Containment Cooling Fan A to start in FAST speed?

- a. Containment Cooling Fan B trips on motor overload.
- b. Containment Cooling Fan B trips on bus undervoltage.
- c. Signal from Loss of Offsite Power (LOSP) sequencer.
- d. Signal from Engineered Safeguards System (ESS) sequencer.
#### QUESTION: 047 (1.00)

Which one of the following describes the location of the reset switches for the containment cooling fan high vibration trips?

- a. All Unit 1 and Unit 2 switches are on their respective BOP panels in the control room.
- b. Unit 1 and Unit 2 switches are in the respective 139-foot penetration/filtration rooms.
- c. Unit 1 switches are in the 139-foot penetration/filtration room, and Unit 2 switches are on the BOP panel.
- d. Unit 1 switches are on the BOP panel, and Unit 2 switches are in the 139-foot penetration/filtration room.

#### QUESTION: 048 (1.00)

Which one of the following is the method used to prevent an inadvertent spraydown of containment components due to a loss of detector power or protective train power, or an erroneous containment pressure trip signal sent to the protection system?

- a. Two containment pressure bistables must energize to send a High-3 pressure signal to cause a "P" signal.
- b. Two containment pressure bistables must energize to send both High-1 and High-3 pressure signals to cause a "P" signal.
- c. The spray pumps start on a "P" signal, but the discharge valves open only if an "S" signal is present along with the "P" signal.
- d. The spray pumps start on an "S" signal and recirculate through the miniflow line, but the discharge valves open only on a "P" signal.

### QUESTION: 049 (1.00)

Which one of the following is the reason that the quantity of aluminum metal components in the Containment Building is minimized?

- a. Aluminum becomes flammable in a high-temperature Class A fire.
- b. Aluminum combines with elemental iodine to form an insoluble salt.
- c. Aluminum reacts with sodium hydroxide (NaOH) to produce hydrogen.
- d. Aluminum loses structural strength in a high-energy line break environment.

## QUESTION: 050 (1.00)

Which one of the following conditions should have already caused an AUTOMATIC Main Steam Isolation on Unit 2? Assume Unit 2 was at 100% power. Assume NO lead/lag action occurs.

- a. Containment pressure of 17 psig on 2/3 detectors.
- b. "B" steam generator water level at 77% on 2/3 detectors.
- c. "A" steamline pressure is 590 psig "B" steamline pressure is 588 psig, "C" steamline pressure is 582 psig.
- d. "A" steamline pressure is 597 psig, "B" steamline pressure is 492 psig, "C" steamline pressure is 596 psig.

#### QUESTION: 051 (1.00)

Given the following conditions on Unit 1:

- Plant power is steady at 75%.
- All SGWLC controls and MFP speed controls are in AUTO.
- Channel IV SGWLC detectors are selected as controlling.
- Rod control is in manual.

Which one of the following is the expected initial response of the feedwater regulating valve (FWRV) for A steam generator if turbine first-stage impulse pressure detector PT-447 (Channel IV) fails HIGH and NO operator action is taken?

- a. FWRV remains in its current position.
- b. FWRV modulates open to increase A SG level by about 3%.
- c. FWRV modulates closed to reduce A SG level to no-load level.
- d. FWRV opens fully and remains open until the Hi-Hi SG level trip is reached.

### QUESTION: 052 (1.00)

Unit 2 is operating at 55% power when turbine first stage pressure transmitter PT-446 (Channel III) fails LOW; no other failures occur. All switch alignments are normal for at-power operations. Which one of the following describes how the PT-446 failure will affect the steam dump system?

- a. Dump valves will be armed, but will not open.
- b. Dump valves receive an open signal, but are not armed.
- c. Dump valves will open to reduce Tavg to match Tref.
- d. Dump valves will open to reduce Tavg to match no-load Tavg.

QUESTION: 053 (1.00)

Given the following conditions:

- "A" steam generator water level control (SGWLC) in Manual.
- Channel III SGWLC detectors selected as controlling.
- All other SGWLC controls and MFP speed controls in AUTO.

Which one of the following detector failures will cause both main feed pumps to slow down?

- a. Feed header pressure detector PT-508 fails LOW.
- b. Steam header pressure detector PT-464 fails HIGH.
- c. "A" SG steam flow detector FT-474 (Channel III) fails HIGH.
- d. "A" SG steam pressure detector PT-475 (Channel III) fails LOW.

# QUESTION: 054 (1.00)

With the plant operating at 100% power, which one of the following will result in an IMMEDIATE Main Feedwater Isolation?

- a. Two protection level transmitters on "A" S/G have failed HIGH.
- b. Two protection pressure transmitters on "A" SG have failed HIGH.
- c. One main feedwater pump has tripped and the reactor has failed to trip.
- d. A narrow range hot leg RTT has failed LOW concurrently with a reactor trip.

# QUESTION: 055 (1.00)

Which one of the following combinations lists the plant components that are used to provide remote capability to feed the steam generators with the turbine-driven AFW pump during a station blackout?

- a. 120 vac instrument inverter, 48 vdc battery, air accumulator.
- b. AC and DC uninterruptible power supply, 48 vdc battery, air accumulator.
- c. AC and DC uninterruptible power supply, auxiliary building 125 vdc battery, emergency air compressor.
- d. 120 vac instrument inverter, auxiliary building 125 vdc battery, emergency air compressor.

QUESTION: 056 (1.00)

Which one of the following transformers is located in the high-voltage switchyard of the off-site power system?

- a. Autobank transformer.
- b. 1B startup transformer.
- c. Phase C main transformer.
- d. Spare startup transformer.

QUESTION: 057 (1.00)

Which one of the following diesel generator (DG) control panels receives 125v DC power from a source without automatic bus transfer device protection?

- a. DG 1-2A
- b. DG 2B
- c. DG 1C
- d. DG 2C

#### QUESTION: 058 (1.00)

Which one of the following Emergency Diesel Generator automatic engine shutdown conditions is blocked when the emergency start (ES) relays are ENERGIZED?

- a. Engine overspeed.
- b. Engine fail-to-start.
- c. Jacket water low pressure.
- d. Generator phase differential.

QUESTION: 059 (1.00)

Which one of the following diesels has cooling water supplied by "A" Train Service Water?

- a. 1B Diesel.
- b. 1C Diesel.
- c. 2B Diesel.
- d. 2C Diesel.

QUESTION: 060 (1.00)

Which one of the following conditions will automatically open the service water emergency recirculation line valves (MOV-538/539), but will NOT automatically close the return header to dilution line isolation valves (MOV-545/546)?

- a. Low dilution line pressure.
- b. Low service water wet pit level.
- c. High dilution line pressure.
- d. High service water surge tank level.

### QUESTION: 061 (1.00)

Given the following conditions on Unit 1:

- Rod control is in Manual.
- Reactor power has decreased from 98% to 95% with no operator action.
- Tavg has decreased 4 F and is continuing to decrease.
- RCS pressure is 2216 psig and decreasing.
- Control Bank D rods are noted to be moving inward.

Which one of the following describes the immediate action to be taken for these conditions, in accordance with AOP-19.0, "Malfunction of Rod Control System"?

- a. Select Control Bank D and withdraw rods.
- b. Reduce turbine load to keep Tavg equal to Tref.
- c. Place rod control in AUTO and determine rod response.
- d. Trip the reactor immediately and go to EEP-0, "Reactor Trip or Safety Injection".

QUESTION: 062 (1.00)

Which one of the following explains why the Unit 1 main generator output breakers (810/914) are closed as soon as possible after disconnect 915 is opened following an inadvertent unit trip due to an operator error?

- a. To prepare the off-site electrical system for a rapid return to power operations.
- b. To minimize the potential for output breaker damage if a breaker fault occurs.
- c. To rapidly restore power to the unit auxiliary transformers by backfeeding through the main power transformer.
- d. To rapidly restore capability of No. 2 230 Kv bus to feed No. 1 230 Kv bus.

QUESTION: 063 (1.00)

Given the following conditions:

- The unit is at 80% power.

- Inadvertent rod insertion has reduced Tavg to 552 F in all loops.

Which one of the following describes the main feed pump (MFP) and feed ter regulating valve (FWRV) response if a reactor trip occurs from conditions? th

- a. MFPs trip; FWRVs close.
- b. MFPs trip; FWRVs remain open.
- c. MFPs continue running; FWRVs close.

d. MFPs continue running; FWRVs remain open.

### OUESTION: 064 (1.00)

Given the following plant conditions:

- Small break LOCA has occurred.
- Pressurizer pressure is stable at 1350 psig. Containment temperature is 185 F.
- Actual pressurizer level is 50%.

Select the combination below that completes the following statement.

The low pressurizer pressure (1350 psig) tends to make the indicated pressurizer level on LI-460 read (X) \_\_\_\_\_ than the actual pressurizer level; the high containment temperature (185 F) tends to make the indicated level on LI-460 read (Y) than the actual level.

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

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

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

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

QUESTION: 065 (1.00)

Given the following plant conditions:

- Pressurizer pressure 985 psig.
- Pressure relief tank (PRT) pressure 5 psig.
- PRT temperature 90 F.
- Reactor is shutdown.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%. Also assume pressurizer and PRT conditions do NOT change.

At equilibrium, which one of the following PORV outlet piping temperatures would be caused by a leaking pressurizer PORV under these conditions?

- a. 230 F
- b. 260 F
- C. 300 F
  - d. 340 F

### QUESTION: 066 (1.00)

The PRZR SAFETY VLV TEMP HI annunciator alarmed about 2 hours ago. A careful RCS leak rate check indicates that the leakage rate associated with this alarm is 7 gpm, and there is no other RCS leakage. Technical Specifications defines this leakage as which one of the following?

- a. IDENTIFIED LEAKAGE that requires a reactor shutdown.
- b. IDENTIFIED LEAKAGE that does NOT require a reactor shutdown.
- c. UNIDENTIFIED LEAKAGE that requires a reactor shutdown.
- d. UNIDENTIFIED LEAKAGE that does NOT require a reactor shutdown.

# QUESTION: 067 (1.00)

Given the following conditions:

- A large-break LOCA has occurred.
- Safety injection and reactor trip have occurred.
- Pressurizer pressure is 1100 psig, decreasing.
- ECCS injection flow rates are as required for 1100 psig.
- Subcooled margin monitor is in CETC mode. Crew has just completed immediate actions of FNP-1-EEP-0,
- "Reactor Trip or Safety Injection".

Which one of the following combinations of containment pressure and RCS subcooling requires the RCPs to be stopped in accordance with EEP-0 Foldout?

	CTMT PRESSURE (psig)	SUBCOOLING (degrees F)
3	2.1	21
р.	3.2	32
α.	4.3	43
1.	5.4	54

#### QUESTION: 068 (1.00)

Which, one of the following combinations states the reasons for establis'ing hot leg recirculation following a large break LOCA?

- a. To quench steam in the core and to ensure balanced cooling of the core.
- b. To quench steam in the core and to prevent boron precipitation in the core.
- c. To quench steam in the hot legs and to ensure balanced cooling of the core.
- d. To quench steam in the hot legs and to prevent boron precipitation in the core.

## QUESTION: 069 (1.00)

Which one of the following sets of conditions will result in an automatic reactor trip on Reactor Coolant LOW FLOW?

- a. Low flow sensed by 2 out of 3 detectors in 2 out of 3 loops when operating at 8% reactor power.
- b. Low flow sensed by 2 out of 3 detectors in 1 out of 3 loops when operating at 18% reactor power.
- c. Low flow sensed by 1 out of 3 detectors in 2 out of 3 loops when operating at 28% reactor power.
- d. Low flow sensed by 2 out of 3 detectors in 1 out of 3 loops when operating at 38% reactor power.

#### QUESTION: 070 (1.00)

If the unit is operating at 24% power and "C" Reactor Coolant Pump (RCP) trips, which one of the following describes how "C" steam generator (SG) water level and "C" SG steam flow will INITIALLY respond? Assume the reactor does not trip.

a. Level decreases and steam flow decreases.

b. Level decreases and steam flow increases.

c. Level increases and steam flow decreases.

d. Level increases and steam flow increases.

### QUESTION: 071 (1.00)

Given the following plant conditions on Unit 1:

- Unit is at 80% power.
- 1A charging pump is running normally.
- 1B boric acid pump is INOPERABLE due to shorted motor windings.
- Emergency boration is required due to actuation of the CONT ROD BANK POSITION LO-LO annunciator.
- Operator attempts to start 1A boric acid pump, but the pump trips on each attempt.

Under these conditions, which one of the following combinations of valve actuations will provide an emergency boration flowpath meeting the requirements of AOP 27.0, "Emergency Boration"?

- a. Open LCV-115B and open LCV-115D (RWST to CCP Suction Valves).
- b. Open LCV-115D and close LCV-115C (VCT Outlet Isolation Valve).
- c. Close LCV-115C and close LCV-115E (VCT Outlet Isolation Valves).
- d. Open FCV-113A and open V-185 (Manual Emergency Boration Flow Path).

QUESTION: 072 (1.00)

Which one of the following conditions requires an emergency boration to be commenced?

- a. Thirty minutes after a reactor trip, both source range detectors remain off-scale high.
- b. During a reactor startup, a steam dump valve opens and then closes when the RCS cools down to 543 degrees F.
- c. While at 98% power, Control Bank D rod H14 withdraws uncontrollably from 198 steps to 212 steps.
- d. With the plant at 5. Agrees F after a reactor trip, a main steam line break cau. a rapid plant cooldown and safety injection.

- Unit 1 is in Mode 5.
- Maintenance is being performed on RCS pressure transmitters PT-402 and PT-403, which is generating a failed high pressure output signal from both transmitters.
- Hold tags on the breakers for MOV-8701B (RHR pump 1A suction) and MOV-8702B (RHR pump 1B suction) are being removed.

When the hold tags are removed and the breakers are closed, MOV-8701B and MOV-8702B go closed because of the high pressure signal, resulting in a loss of all RHR. Which one of the following describes how either pump suction valve can be reopened?

- a. Hold MCB handswitch in OPEN position to override any auto-close signal.
- b. Hold MOV clutch lever down while operating handwheel to open valve.
- c. Reopen breaker, actuate MOV clutch lever, and operate handwheel to open valve.
- d. Momentarily actuate MCB handswitch to CLOSE to reset the autoclose signal and then position handswitch to OPEN.

- Unit 1 is in Mode 6.
- RHR pump 1A is in operation.
- Reactor vessel level is at 122 feet 9 inches (RCS hot leg centerline).

RHR Heat Exchanger Outlet Valve (HCV-603A) has just failed open, causing RHR flow to increase to maximum. If no operator action is taken and RHR flow remains at maximum, which one of the following would occur to cause a loss of RHR flow?

- a. RHR pump 1A motor overspeed trip from runout due to low discharge pressure.
- b. RHR pump 1A motor overcurrent trip due to the high discharge pressure.
- c. Loss of RHR pump 1A suction due to gas entrainment in the pump suction line.
- d. Loss of RHR pump 1A suction due to low net positive suction head.

- Unit 1 is at 100% power.
- "A" train CCW surge tank High-Low alarm condition is present.
- CCW surge tank level is LOWERING.
- The makeup valves are OPEN.
- Leak location has NOT been determined.

If there is only one leak in the CCW system and it is in one of the following components, which one is the location of the described leak? For each component, assume the associated system is operating.

- a. Letdown heat exchanger.
- b. Excess letdown heat exchanger.
- c. Spent fuel pool heat exchanger.
- d. Primary sample cooler heat exchanger.

QUESTION: 076 (1.00)

Which one of the following combinations of conditions will cause the RCP thermal barrier CCW isolation valves to close automatically?

- a. Supply line pressure drops to 75 psig; supply line flow increases to 160 gpm.
- b. Supply line pressure increases to 75 psig; discharge line flow drops to 160 gpm.
- c. Discharge line pressure drops to 75 psig; supply line flow drops to 160 gpm.
- d. Discharge line pressure increases to 75 psig; discharge line flow increases to 160 gpm.

### QUESTION: 077 (1.00)

Given the following conditions:

- Unit 1 is operating at 100% power.
- A failure of the controlling pressurizer pressure channel has caused actual pressure to increase to 2283 psig.
- Pressurizer Pressure Master Controller M/A station PK-444A is now in MANUAL.

Which one of the following describes the master controller M/A station action required to increase the spray flow rate to return actual pressure to its normal value of 2235 psig?

- a. Raise the pressure setpoint adjustment.
- b. Lower the pressure setpoint adjustment.
- c. Increase the M/A station output (% demand).
- d. Decrease the M/A station output (% demand).

#### QUESTION: 078 (1.00)

Which one of the following compares the severity of the plant pressure transient produced by a pegged HIGH failure of pressurizer pressure detector PT-444 versus the severity of the plant pressure transient produced by the same failure in PT-445. Assume that the failures occur separately, with the plant at stable full power operations, with all controls in AUTO, and that NO operator action is taken in either case.

- a. The pressure drop rat: will be smaller for the PT-444 failure.
- b. The pressure drop rate will be the same for the two failures, but the PT-445 failure will result in a lower final plant pressure.
- c. The pressure drop rate and overall plant pressure drop will be the same for the two failures.
- d. The pressure drop rate and overall plant pressure drop will be greater for the PT-444 failure.

EACTOR OPERATOR

QUESTION: 079 (2.00)

Match each action in Column A with the associated pressurizer pressure setpoint in Column B. (0.5 each)

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

	Column A (ACTION)	Co (SET	olumn CPOIN	В Г)
 a .	Backup heaters energize.	1.	2735	psig
b.	Reactor trip on pressure.	2.	2500	psig
 С.	Be in HOT STANDBY within an hour.	3.	2335	psig
 d.	Automatic closure of pressurizer	4.	2210	psig
	FULVE	5.	2000	psig
		6.	1950	psig
		7.	1865	psig

8. 1850 psig

- Unit 1 is at 50% power.
- All automatic control systems are in their normal lineup.
- The controlling pressurizer (PZR) level transmitter fails at the
- programmed level that corresponds to 50% plant load.
- ASSUME no operator action is taken.

Which one of the following describes the effect on PZR level and pressure when the plant load is increased toward 100%?

- a. Charging flow increases, and actual PZR level and pressure remain constant.
- b. Charging flow decreases, and actual PZR level decreases. At 15% actual level, letdown will isolate and the PZR heaters will cut off; pressure decreases.
- c. Charging flow increases, and actual PZR level increases. The backup heaters energize as level rises due to the apparent insurge and pressure increases.
- d. Charging flow remains constant, and actual PZR level decreases. At 15% actual level, letdown will isolate and the PZR heaters will cut off; pressure decreases.

QUESTION: 081 (1.00)

According to the Response NOT Obtained (RNO) actions of 1-FRP-S.1, "Response to Nuclear Generator/ATWT", which one of the following actions must be performed if the main turbine will NOT trip using the MAIN TURB EMERG TRIP switch during ATWT conditions?

- a. Stop both EH pumps.
- b. Close turbine governor valves.
- c. Open generator output breakers.
- d. Run back the turbine to no-load conditions.

## QUESTION: 082 (1.00)

Which one of the following states the number of separate plant conditions listed in immediate action step 4.1 of FRP-S.1, "Response to Nuclear Power Generation/ATWT," that must be checked to determine if emergency boration is required in an ATWT condition?

- a. 3
- b. 4
- c. 5
- d. 6

QUESTION: 083 (1.00)

Given the following conditions:

- Unit 1 reactor startup is in progress; startup rate is 0 dpm.
- Reactor power is stable at the point of adding heat.
- N-35 Intermediate Range (IR) channel has just failed LOW.

Technical Specification 3.1.3.1, "Reactor Trip System Instrumentation" lists the required actions for an IR channel failure based on the relationship of the current power level to P-6, 5%, etc.

Which one of the following states the approximate current power level?

- a. Less than P-6.
- b. Between P-6 and 5%.
- c. Between 5% and P-10.
- d. Greater than P-10.

- A reactor trip and safety injection have occurred.
- Both motor-driven AFW pumps are inoperable.
- Use of the turbine-driven AFW pump is required.
- A tube rupture exists in SG "B" or SG "C".

Select the combination below that completes the following statement.

In accordance with EEP-3, "Steam Generator Tube Rupture," the location at which steam to the turbine-driven AFW pump from the ruptured SG must be isolated is the (X)\_\_\_\_\_\_ if the rupture is in "B" SG, and is the (Y)\_\_\_\_\_\_ if the rupture is in "C" SG?

- a. (X) MCB; (Y) HSP.
- b. (X) HSP; (Y) HSP.
- c. (X) HSP; (Y) Aux Bldg main steam valve room.
- d. (X) Aux Bldg main steam valve rocm; (Y) HSP.

QUESTION: 085 (1.00)

After a ruptured steam generator (SG) has been isolated, EEP-3, "Steam Generator Tube Rupture," directs a rapid RCS cooldown to a selected core exit temperature derived from an EEP-3 table. Which one of the following is the basis for the selected core exit temperature derived from the EEP-3 table?

- a. Allows maximum amount of cooldown without exceeding pressurized thermal shock limits.
- b. Ensures 20 degrees of subcooling is maintained during the subsequent RCS depressurization.
- c. Minimizes inleakage into the ruptured S/G until the subsequent RCS depressurization can be initiated.
- d. Prevents backleakage from the ruptured S/G until the subsequent RCS depressurization can be initiated.

During the initial phases of a faulted steam generator (SG) accident, before Main Steamline Isolation and Feedwater Isolation occur, the MCB indication trends will differ, depending on whether the break is on a feed line or on a steam line.

Which one of the following trend combinations is indicative of a large feed line break prior to Main Steamline/Feedline Isolation?

	RCS Tavg	RCS Loop Delta-Ts	PRZR Pressure	SG Level
a.	Decreasing	Decreasing	Increasing	Increasing
b.	Increasing	Decreasing	Increasing	Decreasing
с.	Decreasing	Increasing	Decreasing	Increasing
d.	Increasing	Increasing	Decreasing	Decreasing

REACTOR OPERATOR

Given the following conditions on Unit 1:

- A reactor trip WITHOUT SI occurred about 12 minutes ago.
- The crew is carrying out 1-ESP-0.1, "Reactor Trip Response."
- Loss of offsite power has just occurred on Unit 1.
- Unit 1 diesel generators will NOT start.
- Unit 1 4160V ESF buses F, G, K, and L are deenergized.
- The STA reports the status of the Critical Safety Functions (CSFs) has just changed to the following:

Heat Sink	-	RED
Subcriticality	-	GREEN
Containment	100	GREEN
Inventory	-	YELLOW
Core Cooling	-	RED
Integrity	-	GREEN

Which one of the following procedures should be used in response to these conditions?

a. 1-FRP-C.1, "Response to Inadequate Core Cooling"

b. 1-ESP-0.2, "Natural Circulation Cooldown"

c. 1-FRP-H.1, "Response to Loss of Secondary Heat Sink"

d. 1-ECP-0.0, "Loss of All AC Power"

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QUESTION: 088 (1.00)

Given the following conditions:

- All diesel generator Mode Selector Switches are in Mode 1.
- All diesel generators will start and load as required, if demanded.
- The Unit Selector Switch for the swing diesels is in 1/2.
- Both Units are operating near 100% power.

Which one of the following casualty combinations will result in 4160v Bus 2H remaining deenergized until it is manually energized?

a. Dual Unit LOSP.

b. LOSP Unit 2, SI Unit 1.

c. Dual Unit LOSP, SI Unit 1.

d. LOSP Unit 2, SI Unit 2.

#### QUESTION: 089 (1.00)

Both units are operating at rated power with all diesel generator lineups and startups normal for at-power operations. Which one of the following describes the automatic operation of DG 1-2A output breaker if a simultaneous dual unit Loss of Offsite Power (LOSP) occurs coincident with a safety injection (SI) on Unit 2?

DG 1-2A will align to:

- a. 1F, and will realign to 2F in the event of a subsequent SI on Unit 1.
- b. 1F, and will remain aligned to 1F in the event of a subsequent SI on Unit 1.
- c. 2F, and will realign to 1F in the event of a subsequent SI on Unit 1.
- d. 2F, and will remain aligned to 2F in the event of a subsequent SI on Unit 1.

REACTOR OPERATOR

## QUESTION: 090 (1.00)

Which one of the following describes a condition that will automatically stop the discharge of a Waste Monitor Tank?

- a. Actuation of the "LIQ OR GS PROC PNL TRBL" alarm on the MCB annunciator panel "M".
- b. Drumming area radiation monitor, R-08, goes into alarm.
- c. Liquid discharge flow rate exceeds 45 gpm as read at the Liquid Waste Panel.
- d. Radioactivity level exceeds alarm setpoint on liquid radwaste effluent monitor, R-18.

QUESTION: 091 (1.00)

Which one of the following valves will CLOSE upon a loss of instrument air to the penetration room?

- a. Boric acid to blender valve (FCV-113A).
- b. Makeup water to blender valve (FCV-114B).
- c. Alternate charging valve (HV-8146).
- d. Seal water injection valve (HCV-186).

# QUESTION: 092 (1.00)

Given the following conditions:

- The control room has been evacuated due to a fire.
- Control of all components has been transferred to the Hot Shutdown Panels (HSPs).
- The electrical lineup for "C" charging pump is normal, with the exception of the HSP switch being in LOCAL.
- "B" charging pump is connected to electrical Train B and running.
- A valid SI signal has just been received.

Which one of the following describes the "C" charging pump response to the SI signal?

The "C" pump will:

- a. Start, and remain running until the SI is reset.
- b. Start, and remain running until "B" charging pump automatically starts.
- c. Not start, but the operator may start the pump using the HSP switch after resetting the SI.
- d. Not start, but the operator may start the pump using the HSP switch without resetting the SI or stopping B charging pump.

#### QUESTION: 093 (1.00)

After a Containment Spray (CS) Actuation, one criterion for stopping the CS pumps is that 90% of the spray additive tank contents have been sprayed into containment. Which one of the following states the other criterion for stopping the CS pumps after a containment spray actuation?

- a. After 2 hours of containment spray recirculation flow for a faulted steam generator (SG) and for a LOCA.
- b. When containment pressure is less than 16 psig for a LOCA and for a faulted SG.
- c. After 2 hours of containment spray recirculation flow for a faulted SG; when containment pressure is less than 16 psig for a LOCA.
- d. After 2 hours of containment spray recirculation flow for a LOCA; when containment pressure is less than 16 psig for a faulted SG.

QUESTION: 094 (1.00)

After a reactor trip, Critical Safety Function Status Tree (CSFST) monitoring must begin when the crew:

- a. Completes the immediate actions of EEP-0, "Reactor Trip or Safety Injection."
- b. Exits from EEP-0 to ESP-0.1, "Reactor Trip Response," at step 4 of EEP-0.
- c. Identifies the symptoms of a challenge to a fission product barrier, vienever the challenge occurs.
- d. Enters the Emergency Response Procedures (ERPs), beginning with step 1 of EEP-0 or ECP-0.0, "LOSS OF ALL AC POWER."

QUESTION: 095 (1.00)

Given the following conditions:

- Unit 1 is at 98% power.
- RCS activity level is normal for this power level.
- Containment minipurge is operating.

Which one of the following radiation monitors will be the first to detect a very small RCS leak under these conditions?

- a. R-11, Containment Atmosphere Particulate.
- b. R-12, Containment Atmosphere Gaseous.
- c. R-21, Plant Vent Stack Particulate.
- d. R-24, Containment Purge Gaseous.

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ANSWER: 001 (1.00)

a.

REFERENCE :

LP OPS-52101F, pg. 36

KA 004010A204 [3.6/4.2]

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004010A204 .. (KA's)

ANSWER: 002 (1.00)

a.

REFERENCE :

FNP-0-AP-16, Table 1, Appx. C, p. C-23.
KA 194001K101 [3.6/3.7]

194001K101 ... (KA's)

ANSWER: 003 (1.00)

d.

REFERENCE:

FNP-0-AP-14, pg. 3-9

KA 194001K102 [3.7/4.1]

194001K102 .. (KA's)

ANSWER: 004 (1.00)

d.

REFERENCE :

FNP-0-AP-14, pg. 18-20

KA 194001K102 [3.7/4.1]

194001K102 .. (KA's)

ANSWER: 005 (1.00)

С.

REFERENCE:

FNP-0-AP-14, pg. 19 KA 194001K109 [3.4/3.4]

194001K109 .. (KA's)

ANSWER: 006 (1.00)

a.

REFERENCE:

Tech Spec 6.12.2

KA 194001K103 [2.8/3.4]

194001K103 .. (KA's)

ANSWER: 007 (2.00)

a. 5 b. 1 c. 3 d. 2 (0.5 each)

REFERENCE :

FNP-0-M-001, para. 6.3, p. 13 & 14
KA 194001K103 [2.8/3.4]

194001K103 ... (KA's)

ANSWER: 008 (1.00)

C.

REFERENCE:

GET, Fire Protection, G-009, p. 13 KA 194001K116 [3.5/4.2]

194001K116 ... (KA's)

ANSWER: 009 (1.00)

d.

REFERENCE :

FNP-0-AP-1, page 13, para. 7.1

KA 194001A101 [3.3/3.4]

194001A101 .. (KA's)

ANSWER: 010 (1.00)

C ...

REFERENCE :

FNP-0-AP-4, pg. 7

KA 194001A101 [3.3/3.4]

194001A101 ... (KA's)

ANSWER: 011 (1.00)

C.

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REFERENCE:
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FNP Technical Specifications, para. 4.0, p. 3/4 0-2 KA 194001A106 [3.4/3.4]

194001A106 ... (KA's)

ANSWER: 012 (1.00)

b.

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REFERENCE:
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Tech Specs 6.2.2.f, pg. 6-2 KA 1940u1A109 [2.7/3.9]

194001A109 .. (KA's)

ANSWER: 013 (1.00)

а.

REFERENCE:

FNP-0-AP-60, pg. 3

KA 194001A112 [3.1/4.1]

194001A112 ... (KA's)

ANSWER: 014 (1.00)

d.

REFERENCE :

L.P. OPS-52102G, pg. 11 KA 208000K401 [3.1/3.3]

008000K401 .. (KA's)

ANSWER: 015 (1.00)

а.

REFERENCE :

LP OPS-521026, Obj. 23

KA 008000K101 [3.1/3.1]

008000K101 .. (KA's)

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ANSWER: 016 (1.00)

a.

# REFERENCE :

LP OPS-402041/52201E

KA 001000A301 [4.1/4.0]

001000A301 ... (KA's)

ANSWER: 017 (2.00)

a. 4 b. 7 c. 5 d. 6 (0.5 each)

REFERENCE:

LP OPS-402041/52201E, pg. 11, 12 KA 001010K404 [2.6/2.8]

001010K404 .. (KA's)

ANSWER: 018 (1.00)

С.

REFERENCE :

LP OPS-52201E, Objective 16

KA 001000K402 [3.8/3.8]

001000K402 .. (KA's)

ANSWER: 019 (1.00)

С.

REFERENCE :

Tech Specs 3.4.7.1

KA 002000G005 [3.6/4.1]

002000G005 .. (KA's)

ANSWER: 020 (1.00)

a,

### REFERENCE :

LP OPS-52101A, pg. 26, 27 KA 002000K606 [2.5/2.8]

002000K606 .. (KA's)

ANSWER: 021 (2.00)

a. 5 b. 1 c. 4 d. 2 (0.5 each)

#### REFERENCE :

LP OPS-52101A, pg. 11, 12 KA 002000K106 [3.7/4.0]

002000K106 .. (KA's)

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ANSWER: 022 (1.00)

a.

REFERENCE :

Farley Exam Bank Question 052101D009

KA 003000A203 [2.7/3.1]

003000A203 .. (KA's)

ANSWER: 023 (1.00)

С.

**REFERENCE**:

Tech Spec 3.4.1.2

KA 003000G005 [3.4/3.8]

003000G005 ... (KA's)

ANSWER: 024 (2.00) a. 3 b. 5

c. 2 d. 1 (0.5 each)

REFERENCE :

Farley exam bank question 052101D05034

KA 003000G010 [3.3/3.6]

003000G010 .. (KA's)

ANSWER: 025 (1.00)

d.

### REFERENCE :

LP OPS-40301F/52101F, pg. 33

KA 004020A305 [3.2/3.0]

004020A305 .. (KA's)

ANSWER: 026 (1.00)

a.

# REFERENCE :

Farley exam bank question 052101FT1043R

KA 004020A305 [3.2/3.0]

004020A305 .. (KA's)

ANSWER: 027 (1.00)

b.

### REFERENCE:

Farl sxam ank question 052101FT1041R

KA 005000K401 [3.0/3.2]

005000K401 .. (KA's)
ANSWER: 028 (1.00)

a.

REFERENCE:

Tech Spec 3.5.5

KA 006000G005 [3.5/4.2]

006000G005 .. (KA's)

ANSWER: 029 (1.00)

d.

#### REFERENCE :

LP OPS-52101K, pg. 6

KA 005000K407 [3.2/3.5]

005000K407 .. (KA's)

ANSWER: 030 (1.00)

b.

#### REFERENCE :

LP OPS-52201H, Obj. 10, pg. 7 KA 010000K403 [3.8/4.1]

010000K403 .. (KA's)

ANSWER: 031 (1.00)

b.

## REFERENCE :

LP OPS-52201H, pg. 19, 20

KA 011000A104 [3.1/3.3]

011000A104 .. (KA's)

ANSWER: 032 (1.00)

b.

#### REFERENCE:

LP OPS-52201H, Obj. 16, fig. 7 KA 011000K406 [3.3/3.7]

011000K406 .. (KA's)

ANSWER: 033 (1.00)

b.

#### REFERENCP :

LP OPS-52201H, Obj. 6 LP OPS-52103B, Fig. 8 KA 010000K201 [3.0/3.4] 010000K201 ...(KA's) ANSWLK: 034 (1.00)

d.

## REFERENCE:

LP OPS-52201I, Obj. 14, pg. 24

KA 012000K401 [3.7/4.0]

012000K401 .. (KA's)

ANSWER: 035 (1.00)

b.

#### REFERENCE :

LP OPS-52201I, pg. T-5c KA 012000K610 [3.5/3.5]

012000K610 .. (KA's)

ANSWER: 036 (1.00)

b.

#### REFERENCE:

Farley LER 93-001

KA 012000A202 [3.6/3.9]

012000A202 .. (KA's)

ANSWER: 037 (1.00)

a.

# REFERENCE :

LP OPS-52201D, Obj. 6, Fig. 4

KA 015000A303 [3.9/3.9]

015000A303 ... (KA's)

ANSWER: 038 (1.00)

a.

#### REFERENCE :

LP OPS-52201I, pg. 50 KA 015000K301 [3.9/4.3]

015000K301 ... (KA's)

ANSWER: 039 (1.00)

b.

## REFERENCE :

LP OPS-52201D, Obj. 29, pg. 25

KA 015020K504 [3.2/3.6]

015020K504 ... (KA's)

ANSWER: 040 (1.00)

d.

#### REFERENCE :

LP OPS-52201J, Obj. 3, 4, pg. 11, 14

KA 016000K403 [2.8/2.9]

016000K403 .. (KA's)

ANSWER: 041 (1.00)

a.

## REFERENCE :

LP OPS-52102B, pg. 9, 10 KA 013000K106 [4.2/4.4]

013000K106 ... (KA's)

ANSWER: 042 (1.00)

a.

## REFERENCE -

LP OPS-52201F, Obj. 5 & 7, pp. 13-14

KA 014000A102 [3.2/3.6]

014000A102 .. (KA's)

ANSWER: 043 (1.00)

a.

## REFERENCE :

LP OPS-52201F, pg. 15, Obj. 8

KA 014000K403 [3.2/3.4]

014000K403 ... (KA's)

ANSWER: 044 (1.00)

С.

#### REFERENCE :

LF OPS-52202E, Obj. 14 KA 017020A402 [3.8/4.1]

017020A402 .. (KA's)

ANSWER: 045 (1.00)

с.

#### REFERENCE :

LP OPS-522011, Obj. 26; Exam Bank Question 052201109063 KA 013000K502 [2.9/3.3]

013000K502 .. (KA's)

ANSWER: 046 (1.00)

a.

## REFERENCE :

LP OPS-52102C, Obj. 11, pg. 19, 20

KA 022000A201 [2.5/2.7]

022000A201 .. (KA's)

ANSWER: 047 (1.00)

С.

# REFERENCE :

LP OPS-52102C, Obj. 11, p. 22

KA 022000A401 [3.6/3.6]

022000A401 .. (KA's)

ANSWER: 048 (1.00)

а.

# REFERENCE:

LP OPS-52201I, pg. 11

KA 026000A301 [4.3/4.5]

026000A301 .. (KA's)

ANSWER: 049 (1.00)

C .

## REFERENCE:

LP OPS-52102D, Obj. 1, pg. 1

KA 028000K503 [2.9/3.6]

028000K503 .. (KA's)

ANSWER: 050 (1.00)

a.

## REFERENCE :

LP OPS-522(11, Obj. 20, pg. T-2b KA 039000K405 [3.7/3.7]

039000K405 .. (KA's)

ANSWER: 051 (1.00)

a.

#### REFERENCE :

LP CPS-52201B, Obj. 5, 7; Fig. 14 KA 035010A203 [3.4/3.6]

035010A203 .. (KA's)

ANSWER: 052 (1.00)

b.

REFERENCE :

LP OPS-52201G, Fig. 3; Farley exam bank 052201G16035 KA 041020A102 [3.1/3.2]

041020A102 .. (KA's)

ANSWER: 053 (1.00)

d.

REFERENCE :

LP OPS-52201B, Obj. 15, Fig. 14

KA 059000K405 [2.5/2.8]

059000K405 ... (KA's)

ANSWER: 054 (1.00)

a.

REFERENCE:

LP OPS-52201K, Obj. 3, Fig. 8 KA 059000A412 [3.4/3.5]

059000A412 .. (KA's)

A WER: 055 (1.00)

b.

## REFERENCE:

LP OPS 52102H, Obj. 18, 22; pg. 9, 10 KA 061000K201 [3.2/3.3]

061000K201 .. (KA's)

ANSWER: 056 (1.00)

a.

# REFERENCE :

LP OPS-52103A, Obj. 4, pg. 3 KA 062000K104 [3.7/4.2]

062000K104 .. (KA's)

ANSWER: 057 (1.00)

REFERENCE :

LP OPS-52103C, Obj. 3, pg. 8 KA 063000K401 [2.7/3.0]

063000K401 .. (KA's)

ANSWER: 058 (1.00)

С.

## REFERENCE:

LP OPS-52102I, Obj. 22, pg. 31

KA 064000K402 [3.9/4.2]

064000K402 .. (KA's)

ANSWER: 059 (1.00)

b.

#### REFERENCE :

LP OPS-40101B, Obj. 13, Fig. 13 KA 076000K105 [3.8/4.0]

076000K105 .. (KA's)

ANSWER: 060 (1.00)

C.

### REFERENCE :

LP OPS-52102F, Obj. 21, pg. 17 KA 076000A202 [2.7/3.1]

076000A202 .. (KA's)

ANSWER: 061 (1.00)

C.

REFERENCE :

LP OPS-52520S, Objective 1 1-AOP-19.0

KA 000001G010 [3.9/4.0]

000001G010 .. (KA's)

ANSWER: 062 (1.00)

b.

REFERENCE :

LP OPS-52103A, Obj. 6, pg. 12

KA 000007K202 [2.6/2.8]

000007K202 ... (KA's)

ANSWER: 063 (1.00)

C.

REFERENCE :

LP OPS-522011, Obj. 25, pg. T-2c

KA 000007A102 [3.8/3.7]

000007A102 .. (KA's)

ANSWER: 064 (1.00)

d.

# REFERENCE :

LP OPS-52201H, Obj. 13

KA 000008A212 [3.4/3.7]

000008A212 .. (KA's)

ANSWER: 065 (1.00)

С,

REFERENCE :

Steam Tables

KA 000008K302 [3.6/4.1]

000008K302 .. (KA's)

ANSWER: 066 (1.00)

b.

#### REFERENCE:

T.S. 1.0 Definitions and T/S 3.4.7.2 KA 000009G003 [3.5/3.4]

000009G003 .. (KA's)

ANSWER: 067 (1.00)

£.

REFERENCE :

EEP-0 Foldout

KA 000011A103 [4.0/4.0]

000011A103 ... (KA's)

ANSWER: 068 (1.00)

b.

REFERENCE :

LP OPS-52102B, Obj. 11, p. 17 LP OPS-52531H, Obj. 12, pp. 4 & 8 KA 000011K313 [3.8/4.2]

10/92 exam

000011K313 .. (KA's)

ANSWER: 069 (1.00)

d.

REFERENCE:

LP OPS-522011, Obj. 18, Table 1

KA 000015G011 [3.5/3.6]

000015G011 ... (KA's)

ANSWER: 070 (1.00)

a.

REFERENCE :

LP OPS-40301A, Obj. 1

KA 000015K104 [2.9/3.1]

4/92 exam

000015K104 .. (KA's)

ANSWER: 071 (1.00)

b.

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REFERENCE :
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AOP-27.0, pg. 2, 3 LP OPS-52521A, Obj. 4, Fig. 1 KA 000024K302 [4.2/4.4]

000024K302 .. (KA's)

ANSWER: 072 (1.00)

a.,

REFERENCE :

LP OPS-52521A, Obj. 1, pg. 2

KA 000024G011 [3.8/3.9]

000024G011 ... (KA's)

ANSWER: 073 (1.00)

С.

## REFERENCE :

LP OPS-52520L, Obj. 6, pg. 7

KA 000025A110 [3.1/2.9]

000025A110 ... (KA's)

ANSWER: 074 (1.00)

Ċ.

## REFERENCE :

LP OPS-52520L, Obj. 3, pg. 6 KA 000025K101 [3.9/4.3]

000025K101 .. (KA's)

ANSWER: 075 (1.00)

C.

#### REFERENCE :

LP OPS-52102G, Obj. 4 & 22 and P&ID D-175002

KA 000026A201 [2.9/3.5]

000026A201 .. (KA's)

ANSWER: 076 (1.00)

đ.

# REFERENCE :

LP OP3-521026, Obj. 16, pg. 8.

KA 000026A106 [2.9/2.9]

000026A106 .. (KA's)

ANSWER: 077 (1.00)

d.

#### REFERENCE :

LP OPS-52201H, Obj. 4, pgs. 6-12. KA 000027A102 [3.1/3.0]

000027A102 ... (KA's)

ANSWER: 078 (1.00)

d.

#### REFERENCE :

LP OPS-52201H, pg. 6-13

KA 000027A103 [3.6/3.5]

000027A103 .. (KA's)

ANSWEL: 079 (2.00) a. 4 b. 7 c. 1 d. 5 (0.5 each)

# REFERENCE :

Farley exam bank question 052201H09026

KA 000027A204 [3.7/4.3]

000027A204 ... (KA's

ANSWER: 080 (1.00)

C.

REFERENCE :

LP OPS-52201H, Obj. 16 & 22, pgs. 18-20 & 23-26 KA 000028A202 [3.4/3.8] 10/92 exam

000028A202 .. (KA's)

ANSWER: 081 (1.00)

b.

REFERENCE :

FRP-S.1, pg. 3

KA 000029G010 [4.5/4.5]

000029G010 .. (KA's)

ANSWER: 082 (1.00)

b. '

REFERENCE:

FRP-S.1

KA 000029G010 [4.0/4.0]

000029G010 .. (KA's)

ANSWER: 083 (1.00)

b,

REFERENCE :

LP OPS-52201D, Obj. 6 KA 000033A208 [3.3/3.4]

100033A208 .. (KA's)

ANSWER: 084 (1.00)

REFERENCE :

EEP-3, pg. 5; LP OPS-5210?<sup>10</sup> Obj. 20 KA 000038A132 [4.6/4.7]

000038A132 .. (KA's)

ANSWER: 085 (1.00)

b.

## REFERENCE :

LP OPS-52530D, Obj. 12, 13, pg. 45

KA 000038A136 [4.3/4.5]

000038A136 .. (KA's)

ANSWER: 086 (1.00)

b.

REFERENCE :

LP OPS-52530C, pg. 7 KA 000040A201 [4.2/4.7]

000040A201 ... (KA's)

ANSWER: 087 (1.00)

# REFERENCE :

ECP-0.0, pg. 1, 2 LP OPS-52532A, Obj. 4

KA 000055G012 [3.9/4.0] 10/92 exam

000055G012 .. (KA's)

ANSWER: 088 (1.00)

d.

## REFERENCE:

LP OPS-52103, Obj. 1, 5, 6; Fig. 7

KA 000056A214 [4.4/4.6]

000056A214 .. (KA's)

ANSWER: 089 (1.00)

d.

REFERENCE :

LP OPS-52103F, Obj. 1.D, pg. 33, 34

KA 000056A214 [4.4/4.6]

10/92 exam

000056A214 .. (KA's)

ANSWER: 090 (1.00)

# REFERENCE :

LP OPS-52106A, Obj., pg. 22

KA 000059A205 [3.6/3.9]

4/92 exam

000059A205 .. (KA's)

ANSWER: 091 (1.00)

b.

#### REFERENCE :

LP OPS-52520F, Obj. 1, pg. 2 FNP-1-AOP-6.0, "Loss of Instrument Air", Table 1, pg. 6

KA 000065A208 [2.9/3.3]

000065A208 ... (KA's)

# ANSWER: 092 (1.00)

d.

REFERENCE :

LP OPS-52101F, figure 14, LO 15, pg. 55

KA 000068A121 [3.9/4.1]

000068A121 .. (KA's)

ANSWER: 093 (1.00)

# REFERENCE :

LP OPS-52530B, Obj. 10, pg. 24

KA 000069K301 [3.8/4.2]

000069K301 .. (KA's)

ANSWER: 094 (1.00)

## b.

#### REFERENCE :

SOP-0.8

KA 000069G012 [3.5/3.5]

000069G012 ... (KA's)

ANSWER: 095 (1.00)

a.

#### REFERENCE :

LP OPS-52106D, Obj. 7, pg. 7 KA 000076K201 [2.6/3.0] 000076K201 ...(KA's)

ANSWER KEY

MUI	LTIPI	LE CHOICE	017	MAT(	CHING
001	a			a	4
002	a			b	7
003	đ			С	5
004	đ			d	6
005	с		MU	LTIPI	LE CHOICE
006	a		018	с	
007	MAT	CHING	019	С	
	ā	5	020	а	
	b	1	021	MATO	CHING
	C	3		â	5
	d	2		b	1
IUM	LTIPI	LE CHOICE		С	4
008	C.			d	2
009	đ		MU	LTIPI	LE CHOICE
010	С		022	a	
011	с		023	С	
012	b		024	MAT	CHING
013	a			а	3
014	đ			b	5
015	а			с	2
016	a			d	1

Page 1

ANSWER KEY

MU	LTIPLE CHOICE	047	С
025	d	048	a
026	a	049	С
027	b	050	а
028	a	051	a
029	đ	052	b
030	b	053	d
031	b	054	а
032	b	055	b
033	b	056	a
034	d	057	b
035	b	058	С
036	d	059	b
037	a	060	C
038	a	061	С
039	b	062	b
040	d	063	C
041	a	064	đ
042	a	065	C
043	a	066	b
044	c	067	С
045	c	068	b
046	a	069	d

ANSWER KEY

010	a					00	u	
071	b				C	89	d	
072	a				0	90	d	
073	С				C	91	b	
074	С				0	92	d	
075	С				C	93	d	
076	d				. 0	94	b	
077	d				C	95	а	
078	d							
079	MAT	CHING	1					
	a	4						
	b	7						
	с	1						
	d	5						
MI	JLTI	PLE CH	OICE					
080	С							
081	b							
082	b							
083	b							
084	d							
085	b							
086	b							
0.87	d							

Al

Master Failey 93-301

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

CANDIDATE'S NAME:	
FACILITY:	Farley 1 & 2
REACTOR TYPE:	PWR-WEC3
DATE ADMINISTERED:	93/10/19

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheat 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	9	
100.00	FINAL GRADE	0/0	TOTAL

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

Candidate's Signature

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

MU	LTIP	LE	CHOIC	CE			016	MAT	CHIN	ſĠ		
001	а	b	с	d				а				
002	а	b	C	đ				b				
003	а	b	C	đ				С				
004	а	b	С	đ				đ				
005	a	b	c	đ	-		MU	LTIF	LE C	HOIC	CE	
006	а	b	с	d			017	a	b	с	d	-
007	а	b	С	d			018	a	b	C	d	
008	а	ь	С	d			019	а	b	С	d	
009	a	b	С	đ			020	a	b	С	d	
010	а	b	c	đ			021	а	b	С	d	
011	а	b	С	d			022	а	b	с	d	
012	MAT	CHI	ING				023	а	b	с	d	
	а	-1					024	а	b	С	đ	
	b	÷.,					025	а	b	С	d	
	С	i.					026	а	b	С	d	
	d						027	а	b	С	d	
MU	ILTI	PLE	CHOI	CE			028	а	b	с	d	
013	а	b	c	d			029	a	b	с	đ	
014	а	b	с	d			030	а	b	С	d	
015	a	b	С	đ	Territoria da		031	а	b	С	d	-
							032	а	b	С	đ	
							033	a	b	с	d	

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

034	а	b	С	d		057	а	b	C	đ	
035	а	b	С	đ		058	a	b	С	đ	
036	а	b	C	d		059	а	b	С	d	-
037	a	b	с	d		060	a	b	С	d	
038	a	b	C	đ		061	а	b	C	đ	
039	а	b	C	d		062	а	b	С	d	
040	а	b	С	d	비야 한 것을 받는 것	063	а	b	с	d	
041	а	b	С	d	무명이 많은 것이다.	064	a	b	С	d	
042	a	b	С	d		065	а	b	С	đ	
043	a	b	С	d		066	a	b	C	d	
044	a	b	c	d		067	а	b	С	d	******
045	a	b	С	d		068	MAT	CHIN	G		
046	a	b	С	d	그의 영상 영상		а				
047	а	b	C	d	요. 신문 영상		b				
048	a	b	С	d			с				
049	a	b	С	đ			đ				
050	a	b	C	d		MU	LTIP	LE C	HOIC	E	
051	a	b	c	d		069	а	b	С	d	
052	а	b	с	d		070	а	b	с	d	-
053	a	b	С	d		071	а	b	С	đ	
054	a	b	С	đ		072	MAT	CHIN	3		
055	a	b	с	d			а	-			
056	а	b	C	d			b	_			

# ANSWER SHEET

Multiple Choice (Circle or X your choice)

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

MU	LTIP	LE	CHOIC	Έ			092	a	b	c	đ	
073	a	b	С	d			093	a	b	с	đ	
074	a	b	C	d			094	а	b	С	đ	-
075	a	b	с	đ			095	a	b	с	d	
076	a	b	C	d			096	а	b	С	d	
077	a	b	с	đ	-		097	а	b	С	d	
078	a	b	С	đ								
079	а	b	C	đ								
080	а	b	C	d								
081	a	b	С	d								
082	a	b	С	d								
083	a	b	С	đ								
084	a	b	c	d								
085	а	b	C	đ								
086	a	b	С	d	-							
087	a	b	C	d								
088	а	b	С	d	and the							
089	MAT	CHI	NG									
	а											
	b		23									
MU	LTIP	LE	CHOIC	Έ								
090	а	b	С	d								
091	а	b	С	đ								
				(**	******	END OF	EXAMINA	TION	* * * *	****	**)	

#### NRC PULES 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.
- 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.
- 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. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as < or > signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.
- 9. The point value for each question is indicated in parentheses after the question.
- Show all calculations, methods, or assumptions used to obtain an answer to any short answer questions.
- 11. Partial credit may be given except on multiple choice questions. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
- 12. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.
- 13. If the intent of a question is unclear, ask questions of the examiner only.

- 14. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
- 15. Ensure all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of immediately following the examination.
- 16. 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)

Which one of the following describes how the position of a locked throttle valve should be verified during a system valve lineup verification?

- a. Verify the valve locking device is locked. Without operating the valve, visually verify the valve stem position.
- b. Verify the valve locking device is locked. Attempt to operate the valve to ensure stem movement is not possible.
- c. Unlock and close the valve while counting the number of turns. Reopen the valve the same number of turns and relock.
- d. Unlock and open the valve while counting the number of turns. Reclose the valve the same number of turns and relock.

#### QUESTION: 002 (1.00)

Which one of the following positions is responsible for performing the tag removal actions of a safety tag order that mechanically isolated a boric acid transfer pump for maintenance?

- a. Journeyman mechanic.
- b. Individual accepting the tag order.
- c. Individual requesting the tag order.
- d. Operations group designated operator.

#### QUESTION: 003 (1.00)

A hypothetical centrifugal pump that transfers water from an open tank to a pressurized accumulator has a local handswitch and a remote breaker. The following tagging actions must be taken to isolate this pump for impeller maintenance.

- 1. Open the remote breaker.
- 2. Close the pump suction valve.
- 3. Close the pump discharge valve.
- 4. Position the local handswitch to OFF.

Which one of the following is the proper sequence for accomplishing the above isolation actions when executing a tag order for this pump?

a. 1, 4, 2, 3.
b. 2, 3, 4, 1.
c. 3, 2, 1, 4.
d. 4, 1, 3, 2.

#### QUESTION: 004 (1.00)

Which one of the following is the system pressure above which double boundary valve isolation should be used to protect a pipe-breach work area in a cold-water piping system?

- a. 200 psig.
- b. 600 psig.
- c. 800 psig.
- d. 1000 psig.

#### QUESTION: 005 (1.00)

Which one of the following National Fire Protection Association classifications of fire extinguishers should be applied to a fire involving energized electrical equipment?

- a. Class A
- b. Class B
- c. Class C
- d. Class D

QUESTION: 006 (1.00)

Revision 5 of a safety-related procedure contains two temporary changes, TCN 5A and TCN 5B.

Which one of the following describes the correct use of this procedure?

- a. TCN 5A should be used because only one temporary change may be written for a safety-related procedure.
- b. NEITHER TCN should be used because Revision 5 is the only controlled document.
- c. TCN 5B should be used because the latest temporary change supersedes all previous temporary changes.
- d. BOTH TCN's should be used unless TCN 5B states that TCN 5A is superseded.

#### QUESTION: 007 (1.00)

Which one of the following controlled documents must be printed on BLUE paper?

- a. Shared Procedures.
- b. Unit 1 Temporary Changes.
- c. Unit 2 Temporary Changes.
- d. Shared Temporary Changes.

## QUESTION: 008 (1.00)

Technical Specifications require that the Nuclear Instrumentation Power Range functional test be accomplished on a MONTHLY basis. The last three dates on which this surveillance was performed are 0600 on August 15, 0600 on September 19, and 0600 on October 18.

Which one of the following date/time combinations is the latest date on which this surveillance can be accomplished without exceeding the maximum interval requirements of Technical Specifications?

a. By 2359 on November 19b. By 2359 on November 24c. By 2359 on November 25d. By 2359 on November 26
SENIOR REACTOR OPERATOR

QUESTION: 009 (1.00)

Select the combination below that completes the following statement.

Technical Specifications limit overtime for reactor operators such that an individual shall NOT work more than (X) hours in any 48-hour period nor more than (Y) hours in any 7-day period (all excluding turnover time).

a. (X) 24; (Y) 56
b. (X) 24; (Y) 72
c. (X) 32; (Y) 84
d. (X) 32; (Y) 96

QUESTION: 010 (1.00)

A PCB spill area is defined as the area encompassing all visible traces of PCB oil plus a \_\_\_\_\_ lateral zone around the entire spill.

a. 1-foot

b. 2-foot

c. 3-foot (1-yard)

d. 5-foot

## QUESTION: 011 (1.00)

Given the following conditions on Unit 2:

- CCW pump 2B is aligned to 4160V bus 2G.
- All CCW local/remote selector switches are in "REMOTE".
- All CCW pump handswitches on the MCB are in "AUTO".

Which one of the following describes a condition that will automatically start CCW pump 2B?

- a. CCW pump 2C trips on overload.
- b. CCW pump 2A is stopped from the hot shutdown panel.
- c. CCW pump 2C local/remote selector switch is taken to "LOCAL".
- d. An "S" signal occurs after CCW pump 2A breaker has been racked out.

#### QUESTION: 012 (2.00)

Match the Bank Selector Switch (BSS) position/plant condition in Column A with the associated rod speed in Column B. (0.5 each)

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

		Column A (BSS POSITION/PLANT CONDITION)		(ROD SPEED)
	_a.	AUTO with a 4 degree F temperature	1.	0 steps/minute
		III. BIIK CCH -	2.	8 steps/minute
	_b.	AUTO with a 10 degree F temperature mismatch.	3.	32 steps/minute
	_c.	MANUAL with a 10 degree F temperature mismatch	4.	40 steps/minute
	1,1		5.	48 steps/minute
	_d.	SBB during plant startup.	6.	62 steps/minute
			7.	72 steps/minute

## SENIOR REACTOR OPERATOR

# C/UESTION: 013 (1.00)

Which one of the following combinations correctly lists the reactor coolant leakage detection systems that must be OPERABLE during Mode 3 operations?

- a. R-11 (containment atmosphere particulate rad monitor) OR R-12 (containment atmosphere gaseous rad monitor).
- b. R-11, R-12, AND the containment air cooler condensate level monitoring system (ALL 3).
- c. R-11, AND R-12 OR the containment air cooler condensate level monitoring system.
- d. R-11 OR R-12, AND the containment air cooler condensate level monitoring system.

## QUESTION: 014 (1.00)

Which one of the following combinations describes the penetration arrangement of the flow detectors that are used to determine RCS loop flow?

- a. One high-pressure tap on the outside of the elbow; three lowpressure taps on the inside of the elbow.
- b. One low-pressure tap on the outside of the elbow; three highpressure taps on the inside of the elbow.
- c. Three high-pressure taps on the outside of the elbow; one lowpressure tap on the inside of the elbow.
- d. Three low-pressure taps on the outside of the elbow; one highpressure tap on the inside of the elbow.

# QUESTION: 015 (1.00)

Which one of the following is the reason that the RCPs have an antireverse rotation device installed on the pump rotor?

- a. Prevent stator winding damage due to excessive pump starting current.
- b. Prevent backleakage through a tripped RCP when other RCPs are running.
- c. Prevent damage to the pump thrust bearing due to reverse thrust direction.
- d. Prevent overheating of pump bearings due to a tripped RCP rotating without normal internal cooling flow.

#### QUESTION: 016 (2.00)

Match each precaution for an operating RCP in Column A with the associated reason from Column B. (0.5 each)

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

Column A (PRECAUTIONS)

- \_\_\_\_a. Maintain 6 gpm seal water injection flow OR CCW flow to the thermal barrier.
  - \_b. Maintain at least 18 psig in the VCT.
  - \_c. Maintain at least 200 psid across the #1 seal.
  - d. If CCW flow to the oil coolers is lost, RCP operation must stop when temperature limits are reached.

(REASONS)

- Prevents damage to the RCP motor bearings.
- 2. Ensures #1 seal is not riding on the runner.
- Ensures cooling for the lower radial bearing and the seal package.
- 4. Prevents overheating of motor stator windings.
- Ensures adequate seal water flow to the #2 seal.
- Ensures proper #1 seal leakoff flow is maintained.
- Prevents excessive delta-P across #2 seal.

QUESTION: 017 (1.00)

Given the following Unit 1 plant conditions:

- 100% power, steady-state
- 1A charging pump running with FCV-122 in automatic control
- Letdown flow (FI-150) = 60 gpm

Which one of the following will occur if VCT level transmitter LT-112 fails HIGH? (Assume NO operator action is taken and all associated systems are in AUTOMATIC.)

- a. VCT level cycles between 20% and 40%.
- b. Letdown isolates due to low VCT level.
- c. 1A charging pump cavitates and trips on overcurrent.
- d. Charging punn suction shifts to the RWST at 5% actual level.

QUESTION: 018 (1.00)

Given the following Unit 1 conditions:

- The plant is in Mode 5.
- Solid plant conditions have been established.
- Tavg is being maintained at 160 F by operation of the "B" RCP. RHR train "A" is in service with "A" RHR pump running in the cooldown mode
- Low pressure letdown is established on RHR train "A" and the orifice isolation valves are closed.
- Seal injection to each RCP is established at 8 gpm.

With letdown flow at 90 gpm, charging flow at 85 gpm, and RCS pressure at 370 psig, letdown pressure control valve PCV-145 is placed in manual. Which one of the following will occur if NO further operator action is taken?

- a. RCS pressure will remain constant.
- b. PRT level and pressure will increase.
- c. "B" RCP #1 seal differential pressure will fall below minimum.
- d. VCT level will increase until VCT level control valve LCV-115A diverts.

## QUESTION: 019 (1.00)

The plant is operating at 100% power when a ramped 70% load reduction causes plant pressure to increase steadily, faster than the spray valves can accommodate. Which one of the following explains why PORV PCV-444B will open in advance of PORV PCV-445A opening to mitigate the pressure transient?

- a. PCV-444B is physically lower and closer to the pressurizer.
- b. PCV-444B is controlled by a proportional-integral controller.
- c. PCV-444B is a quicker-acting valve with a larger air operator.
- d. PCV-444B nominal lift setpoint is lower than the PCV-445A nominal lift setpoint.

#### QUESTION: 020 (1.00)

Select the combination below that completes the following statements.

In preparation for a plant startup after Mode 5 operations, the plant and pressurizer have been heated up, and a bubble has been drawn in the pressurizer. As the plant heatup and pressurization to normal operating conditions are continued, the indicated level from pressurizer level detector LT-459 (Channel I) will (X) the actual pressurizer level, and the indicated level from cold-calibrated pressurizer level detector LT-462 will (Y) the actual pressurizer level.

- a. (X) Converge upon; (Y) converge upon
- b. (X) Converge upon; (Y) diverge from
- c. (X) Diverge from; (Y) diverge from
- d. (X) Diverge from; (Y) converge upon

QUESTION: 021 (1.00)

Given the following conditions:

- The off-site grid has been lost on both units with NO safety injection on either unit.
- The Unit Selector Switch for the swing diesels is in 1/2.
- Diesel generator 1-2A will NOT start.

If Unit 1 pressurizer heaters are needed to restore plant pressure during the transient, which one of the following group(s) of heaters should the Unit 1 operators work on restoring first?

- a. Group A only.
- b. Group B only.
- c. Group A or B operator's choice.
- d. Group D or E operator's choice.

OUESTION: 022 (1.00)

Given the following conditions:

- + Reactor startup is in progress
- Source range channel N31 indicates 1E5 cps
- Source range channel N32 indicates 9.5E4 cps
- Intermediate range channel N35 indicates 1.5E-11 amps
- Intermediate range channel N36 indicates 4E-10 amps

Which one of the following statements describes the condition of the nuclear instruments?

a. N35 is overcompensated.

b. N35 is undercompensated.

c. N36 is overcompensated.

d. N36 is undercompensated.

# QUESTION: 023 (1.00)

Given the following conditions:

- Reactor startup is in progress
- All NI switches are in their normal lineup
- Intermediate Range (IR) Channel N35 indicates 3E-10
- IR Channel N36 indicates 9E-11
- No manual blocks have been inserted
- Power is lost to Source Range (SR) Channel N31
- Power is maintained to SR Channel N32

Which one of the following describes the plant response to the SR Channel N31 power loss?

- a. A reactor trip signal is generated resulting in a reactor trip.
- b. A reactor trip signal is generated, but no trip occurs since one IR channel is above P-6.
- c. No reactor trip signal is generated since only one IR channel is above P-6.
- d. No reactor trip signal is generated, but the level trip switch must be taken to bypass as soon as N36 indicates above 1E-10.

### QUESTION: 024 (1.00)

Which one of the following states the alarm function of the Detector Current Comparator section of the Miscellaneous Control and Indication Panel (top panel) in the Excore Nuclear Instrumentation system?

- a. Actuates an alarm at 2% deviation between any two power range channels.
- b. Actuates an alarm when any one detector input is 2% greater than the average of the other detectors.
- c. Actuates an alarm at 4% deviation between the upper and lower detector of any power range channel.
- d. Actuates an alarm when the difference between channels in the selected range (source or intermediate) exceeds 4%.

Within five minutes after an "S" signal is caused by a large-break LOCA, which one of the following valve actuations will occur in the RHR-LHSI system with NO operator action?

- a. RHR pump miniflov valves (FCV-602A/B) go closed.
- b. RWST to RHR pump suction valves (MOV-8809A/B) go open.
- c. RHR to RCS hot legs cross-connect valves (MOV-8887A/B) go closed.
- d. RHR supply to charging pump suction valves (MOV-8706A/B) go open.

QUESTION: 026 (1.00)

When the Digital Rod Position Indication (DRPI) system experiences a failure of the "A" Data Cabinet, the accuracy range of the DRPI system becomes +10 to -4 steps.

Which one of the following is the accuracy range of the DRPI system if the "B" Data Cabinet fails, instead of the "A" Data Cabinet?

a. +4 to - 0 steps
b. +10 to -4 steps
c. +10 to -10 steps

d. +4 to -4 steps

## QUESTION: 027 (1.00)

Gi'en the following:

- Channel "B" of the subcooled margin monitor (SMM) is selected to the "CETC" mode.
- Hottest RTD = 630 degrees F.
- Hottest core exit T/C = 612 degrees F.
- Hottest upper head T/C = 616 degrees F.
- PT-402 = 2255 psig.
- PT-403 = 2260 psig.
- PT-455 = 2210 psig.
- PT-457 = 2240 psig.

Which one of the following values should be displayed on the SMM?

- a. +37
- b. +39
- C. +41
- d. +43

# QUESTION: 028 (1.00)

During the performance of a surveillance test, the mode selector switch on the B train output relay test panel is placed in the TEST position. If an actual plant condition calling for an automatic safety injection (SI) occurs, which one of the following will occur?

- a. No SI actuation or reactor trip will occur on either train.
- b. No SI actuation will occur on either train, but the reactor will trip.
- c. SI actuation will occur on A train only, and the reactor will trip.
- d. SI actuation will occur on both A and B trains, and the reactor will trip.

# QUESTION: 029 (1.00)

Given the following conditions for containment cooling fan A:

- Local/Remote selector switch in REMOTE.
- Both remote landswitches in AUTO.
- Containment cooling fan A stopped.
- Containment cooling fan B running in FAST.

Which one of the following will cause Containment Cooling Fan A to start in FAST speed?

- a. Containment Cooling Fan B trips on motor overload.
- b. Containment Cooling Fan B trips on bus undervoltage.
- c. Signal from Loss of Offsite Power (LOSP) sequencer.
- d. Signal from Engineered Safeguards System (ESS) sequencer.

## QUESTION: 030 (1.00)

Which one of the following is the method used to prevent an inadvertent spraydown of containment components due to a loss of detector power or protective train power, or an erroneous containment pressure trip signal sent to the protection system?

- a. Two containment pressure bistables must energize to send a High-3 pressure signal to cause a "P" signal.
- b. Two containment pressure bistables must energize to send both High-1 and High-3 pressure signals to cause a "P" signal.
- c. The spray pumps start on a "P" signal, but the discharge valves open only if an "S" signal is present along with the "P" signal.
- d. The spray pumps start on an "S" signal and recirculate through the miniflow line, but the discharge valves open only on a "P" signal.

### QUESTION: 031 (1.00)

Which one of the following is the reason that the quantity of aluminum metal components in the Containment Building is minimized?

- a. Aluminum becomes flammable in a high-temperature Class A fire.
- b. Aluminum combines with elemental iodine to form an insoluble salt.
- c. Aluminum reacts with sodium hydroxide (NaOH) to produce hydrogen.
- Aluminum loses structural strength in a high-energy line break environment.

# QUESTION: 032 (1.00)

Given the following conditions on Unit 1:

- Plant power is steady at 75%.
- All SGWLC controls and MFP speed controls are in AUTO.
- Channel IV SGWLC detectors are selected as controlling.
- Rod control is in manual.

Which one of the following is the expected initial response of the feedwater regulating valve (FWRV) for A steam generator if turbine first-stage impulse pressure detector PT-447 (Channel IV) fails HIGH and NO operator action is taken?

a. FWRV remains in its current position.

- b. FWRV modulates open to increase A SG level by about 3%.
- c. FWRV modulates closed to reduce A SG level to no-load level.
- d. FWRV opens fully and remains open until the Hi-Hi SG level trip is reached.

QUESTION: 033 (1.00)

Given the following conditions:

- "A" steam generator water level control (SGWLC) in Manual.
- Channel III SGWLC detectors selected as controlling.
- All other SGWLC controls and MFP speed controls in AUTO.

Which one of the following detector failures will cause both main feed pumps to slow down?

- a. Feed header pressure detector PT-508 fails LOW.
- b. Steam header pressure detector PT-464 fails HIGH.
- c. "A" SG steam flow detector FT-474 (Channel III) fails HIGH.
- d. "A" SG steam pressure detector PT-475 (Channel III) fails LOW.

QUESTION: 034 (1.00)

Which one of the following diesel generator (DG) control panels receives 125v DC power from a source without automatic bus transfer device protection?

- a. DG 1-2A
- b. DG 2B
- c. DG 1C
- d. DG 2C

# SENIOR REACTOR OPERATOR

## QUESTION: 035 (1.00)

Which one of the following conditions will automatically open the service water emergency recirculation line valves (MOV-538/539), but will NOT automatically close the return header to dilution line isolation valves (MOV-545/546)?

- a. Low dilution line pressure.
- b. Low service water wet pit level.
- c. High dilution line pressure.
- d. High service water surge tank level.

#### QUESTION: 036 (1.00)

Given the following conditions on Unit 1:

- Rod control is in Manual.
- Reactor power has decreased from 98% to 95% with no operator action.
- Tavg has decreased 4 F and is continuing to decrease.
- RCS pressure is 2216 psig and decreasing.
- Control Bank D rods are noted to be moving inward.

Which one of the following describes the immediate action to be taken for these conditions, in accordance with AOP-19.0, "Malfunction of Rod Control System"?

- a. Select Control Bank D and withdraw rods.
- b. Reduce turbine load to keep Tavg equal to Tref.
- c. Place rod control in AUTO and determine rod response.
- d. Trip the reactor immediately and go to EEP-0, "Reactor Trip or Safety Injection".

SENIOR REACTOR OPERATOR

## QUESTION: 037 (1.00)

Which one of the following explains why the Unit 1 main generator output breakers (810/914) are closed as soon as possible after disconnect 915 is opened following an inadvertent unit trip due to an operator error?

- a. To prepare the off-site electrical system for a rapid return to power operations.
- b. To minimize the potential for output breaker damage if a breaker fault occurs.
- c. To rapidly restore power to the unit auxiliary transformers by backfeeding through the main power transformer.
- d. To rapidly restore capability of No. 2 230 Kv bus to feed No. 1 230 Kv bus.

QUESTION: 038 (1.00)

Given the following conditions:

- The unit is at 80% power.
- Inadvertent rod insertion has reduced Tavg to 552 F in all loops.

Which one of the following describes the main feed pump (MFP) and feedwater regulating valve (FWRV) response if a reactor trip occurs from these conditions?

- a. MFPs tri, "WRVs close.
- b. MFPs trip; FWRVs remain open.
- c. MFPs continue running; FWRVs close.
- d. MFPs continue \_unning; FWRVs remain open.

## QUESTION: 039 (1.00)

Given the following plant conditions:

- Small break LOCA has occurred.
- Pressurizer pressure is stable at 1350 psig. Containment temperature is 185 F.
- Actual pressurizer level is 50%.

Select the combination below that completes the following statement.

The low pressurizer pressure (1350 psig) tends to make the indicated pressurizer level on LI-460 read (X) \_\_\_\_\_ than the actual pressurizer level; the high containment temperature (185 F) tends to make the indicated level on LI-460 read (Y) \_\_\_\_\_ than the actual level.

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

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

QUESTION: 040 (1.00)

Given the following plant conditions:

- Pressurizer pressure 985 psig.
- Pressure relief tank (PRT) pressure 5 psig.
- PRT temperature 90 F.
- Reactor is shutdown.

Assume ambient heat losses are negligible and the steam quality in the pressurizer bubble is 100%. Also assume pressurizer and PRT conditions do NOT change.

At equilibrium, which one of the following PORV outlet piping temperatures would be caused by a leaking pressurizer PORV under these conditions?

- a. 230 F
- b. 260 F
- C. 300 F
- d. 340 F

## QUESTION: 041 (1.00)

Given the following conditions:

- A large-break LOCA has occurred.
- Safety injection and reactor trip have occurred.
- Pressurizer pressure is 1100 psig, decreasing.
- ECCS injection flow rates are as required for 1100 psig.
- Subcooled margin monitor is in CETC mode.
- Crew has just completed immediate actions of FNP-1-EEP-0, "Reactor Trip or Safety Injection".

Which one of the following combinations of containment pressure and RCS subcooling requires the RCPs to be stopped in accordance with EEP-0 Foldout?

	CTMT PRESSURE (psig)	SUBCOOLING (degrees F)
h., -	2.1	21
	3.2	32
	4.3	43
1.	5.4	54

## QUESTION: 042 (1.00)

Which one of the following sets of conditions will result in an automatic reactor trip on Reactor Coolant LOW FLOW?

- a. Low flow sensed by 2 out of 3 detectors in 2 out of 3 loops when operating at 8% reactor power.
- b. Low flow sensed by 2 out of 3 detectors in 1 out of 3 loops when operating at 18% reactor power.
- c. Low flow sensed by 1 out of 3 detectors in 2 out of 3 loops when operating at 28% reactor power.
- d. Low flow sensed by 2 out of 3 detectors in 1 out of 3 loops when operating at 38% reactor power.

#### QUESTION: 043 (1.00)

If the unit is operating at 24% power and "C" Reactor Coolant Pump (RCP) trips, which one of the following describes how "C" steam generator (SG) water level and "C" SG steam flow will INITIALLY respond? Assume the reactor does not trip.

- a. Level decreases and steam flow decreases.
- b. Level decreases and steam flow increases.
- c. Level increases and steam flow decreases.
- d. Level increases and steam flow increases.

#### QUESTION: 044 (1.00)

Given the following plant conditions on Unit 1:

- Unit is at 80% power.
- 1A charging pump is running normally.
- 1B boric acid pump is INOPERABLE due to shorted motor windings.
- Emergency boration is required due to actuation of the CONT ROD BANK POSITION LO-LO annunciator.
- Operator attempts to start 1A boric acid pump, but the pump trips on each attempt.

Under these conditions, which one of the following combinations of valve actuations will provide an emergency boration flowpath meeting the requirements of AOP 27.0, "Emergency Boration"?

- a. Open LCV-115B and open LCV-115D (RWST to CCP Suction Valves).
- b. Open LCV-115D and close LCV-115C (VCT Outlet Isolation Valve).
- c. Close LCV-115C and close LCV-115E (VCT Outlet Isolation Valves).
- d. Open FCV-113A and open V-185 (Manual Emergency Boration Flow Path).

## QUESTION: 045 (1.00)

Which one of the following conditions requires an emergency boration to be commenced?

- a. Thirty minutes after a reactor trip, both source range detectors remain off-scale high.
- b. During a reactor startup, a steam dump valve opens and then closes when the RCS cools down to 543 degrees F.
- c. While at 98% power, Control Bank D rod H14 withdraws uncontrollably from 198 steps to 212 steps.
- d. With the plant at 547 degrees F after a reactor trip, a main steam line break causes a rapid plant cooldown and safety injection.

QUESTION: 046 (1.00)

Given the following conditions:

- Unit 1 is in Mode 5.
- Maintenance is being performed on RCS pressure transmitters PT-402 and PT-403, which is generating a failed high pressure output signal from both transmitters.
- Hold tags on the breakers for MOV-8701B (RHR pump 1A suction) and MOV-8702B (RHR pump 1B suction) are being removed.

When the hold tags are removed and the breakers are closed, MOV-8701B and MOV-8702B go closed because of the high pressure signal, resulting in a loss of all RHR. Which one of the following describes how either pump suction valve can be reopened?

- a. Hold MCB handswitch in OPEN position to override any auto-close signal.
- b. Hold MOV clutch lever down while operating handwheel to open valve.
- c. Reopen breaker, actuate MOV clutch lever, and operate handwheel to open valve.
- d. Momentarily actuate MCB handswitch to CLOSE to reset the autoclose signal and then position handswitch to OPEN.

## QUESTION: 047 (1.00)

Given the following conditions:

- Unit 1 is in Mode 6.
- RHR pump 1A is in operation. Reactor vessel level is at 122 feet 9 inches (RCS hot leg centerline).

RHR Heat Exchanger Outlet Valve (HCV-603A) has just failed open, causing RHR flow to increase to maximum. If no operator action is taken and RHR flow remains at maximum, which one of the following would occur to cause a loss of RHR flow?

- a. RHR pump 1A motor overspeed trip from runout due to low discharge pressure.
- b. RHR pump 1A motor overcurrent trip due to the high discharge pressure.
- c. Loss of RHR pump 1A suction due to gas entrainment in the pump suction line.
- d. Loss of RHR pump 1A suction due to low net positive suction head.

QUESTION: 048 (1.00)

Given the following conditions:

- Unit 1 is at 100% power.
- "A" train CCW surge tank High-Low alarm condition is present.
- CCW surge tank level is LOWERING.
- The makeup valves are OPEN.
- Leak location has NOT been determined.

If there is only one leak in the CCW system and it is in one of the following components, which one is the location of the described leak? For each component, assume the associated system is operating.

- a. Letdown heat exchanger.
- b. Excess letdown heat exchanger.
- c. Spent fuel pool heat exchanger.
- d. Primary sample cooler heat exchanger.

#### QUESTION: 049 (1.00)

Which one of the following combinations of conditions will cause the RCP thermal barrier CCW isolation valves to close automatically?

- a. Supply line pressure drops to 75 psig; supply line flow increases to 160 gpm.
- b. Supply line pressure increases to 75 psig; discharge line flow drops to 160 gpm.
- c. Discharge line pressure drops to 75 psig; supply line flow drops to 160 gpm.
- d. Discharge line pressure increases to 75 psig; discharge line flow increases to 160 gpm.

Given the following conditions:

- Unit 1 is operating at 100% power.
- A failure of the controlling pressurizer pressure channel has caused actual pressure to increase to 2283 psig.
- Pressurizer Pressure Master Controller M/A station PK-444A is now in MANUAL.

Which one of the following describes the master controller M/A station action required to increase the spray flow rate to return actual pressure to its normal value of 2235 psig?

- a. Raise the pressure setpoint adjustment.
- b. Lower the pressure setpoint adjustment.
- c. Increase the M/A station output (% demand).
- d. Decrease the M/A station output (% demand).

## QUESTION: 051 (1.00)

Which one of the following compares the severity of the plant pressure transient produced by a pegged HIGH failure of pressurizer pressure detector PT-444 versus the severity of the plant pressure transient produced by the same failure in PT-445. Assume that the failures occur separately, with the plant at stable full power operations, with all controls in AUTO, and that NO operator action is taken in either case.

- a. The pressure drop rate will be smaller for the PT-444 failure.
- b. The pressure drop rate will be the same for the two failures, but the PT-445 failure will result in a lower final plant pressure.
- c. The pressure drop rate and overall plant pressure drop will be the same for the two failures.
- d. The pressure drop rate and overall plant pressure drop will be greater for the PT-444 failure.

#### QUESTION: 052 (1.00)

According to the Response NOT Obtained (RNO) actions of 1-FRP-S.1, "Response to Nuclear Generator/ATWT", which one of the following actions must be performed if the main turbine will NOT trip using the MAIN TURB EMERG TRIP switch during ATWT conditions?

- a. Stop both EH pumps.
- b. Close turbine governor valves.
- c. Open generator output breakers.
- d. Run back the turbine to no-load conditions.

## QUESTION: 053 (1.00)

Which one of the following states the number of separate plant conditions listed in immediate action step 4.1 of FRP-S.1, "Response to Nuclear Power Generation/ATWT," that must be checked to determine if emergency boration is required in an ATWT condition?

a. 3 b. 4 c. 5

d. 6

QUESTION: 054 (1.00)

Given the following conditions:

- Unit 1 reactor startup is in progress; startup rate is 0 dpm.
- Reactor power is stable at the point of adding heat.
- N-35 Intermediate Range (IR) channel has just failed LOW.

Technical Specification 3.1.3.1, "Reactor Trip System Instrumentation" lists the required actions for an IR channel failure based on the relationship of the current power level to P-6, 5%, etc.

Which one of the following states the approximate current power level?

- a. Less than P-6.
- b. Between P-6 and 5%.
- c. Between 5% and P-10.
- d. Greater than P-10.

QUESTION: 055 (1.00)

Given the following conditions:

- A reactor trip and safety injection have occurred.
- Both motor-driven AFW pumps are inoperable.
- Use of the turbine-driven AFW pump is required.
- A tube rupture exists in SG "B" or SG "C".

Select the combination below that completes the following statement.

In accordance with EEP-3, "Steam Generator Tube Rupture," the location at which steam to the turbine-driven AFW pump from the ruptured SG must be isolated is the (X) if the rupture is in "B" SG, and is the (Y) if the rupture is in "C" SG?

- a. (X) MCB; (Y) HSP.
- b. (X) HSP; (Y) HSP.
- c. (X) HSP; (Y) Aux Bldg main steam valve room.

d. (X) Aux Bldg main steam valve room; (Y) HSP.

SENIOR REACTOR OPERATOR

After a ruptured steam generator (SG) has been isolated, EEP-3, "Steam Generator Tube Rupture," directs a rapid RCS cooldown to a selected core exit temperature derived from an EEP-3 table. Which one of the following is the basis for the selected core exit temperature derived from the EEP-3 table?

- a. Allows maximum amount of cooldown without exceeding pressurized thermal shock limits.
- b. Ensures 20 degrees of subcooling is maintained during the subsequent RCS depressurization.
- c. Minimizes inleakage into the ruptured S/G until the subsequent RCS depressurization can be initiated.
- d. Prevents backleakage from the ruptured S/G until the subsequent RCS depressurization can be initiated.

QUESTION: 057 (1.00)

During the initial phases of a faulted steam generator (SG) accident, before Main Steamline Isolation and Feedwater Isolation occur, the MCB indication trends will differ, depending on whether the break is on a feed line or on a steam line.

Which one of the following trend combinations is indicative of a large feed line break prior to Main Steamline/Feedline Isolation?

	RCS Tavg	RCS Loop Delta-Ts	PRZR Pressure	SG Level
a.	Decreasing	Decreasing	Increasing	Increasing
Ь.	Increasing	Decreasing	Increasing	Decreasing
σ.	Decreasing	Increasing	Decreasing	Increasing
đ.	Increasing	Increasing	Decreasing	Decreasing

SENIOR REACTOR OPERATOR

Given the following conditions on Unit 1:

- A reactor trip WITHOUT SI occurred about 12 minutes ago.
- The crew is carrying out 1-ESP-0.1, "Reactor Trip Response."
- Loss of offsite power has just occurred on Unit 1.
- Unit 1 diesel generators will NOT start.
- Unit 1 4160V ESF buses F, G, K, and L are deenergized.
- The STA reports the status of the Critical Safety Functions (CSFs) has just changed to the following:

Heat Sink		RED
Subcriticality	-	GREEN
Containment		GREEN
Inventory	1.1	YELLOW
Core Cooling	-	RED
Integrity	-	GREEN

Which one of the following procedures should be used in response to these conditions?

a. 1-FRP-C.1, "Response to Inadequate Core Cooling"

b. 1-ESP-0.2, "Natural Circulation Cooldown"

c. 1-FRP-H.1, "Response to Loss of Secondary Heat Sink"

d. 1-ECP-0.0, "Loss of All AC Power"

Given the following conditions:

- All diesel generator Mode Selector Switches are in Mode 1.
- All diesel generators will start and load as required, if demanded.
- The Unit Selector Switch for the swing diesels is in 1/2.
- Both Units are operating near 100% power.

Which one of the following casualty combinations will result in 4160v Bus 2H remaining deenergized until it is manually energized?

a. Dual Unit LOSP.

b. LOSP Unit 2, SI Unit 1.

c. Dual Unit LOSP, SI Unit 1.

d. LOSP Unit 2, SI Unit 2.

#### QUESTION: 060 (1.00)

Both units are operating at rated power with all diesel generator lineups and startups normal for at-power operations. Which one of the following describes the automatic operation of DG 1-2A output breaker if a simultaneous dual unit Loss of Offsite Power (LOSP) occurs coincident with a safety injection (SI) on Unit 2?

DG 1-2A will align to:

- a. 1F, and will realign to 2F in the event of a subsequent SI on Unit 1.
- b. 1F, and will remain aligned to 1F in the event of a subsequent SI on Unit 1.
- c. 2F, and will realign to 1F in the event of a subsequent SI on Unit 1.
- d. 2F, and will remain aligned to 2F in the event of a subsequent SI on Unit 1.

Given the following conditions:

- The control room has been evacuated due to a fire.
- Control of all components has been transferred to the Hot Shutdown Panels (HSPs).
- The electrical lineup for "C" charging Jump is normal, with the
- exception of the HSP switch being in LOCAL.
- "B" charging pump is connected to electrical Train B and running.
- A valid SI signal has just been received.

Which one of the following describes the "C" charging pump response to the SI signal?

The "C" pump will:

- a. Start, and remain running until the SI is reset.
- b. Start, and remain running until "B" charging pump automatically starts.
- c. Not start, but the operator may start the pump using the HSP switch after resetting the SI.
- d. Not start, but the operator may start the pump using the HSP switch without resetting the SI or stopping B charging pump.

SENIOR REACTOR OPERATOR

### QUESTION: 062 (1.00)

After a Containment Spray (CS) Actuation, one criterion for stopping the CS pumps is that 90% of the spray additive tank contents have been sprayed into containment. Which one of the following states the other criterion for stopping the CS pumps after a containment spray actuation?

- a. After 2 hours of containment spray recirculation flow for a faulted steam generator (SG) and for a LOCA.
- b. When containment pressure is less than 16 psig for a LOCA and for a faulted SG.
- c. After 2 hours of containment spray recirculation flow for a faulted SG; when containment pressure is less than 16 psig for a LOCA.
- d. After 2 hours of containment spray recirculation flow for a LOCA; when containment pressure is less than 16 psig for a faulted SG.

#### QUESTION: 063 (1.00)

After a reactor trip, Critical Safety Function Status Tree (CSFST) monitoring must begin when the crew:

- a. Completes the immediate actions of EEP-0, "Reactor Trip or Safety Injection."
- b. Exits from EEP-0 to ESP-0.1, "Reactor Trip Response," at step 4 of EEP-0.
- c. Identifies the symptoms of a challenge to a fission product barrier, whenever the challenge occurs.
- d. Enters the Emergency Response Procedures (ERPs), beginning with step 1 of EEP-0 or ECP-0.0, "LOSS OF ALL AC POWER."

QUESTION: 064 (1.00)

Given the following conditions:

- Unit 1 is at 98% power.

- RCS activity level is normal for this power level.

- Containment minipurge is operating.

Which one of the following radiation monitors will be the first to detect a very small RCS leak under these conditions?

a. R-11, Containment Atmosphere Particulate.

b. R-12, Containment Atmosphere Gaseous.

c. R-21, Plant Vent Stack Particulate.

d. R-24, Containment Purge Gaseous.

QUESTION: 065 (1.00)

Which one of the following must give permission to return the reactor to criticality following a reactor trip?

a. Manager Operations.

b. Vice President - Nuclear.

c. On-Call Emergency Director.

d. Unit Superintendent - Operations.

#### QUESTION: 066 (1.00)

The dose rate at the boundary of an area within the Radiation Controlled Area (RCA) is 3.5 mrem/hour. Which one of the following accurately describes how the area should be posted?

- a. High radiation area because the one-hour dose rate is greater than 2.5 mrem/hour.
- b. Radiation area because the one-hour dose rate is less than 5 mrem/hour.
- c. High radiation area because a dose in excess of 100 mrem would be received in a normal workweek.
- d. Radiation area because in any 5 consecutive days a dose in excess of 100 mrem would be received.

QUESTION: 067 (1.00)

If a "personal" HOLD tag was inadvertently left attached after the associated task was completed, and the responsible individual is now unavailable off-site, which one of the following procedures may be used to remove the tag?

- a. In an emergency, the cognizant work group foreman can verify the associated task has been completed and then authorize the tag removal.
- b. In an emergency, the On-Call Emergency Director can assume responsibility and then authorize the tag removal.
- c. During normal operations, the Shift Supervisor can direct another operator to perform the associated task again and then authorize the tag removal.
- d. During normal operations, the General Manager-Nuclear Plant can direct the cognizant work group superintendent to verify the associated task complete and then authorize the tag removal.

QUESTION: 068 (2.00)

Match each dose description in Column A with the associated 10CFR20 dose limit from Column B. (0.5 each)

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

	Column A (DOSE DESCRIPTION)			(DOSE LIMIT)
a.	Maximum guarterly dose to	extremities	1.	0.5 Rem
 b.	Maximum quarterly dose to	skin	2.	1.25 Rem
 c.	Maximum annual whole-body non-radiation workers	dose to	з.	3.0 Rem
 đ.	Maximum annual whole-body radiation workers	dose to	5.	7.5 Rem
			6.	12.0 Rem
			7	18.75 Rem

## QUESTION: 069 (1.00)

Unit 1 is in Mode 1, with the 1B charging pump aligned to A train. The 1A Charging Pump is declared INOPERABLE and taken out of service for an oil replacement. All other portions of the CVCS and related subsystems are OPERABLE.

Which one of the following statements describes the type of LCO Status Sheet required for 1A Charging Pump?

- a. The LCO type is VOLUNTARY.
- b. The LCO type is MANDATORY.
- c. The LCO type is ADMINISTRATIVE.
- d. NO LCO Status Sheet is required.

QUESTION: 070 (1.00)

Given the following:

- Units 1 and 2 are in MODE 1.
- Both SROs are in the control room at their respective units and both have dual unit licenses.
- Two AOs normally assigned to this shift are noted to be absent after shift turnover.
- The units are currently manned as shown in the following table.

	UNIT 1	UNIT 2
20	0	1
SRO	ĩ	Ď
20	2	1
10	1	2
STA	1	0

Which one of the following would violate the MINIMUM shift staffing requirements per Technical Specifications 6.2.2, "Facility Staff"?

- a. The 2 absent AOs are NOT replaced until 130 minutes after their absence is noted.
- b. One RO is escorted from the Unit 1 control room by security personnel and a replacement is NOT available for 130 minutes.
- c. The Shift Supervisor proceeds to the HP office for 130 minutes after designating the Unit 1 SRO as in charge of the control room.
- d. The On-Call Operations Manager leaves the plant site for 130 minutes due to an emergency at home.

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### QUESTION: 071 (1.00)

If a power mismatch error signal is generated in the Reactor Control Unit, which one of the following parameters determines the magnitude of the gain applied to the error signal?

- a. Startup rate.
- b. Channel N-44 power.
- c. Auctioneered high Tavg.
- d. Turbine impulse pressure.

QUESTION: 072 (1.00)

Match each interconnecting system penetration listed in Column A with the associated RCS loop segment in Column B. (0.5 each)

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

Column A (PENETRATIONS)

Column B (RCS LOOP SEGMENT)

1. Loop A hot leg

a. Pressurizer surge line

2. Loop A intermediate leg

b. Tygon hose connection for reactor vessel level indication

- 3. Loop A cold leg
- 4. Loop B hot leg
- 5. Loop B intermediate leg
- 6. Loop B cold leg
#### QUESTION: 073 (1.00)

If Unit 1 is conducting long-term (more than 1 hour) Mode 3 operations with the rod control system disabled (reactor trip breakers open), which one of the following RCS loop operating conditions must be established?

- a. One loop OPERABLE and in operation.
- b. Two OPERABLE loops with one loop in operation.
- c. Two OPERABLE loops with two loops in operation.
- d. Three OPERABLE loops with two loops in operation.

#### QUESTION: 074 (1.00)

During solid plant conditions with the orifice isolation valves closed, the on-service RHR train (A train) must be removed from service for maintenance. The system operator shuts the RHR 1A heat exchanger (HX) to CVCS letdown isolation valve (1-RHR-8720A) before opening the RHR 1B HX to CVCS letdown isolation valve (1-RHR-8720B).

Which one of the following combinations describes how the plant will respond?

- a, PCV-145 closes; RCS pressure increases.
- b. PCV-145 closes; RCS pressure decreases.
- c. PCV-145 opens; RCS pressure increases.
- d. PCV-145 opens; RCS pressure decreases.

#### QUESTION: 075 (1.00)

With Unit 1 in Mode 1 operations, the 1C charging pump breaker has been racked out for replacement of a defective charging spring. The remaining high-head and low-head safety injection (SI) pumps are OPERABLE and powered from their required buses. Under these conditions, which one of the following combinations lists the SI pumps that are lost if 4160V bus G trips on lockout?

- a. High-head SI pump A and low-head SI pump A.
- b. High-head SI pump A and low-head SI pump B.
- c. High-head SI pump B and low-head SI pump A.
- d. High-head SI pump B and low-head SI pump B.

### QUESTION: 076 (1.00)

Which one of the following "A" Train Reactor Protection System switch positions can be selected without causing a SSPS A TRN TRBL alarm?

- a. LOGIC A switch in position 4
- b. LOGIC B switch in position 1
- c. MULTIPLEXER TEST switch in INHIBIT
- d. INPUT ERROR INHIBIT switch in INHIBIT

### QUESTION: 077 (1.00)

Which one of the following events will cause a DECREASE in the Overpower delta-T trip setpoint? (Assume NO reactor trip occurs.)

- a. A power increase from 70% to 100%.
- b. A reactor boration is initiated at 50% power.
- c. Pressurizer spray valve sticks open for 15 seconds.
- d. Feed flow to a steam generator is increased for 10 seconds.

Which one of the following is the DESIGN minimum water depth that will occur in the Spent Fuel Pool during any Spent Fuel Pool Cooling (SFPC) System pipe failure, and the basis for requiring this level to be maintained?

- a. 6 feet below the normal pool level to provide adequate NPSH for operation of SFPC pumps.
- b. 10 feet above irradiated fuel assemblies to provide adequate radiation shielding for unrestricted access of plant personnel.
- c. 16 feet below the normal pool level to keep the irradiated fuel assemblies covered with borated water for shutdown margin.
- d. 23 feet above irradiated fuel assemblies to provide adequate filtration of fission gas released from ruptured assemblies.

### QUESTION: 079 (1.00)

Which one of the following refueling machine manipulator crane hoist cable load interlocks can be bypassed?

- a. Refueling machine load control system (RMLCS overload in the RAISE direction.
- b. Mechanical c bad in the RAISE direction.
- c. Refueling maching load control system (RMLCS) overload in the LOWER direction
- d. Mechanical overload in the LOWER direction.

### QUESTION: 380 (1.00)

On Unit 1 the loop 1 Tavg has failed high. If a reactor and turbine trip occur in this condition, which one of the following describes how the steam dump valves will function?

- a. Dump valves will never open.
- b. Dump valves will open to 100% and will NOT close without operator action.
- c. Dump valves will open to 100% and will close when actual Tavg decreases below 547 F.
- d. Dump valves will open to 100% and will close when actual Tavg decreases below 543 F.

### QUESTION: 081 (1.00)

Which one of the following AFW pump autostarts (turbine-driven or motordriven) will be prevented from actuating if the power to the associated detectors is deenergized?

- a. AMSAC signal.
- b. Lo-Lo SG levels.
- c. Blackout on RCP buses.
- d. Trip of both main feedwater pumps.

### QUESTION: 082 (1.00)

Which one of the following 600v load centers may be supplied from 4160v Bus F through 600v load center F?

- a. P.
- b. R
- C. M
- d. U

Given the following conditions:

- Both units are operating at 80% power.
- Emergency diesel generator (DG) 1C has been shutdown for 5 days.
- The Unit Selector Switch for the swing diesels is in 1/2
- DG 1C Mode Selector Switch is in Mode 1.

Which one of the following will PREVENT DG 1C from starting on a Unit 2 safety injection (S signal)?

- a. 1C DG fails to start within 5 seconds.
- b. The barring device is still engaged.
- c. 1C DG auxiliary jacket water pump is running.
- d. The reset pushbutton on generator phase differential (86A relay) is being pushed.

#### QUESTION: 084 (1.00)

During a reactor startup, Control Bank "D" rods are at 10 steps withdrawn when Control Bank "D" rod P8 drops to the bottom

Which one of the following describes the expected response of the "Rod at Bottom" alarm and the reason for that response?

- a. Actuated since rod overlap has already occurred between Control Bank "A" and Control Bank "B".
- b. NOT actuated because Control Bank "D" rods are below 12 steps.
- c. Actuated because all Shutdown Bank rods are above 211 steps.
- d. NOT actuated because Control Bank "C" rods are below 211 steps.

### QUESTION: 085 (1.00)

Given the following conditions on Unit 1:

- Reactor power is at 83%.
- Turbine load is being slowly increased.
- Control Bank D rod B8 indicates 144 steps.
- Remaining Control Bank D rods indicate 168 steps.
- Control Bank D is being periodically moved for the load increase.
- Rod B8 does NOT move when Control Bank D is moved out or in.

Which one of the following describes the action required to be taken within one hour?

- a. Be in Hot Standby.
- b. Reduce turbine load and drive Control Bank D in to 155 steps.
- c. Trip the reactor immediately and go to EEP-0, "Reactor Trip or Safety Injection".
- d. Determine that the shutdown margin requirement of Tech. Spec. 3.1.1.1 is satisfied.

#### QUESTION: 086 (1.00)

Which one of the following RCS leak rates at ormal operating pressure and temperature is within allowable limits for continued operations per the plant Technical Specifications? (Consider each leak rate separately; assume there is NO concurrent leakage.)

- a. 8 gpm identified leakage.
- b. 8 gpm unidentified leakage.
- c. 8 gpm total steam generator tube leakage.
- d. 8 gpm seat leakage through RHR loop A isolation valve (MOV-8701A) to the RHR system.

QUESTION: 087 (1.00)

In accordance with the foldout page for EEP-0, "Reactor Trip or Safety Injection," which one of the following states the criteria for the operation of the charging miniflow valves (MOV-8109A/B/C) versus RCS pressure during a small-break LOCA?

- a. Valves MUST be open below 1900 psig and MAY be closed above that pressure.
- b. Valves MAY be closed above 1300 psig and MUST be open below that pressure.
- c. Valves MUST be open from 1300 to 1900 psig and MAY be closed below that pressure band.
- d. Valves MAY be closed from 1300 to 1900 psig and MUST be open above that pressure band.

QUESTION: 088 (1.00)

Steps 18.1 and 18.2 of EEP-1, "Loss of Reactor or Secondary Coolant," and their associated note are:

- 18.1 Check RWST level LESS 18.1 Return to step 16 (Plant THAN 12.5 ft. Status Evaluation)
- NOTE: Step 18.1 must be completed before continuing with this procedure.
  - 18.2 Go to FNP-1 SSP-1.3, TRANSFER TO COLD LEG RECIRCULATION

Which one of the following describes the basis for the above note?

- a. To ensure most of the water available in the RWST has been used for core cooling.
- b. To ensure most of the boric acid available in the RWST has been flushed through the core.
- c. To ensure the operators have taken sufficient time to evaluate plant status per step 16.
- d. To ensure level in the containment sump is high enough to provide adequate suction head for LHSI pumps.

#### QUESTION: 089 (1.00)

Refer to the attached Technical Specifications Figure 2.1-1 for the Reactor Core Safety Limits. Match each labeled 2250 psia curve segment in Column A with the associated basis for the segment from Column B. (0.5 each)

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

Column A (CURVE SEGMENT) Column B (BASIS)

a. Segment I

 Prevents exceeding DNBR limit anywhere in core.

b. Segment II

 Prevents exceeding 1% quality in coolant at core exit.

- Prevents T-hot from reaching saturation.
- Prevents exceeding OP delta-T/ OT delta-T trip setpoints.

### QUESTION: 090 (1.00)

With the Pressurizer Level Control Selector Switch in position I/III, a level detector failure causes the following plant events to occur with NC operator action:

- 1) All letdown orifice valves close.
- 2) All pressurizer heaters are tripped of £.
- 3) Letdown isolation valve LCV-460 closes.
- 4) Charging flow slowly reduces to minimum.

Which one of the following detector failures has occurred?

- a. LT-459 (Channel I) has failed LOW.
- b. LT-460 (Channel II) has failed HIGH.
- c. LT-461 (Channel TII) has failed LOW.
- d. LT-462 (cold-calibrated) has failed HIGH.



Figure 2.1-1 Reactor Core Safety Limits Three Loops in Operation

FARLEY - UNIT 1

AMENDMENT NO. 37, 73. 87, 92 時代設

### QUESTION: 091 (1.00)

Given the following:

- Unit 1 is in Mode 6 in preparation for refueling.
- While removing the upper internals, a fuel assembly was lifted with the upper internals, became dislodged, and fell to the refueling cavity floor.
- The SRO in charge of refueling has informed the control room of the problem.
- Radiation alarms for R-24A, R-24B, and R-12 are received in the control room.
- The reactor cavity level is stable.

Which one of the following IMMEDIATE actions should be taken per AOP-30.0, "Refueling Accident"?

- Evacuate containment and ensure all personnel access doors are closed.
- b. Place the control switches for the containment sump pumps to pull-to-lock.
- c. Monitor R-5 and R-25A/B for determination of the magnitude of the fuel damage.
- d. Direct the SRO in charge of refueling to verify that containment radiation monitor R-2 is alarming.

Which one of the following describes the applicability of the RCP trip criteria while responding to a SGTR per EEP-3, "Steam Generator Tube Rupture"?

- a. RCPs should be tripped whenever the criteria are met during EEP-3.
- b. RCPs should be tripped during EEP-3 ONLY if the criteria are met before initiating cooldown.
- c. RCPs should be tripped during EEP-3 ONLY if the criteria are met before isolating the ruptured S/G.
- d. RCPs should be tripped during EEP-3 ONLY if the criteria are met when the operator is specifically required to check the criteria.

QUESTION: 093 (1.00)

Refer to attached Integrity Curve, 1-CSF-0.4, of 1-CEF-0, "Critical Safety Function Status Trees."

Which one of the following describes the basis for Limit A on the Integrity Curve?

- a. Defines the maximum cooldown rate for the RCS to prevent growth of an existing flaw in the reactor pressure vessel.
- b. Indicates a potential for development of a flaw in the reactor pressure vessel wall if RCS temperature exceeds this limit.
- c. Ensures the cooldown rate of the RCS is controlled to prevent permanent plastic deformation of the reactor pressure vessel.
- d. Prevents the growth of a flaw that is assumed to be present in the reactor pressure vessel beltline inner surface.

FNP-1-CSF

# NTEGRITY

**REVISION** 7



### QUESTION: 094 (1.00)

Which one of the following describes a condition when 1-ESP-0.0, "Rediagnosis", should NOT be used on Unic 1?

- a. 1-EEP-0, "Reactor Trip or Safety Injection," is in use with an SI, but the accident has not yet been identified.
- b. Anytime the Emergency Response Procedure (ERP) network has been entered with an SI in progress or required, based on operator judgement.
- c. 1-EEP-0 is in use with an SI, and a transition is made to another EEP, but the operator thinks he is in the wrong procedure.
- d. 1-ECP-0.0, "Loss of All AC Power," is in use, no SI is required, and RCS isolation is being verified per step 3 when 1F 4160V bus is reenergized; the operator is unsure whether to return to 1-EEP-0 immediately or continue in 1-ECP-0.0.

QUESTION: 095 (1.00)

Attachment 2, RCP Seal Isolation, to ECP-0.0, "Loss of All AC Power," includes the step:

"Locally isolate seal water return line."

Which one of the following describes the reason for isolating the seal water return line?

- a. Protects the RCP shaft from thermal shock when a charging pump is started for the recovery.
- b. Protects the auxiliary building from a radioactive release due to overfilling the VCT.
- c. Protects the CCW System from steam formation due to RCP thermal barrier heating.
- d. Protects the RCP seals from damage when a charging pump is started for the recovery.

### QUESTION: 096 (1.00)

Which one of the following is the reason all intact SGs are depressurized to atmospheric pressure during performance of FRP-C.1, "Response to Inadequate Core Cooling," if safety injection flow to the RCS is NOT effective in reducing CETC temperatures.

- a. To reduce RCS temperature to increase thermal driving head for natural circulation.
- b. To reduce RCS temperature to collapse the steam void in the upper part of the vessel.
- c. To reduce RCS pressure to allow the ECCS accumulators and LHSI pumps to inject water to the RCS.
- d. To reduce RCS pressure which enhances the Leidenfrost effect preventing the formation of superheated steam in the core.

### QUESTION: 097 (1.00)

Given the following conditions on Unit 1:

- "A" MDAFWP has a ruptured casing and has been disassembled for repairs.
- A steam rupture has occurred on the inlet to the TDAFWP steam admission valve (HV-3226) requiring the keep warm valves to be shut, and steam supplies (HV-3235A/B) to be tagged in LOCAL.
  The plant is at 40% power conducting a controlled plant shutdown
- because of the above casualties.
- An arc-over and small fire have just occurred in the 4160V breaker for "B" MDAFWP, tripping the breaker.

What plant action should be taken for these conditions? (Copies of applicable Technical Specifications (T.S.) pages are attached)

a. Trip the reactor and cool down to Mode 4 as soon as possible.

- b. Continue the controlled plant shutdown to reach HOT STANDBY within 6 hours of the initial casualties and HOT SHUTDOWN within the following 6 hours.
- c. Invoke T.S. 3.0.5; stabilize plant power for up to 2 hours to obtain an emergency power supply for "B" MDAFWP; if unsuccessful, continue the plant shutdown and progression to HOT SHUTDOWN.
- d. Stabilize plant power indefinitely; if emergency power supply to "B" MDAFWP is obtained, continue the plant shutdown and progression to HOT SHUTDOWN.

PLANT SYSTEMS

### LIMITING CONDITION FOR OPERATION

3.7.1.2 At least three independent steam generator auxiliary feedwater pumps and associated manual actuation switches in the control room and flow paths shall be OPERABLE with:

- Two auxiliary feedwater pumps, each capable of being powered from separate emergency busses, and
- One auxiliary feedwater pump capable of being powered from an OPERABLE steam supply system.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With one auxiliary feedwater pump inoperable, restore the required auxiliary feedwater pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With two auxiliary feedwater pumps inoperable be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With three auxiliary feedwater pumps inoperable, immediately initiate corrective action to restore at least one auxiliary feedwater pump to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.7.1.2.1 Each motor-driven and the turbine-driven auxiliary feedwater pump shall be demonstrated OPERABLE pursuant to Specification 4.0.5. For the turbine-driven pump, the provisions of Specification 4.0.4 are not applicable for entry into MODE 3.

4.7.1.2.2 Each auxiliary feedwater pump shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
  - Verifying that each non-automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

3/4 LIMITING CONDITION FOR OPERATION AND SURVEILLANCE POULREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifical in is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

3.0.2 A condition prohibited by the Technical Specifications shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Condition for Operation is restored prior to the expiration of the specified time intervals, completion of the ACTION requirements is not required.

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

- 1. At least HOT STANDBY within the next 6 hours,
- 2. At least HOT SHUTDOWN within the following 6 hours, and
- 3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION requirements. This provision shall not prevent passage through OPERATIONAL MODES as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual specifications.

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within applicable Limiting Condition for Operation for Operation for Operation, unless both conditions (1) and (2) are satisfied within applicable Limiting Condition for Operation does not apply by placing it, as

FARLEY-UNIT 1

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AMENDMENT NO.57

### SURVEILLANCE REQUIREMENTS

- 1. At least HOT STANDBY within the next 6 hours,
- 2. At least HOT SHUTDOWN within the following 6 hours, and
- 3. At least COLD SHUTDOWN within the subsequent 24 hours.

This specification is not applicable in MODES 5 or 6.

4.0.1 Surveillance Requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

4.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.

4.0.3 Failure to perform a Surveillance Requirement\* within the specified time interval shall constitute a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Exceptions to these requirements are stated in the individual specifications. Surveillance Requirements do not have to be performed on inoperable equipment.

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified.

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2 and 3 components shall be applicable as follows:

- a. Inservice inspection of ASME Code Class 1, 2 and 3 components and inservice testing of ASME Code Class 1, 2 and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10CFR50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10CFR50, Section 50.55a(g)(6)(i).
- b. Surveillance intervals specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda for the inservice inspection and testing activities required by the ASME Boiler and Pressure Vessel Code and applicable Addenda shall be applicable as follows in these Technical Specifications:

\*Upon determination that the surveillance had been inadvertently omitted, the Surveillance Requirement shall be successfully performed within the Limiting Condition of Operation (LCO) period which would begin upon discovery.

ANSWER: 001 (1.00)

a.

REFERENCE :

FNP-0-AP-16, Table 1, Appx. C, p. C-23.

KA 194001K101 [3.6/3.7]

194001K101 ... (KA's)

ANSWER: 002 (1.00)

d.

REFERENCE :

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FNP-0-AP-14, pg. 3-9
KA 194001K102 [3.7/4.1]
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194001K102 ... (KA's)

ANSWER: 003 (1.00)

đ.

REFERENCE :

FNP-0-AP-14, pg. 18-20

KA 194001K102 [3.7/4.1]

194001K102 ... (KA's)

ANSWER: 004 (1.00)

C .

REFERENCE :

FNP-0-AP-14, pg. 19

KA 194001K109 [3.4/3.4]

194001K109 .. (KA's)

AUSWER: 005 (1.00)

С.

REFERENCE:

GET, Fire Protection, G-009, p. 13 KA 194001K116 [3.5/4.2]

194001K116 ,.(KA's)

ANSWER: 006 (1.00)

d.

REFERENCE :

FNP-0-AP-1, page 13, para. 7.1
KA 194001A101 [3.3/3.4]

194001A101 ... (KA's)

ANSWER: 007 (1.00)

C . .

REFERENCE :

FNP-0-AP-4, pg. 7

KA 194001A101 [3.3/3.4]

194001A101 ... (KA's)

ANSWER: 008 (1.00)

С.,

REFERENCE :

FNP Technical Specifications, para. 4.0, p. 3/4 0-2
KA 194001A106 [3.4/3.4]

194001A106 .. (KA's)

ANSWER: 009 (1.00)

b.

REFERENCE :

Tech Specs 6.2.2.f, pg. 6-2-KA 194001A109 [2.7/3.9]

194001A109 ... (KA's)

ANSWER: 010 (1.00)

a.

REFERENCE :

FNP-0-AP-60, pg. 3

KA 194001A112 [3.1/4.1]

194001A112 ... (KA's)

ANSWER: 011 (1.00)

d.

REFERENCE:

L.P. OPS-52102G, pg. 11 KA 008000K401 [3.1/3.3]

008000K401 ... (KA's)

ANSWER: 012 (2.00)

a. 4 b. 7 c. 5 d. 6 (0.5 each)

REFERENCE :

LP OPS-402041/52201E, pg. 11, 12

KA 001010K404 [2.6/2.8]

001010K404 .. (KA's)

ANSWER: 013 (1.00)

C.

REFERENCE :

Tech Specs 3.4.7.1

KA 002000G005 [3.6/4.1]

002000G005 .. (KA's)

ANSWER: 014 (1.00)

a.

REFERENCE :

LP OPS-52101A, pg, 26, 27 KA 002000K606 [2.5/2.8]

002000K606 ... (KA's)

ANSWER: 015 (1.00)

a.

REFERENCE :

Farley Exam Bank Question 052101D009 KA 003000A203 [2.7/3.1]

003000A203 ... (KA's)

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ANSWER: 016 (2.00)
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a. 3
b. 5
c. 2
d. 1 (0.5 each)
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# REFERENCE ;

Farley exam bank question 052101D05034 KA 003000G010 [3.3/3.6]

003000G010 ... (KA's)

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ANSWER: 017 (1,00)
```

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a.
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REFERENCE :

Farley exam bank question 052101FT1043R

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KA 004020A305 [3.2/3.0]
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004020A305 ... (KA's)

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ANSWER: 018 (1.00)
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b.

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REFERENCE :
```

Farley exam bank question 052101FT1041R

KA 005000K401 [3.0/3.2]

005000K401 .. (KA's)

ANSWER: 019 (1.00)

b.

### REF RENCE :

LP OPS-52201H, Obj. 10, pg. 7

KA 010000K403 [3.8/4.1]

010000K403 ... (KA's)

ANSWER: 020 (1.00)

b.

### REFERENCE :

LP OPS-52201H, pg. 19, 20 KA 011000A104 [3.1/3.3]

011000A104 ... (KA's)

ANSWER: 021 (1.00)

b.

### REFERENCE :

LP OPS-52201H, Obj. 6 LP OPS-52103B, Fig. 8 KA 010000K201 [3.0/3.4]

010000K201 ... (KA's)





IMAGE EVALUATION TEST TARGET (MT-3)





1.25

c1.



ANSWER: 022 (1.00)

a.

# REFERENCE :

LP OPS-52201D, Obj. 6, Fig. 4

XA 015000A303 [3.9/3.9]

015000A303 .. (KA s)

ANSWER: 023 (1.00)

a.

### REFERENCE :

LP OPS-522011, pg. 50 RA 015000K301 [3.9/4.3]

015000K301 .. (KA's)

ANSWER: 024 (1.00)

b.

### REFERENCE :

LP OPS-52201D, Obj. 29, pg. 25

KA 015020K504 [3.2/3.6]

015020K504 .. (KA's)

ANSWER: 025 (1.00)

a.

### REFERENCE :

LP OPS-52102B, pg. 9, 10 KA 013000K106 [4.2/4.4]

013000K106 .. (KA's)

ANSWER: 026 (1.00)

a.

### REFERENCE :

LP OPS-52201F, Obj. 5 & 7, pp. 13-14 KA 014000A102 [3.2/3.6]

014000A102 .. (KA's)

ANSWER: 027 (1.00)

C.

### REFERENCE :

LP OPS-52202E, Obj. 14 KA 017020A402 [3.8/4.1]

017020A402 .. (KA's)

ANSWER: 028 (1.00)

С.

### REFERENCE :

LP OPS-522011, Obj. 26; Exam Bank Question 052201109063

KA 013000K502 [2.9/3.3]

013000K502 .. (KA's)

ANSWER: 029 (1.00)

а.

REFERENCE :

LP OPS-52102C, Obj. 11, pg. 19, 20 KA 022000A201 [2.5/2.7]

022000A201 ...(KA's)

ANSWER: 030 (1.00)

a.

REFERENCE :

LP 0PS-522011, pg. 11 KA 026000A301 [4.3/4.5]

026000A301 ... (KA's)

ANSWER: 031 (1.00)

С,

# REFERENCE :

LP OPS-52102D, Obj. 1, pg. 1 KA 628000K503 [2.9/3.6]

028000K503 ... (KA's)

ANSWER: 032 (1.00)

a.

# REFERENCE :

LP OPS-52201B, Obj. 5, 7; Fig. 14 KA 035010A203 [3.4/3.6]

C35010A203 .. (KA's)

ANSWER: 033 (1.00)

d.

### REFERENCE:

LP OPS-52201B, Obj. 15, Fig. 14 KA 059000K405 [2.5/2.8]

059000K405 ... (KA's)

ANSWER: 034 (1.00)

b.

REFERENCE :

LP OPS-52103C, Obj. 3, pg. 8 KA 063000K401 [2.7/3.0]

063000K401 ...(KA's)

ANSWER: 035 (1.00)

C.

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REFERENCE:
```

LP OPS-52102F, Obj. 21, pg. 17 KA 076000A202 [2.7/3.1]

076000A202 .. (KA's)

ANSWER: 036 (1.00)

С.

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REFERENCE :
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LP OPS-52520S, Objective 1 1-AOP-19.0

KA 000001G010 [3.9/4.0]

000001G010 ... (KA's)

ANSWER: 037 (1.00)

b.

# REFERENCE :

LP OPS-52103A, Obj. 6, pg. 12

KA 000007K202 [2.6/2.8]

000007K202 .. (KA's)

ANSWER: 038 (1.00)

C .

# REFERENCE :

LP OPS-522011, Obj. 25, pg. T-2c KA 000007A102 [3.8/3.7]

000007A102 .. (KA's)

ANSWER: 039 (1.00)

d.

### REFERENCE :

LP OPS-52201H, Obj. 13 KA 000008A212 [3.4/3.7]

000008A212 ... (KA's)

ANSWER: 040 (1.00)

C.

REFERENCE :

Steam Tables

KA 000008K302 [3.6/4.1]

000008K302 .. (KA's)

ANSWER: 041 (1.00)

С.

REFERENCE:

EEP-0 Foldout

KA 000011A103 [4.0/4.0]

000011A103 ... (KA's)

ANSWER: 042 (1.00)

đ.

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REFERENCE :
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LP OPS-522011, Obj. 18, Table 1 KA 000015G011 [3.5/3.6]

000015G011 ... (KA's)
ANSWER: 043 (1.00)

a.

REFERENCE :

LP OPS-40301A, Obj. 1

KA 000015K104 [2.9/3.1]

4/92 exam

000015K104 . (KA's)

ANSWER: 044 (1.00)

b.

REFERENCE :

AOP-27.0, pg. 2, 3 LP OPS-52521A, Obj. 4, Fig. 1 KA 000024K302 [4.2/4.4]

000024K302 ... (KA's)

ANSWER: 045 (1.00)

a.

REFERENCE :

LP OPS-52521A, Obj. 1, pg. 2

KA 000024G011 [3.8/3.9]

000024G011 ... (KA's)

ANSWER: 046 (1.00)

С.

REFERENCE :

LP OPS-52520L, Obj. 6, pg. 7

KA 000025A110 [3.1/2.9]

000025A110 ... (KA's)

ANSWER: 047 (1.00)

C .

REFERENCE :

LP OPS-52520L, Obj. 3, pg. 6 KA 000025K101 [3.9/4.3]

000025K101 .. (KA's)

ANSWER: 048 (1.00)

с.

REFERENCE :

LP OPS-52102G, Obj. 4 & 22 and P&ID D-175002 KA 000026A201 [2.9/3.5]

000026A201 ... (KA's)

ANSWER: 049 (1.00)

d.

### REFERENCE :

LP OPS-521026, Obj. 16, pg. 8.

KA 000026A106 [2.9/2.9]

000026A106 ... (KA's)

ANSWER: 050 (1.00)

d.

REFERENCE :

LP OPS-52201H, Obj. 4, pgs. 6-12. KA 000027A102 [3.1/3.0]

000027A102 ... (KA's)

ANSWER: 051 (1.00)

đ.

REFERENCE :

LP OPS-52201H, pg. 6-13 KA 000027A103 [3.6/3.5]

000027A103 ... (KA's)

ANSWER: 052 (1.00)

b.

### REFERENCE :

FRP-S.1, pg. 3

KA 000029G010 [4.5/4.5]

000029G010 ... (KA's)

ANSWER: 053 (1.00)

b.

REFERENCE :

FRP-S.1

KA 000029G010 [4.0/4.0]

000029G010 ... (KA's)

ANSWER: 054 (1.00)

b.

REFERENCE :

LP OPS-52201D, Obj. 6 KA 000033A208 [3.3/3.4]

000033A208 ... (KA's)

ANSWER: 055 (1.00)

d.

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REFERENCE :
```

EEP-3, pg. 5; LP OPS-52102H, Obj. 20 KA 000038A132 [4.6/4.7]

000038A132 .. (KA's)

ANSWER: 056 (1.00)

b.

REFERENCE :

LP OPS-52530D, Obj. 12, 13, pg. 45 KA 000038A136 [4.3/4.5]

000038A136 ...(KA's)

ANSWER: 057 (1.00)

b.

REFERENCE :

LP OPS-52530C, pg. 7 KA 000040A201 [4.2/4.7]

000040A201 ...(KA's)

ANSWER: 058 (1.00)

d.

REFERENCE:

ECP-0.0, pg. 1, 2 LP OPS-52532A, Obj. 4

KA 000055G012 [3.9/4.0] 10/92 exam

000055G012 ... (K`'s)

ANSWER: 059 (1.00)

d.

REFERENCE :

LP OPS-52103, Obj. 1, 5, 6; Fig. 7 KA 000056A214 [4.4/4.6]

000056A214 ... (KA's)

ANSWER: 060 (1.00)

d.

REFERENCE :

LP OPS-52103F, Obj. 1.D, pg. 33, 34 KA 000056A214 [4.4/4.6] 10/92 exam

000056A214 .. (KA's)

ANSWER: 061 (1.00)

đ.

### REFERENCE :

LP OPS-52101F, figure 14, LO 15, pg. 55

KA 000068A121 [3.9/4.1]

000068A121 ... (KA's)

ANSWER: 062 (1.00)

d.

REFERENCE :

LP OPS-52530B, Obj. 10, pg. 24 KA 000069K301 [3.8/4.2]

000069K301 .. (KA's)

Al/SWER: 063 (1.00)

b.

REFERENCE :

SOP-0.8

KA 000069G012 [3.5/3.5]

000069G012 ... (KA's)

ANSWER: 064 (1.90)

a.

#### REFERENCE :

LP OPS-52106D, Obj. 7, pg. 7 KA 000076K201 [2.6/3.0] 000076K201 ...(KA's)

ANSWER: 065 (1.00)

С.

REFERENCE :

FNP-0-AP-16, pg. 30

KA 194001A102 [4.1/3.9]

4/92 exam

194001A102 ... (KA's)

ANSWER: 066 (1.00)

d.

REFERENCE :

FNP-0-M-001, page 13, para. 6.3.1 KA 194001K103 [2.8/3.4]

4/92 exam

194001K103 ... (KA's)

ANSWER: 067 (1.00)

b.

REFERENCE :

FNP-0-AP-14, pg. 26

KA 194001K102 [3.7/4.1]

194001K102 ... (KA's)

ANSWER: 068 (2.00)

a. 7 b. 5 c. 1 d. 4 (0.5 each)

REFERENCE :

FNP-0-M-001, para. 4.2, p. 3, 4
10CFR20.101 & 105

KA 194001K103 [2.8/3.4]

194001K103 ... (KA's)

ANSWER: 069 (1.00)

C.

. EFERENCE :

NFP-0-AP-16, para. 6.5, p. 48

KA 194001A102 [4.1/3.9]

194001A102 ... (KA's)

ANSWER: 070 (1.00)

b.

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REFERENCE :
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Farley: Technical Specifications 6.2.2.a and Table 6.2-1, p. 6-4 KA 194001A103 [2.5/3.4]

194001A103 ... (KA's)

ANSWER: 071 (1.00)

đ.

REFERENCE :

LP OPS-52201E, p. 16, Objective 13

KA 001000A102 [3.1/3.4]

4/92 exam

ANSWER: 072 (1.00)

a. 4 b. 5 (0.5 trch)

### REFERENCE :

LP OPS-52101A, pg. 11, 12

KA 002000K107 [3.5/3.7]

002000K107 ... (KA's)

ANSWER: 073 (1.00)

### b.

REFERENCE :

Tech Spec 3.4.1.2

KA 003000G005 [3.4/3.8]

003000G005 ... (KA's)

ANSWER: 074 (1,00)

a.

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REFERENCE :
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Farley exam bank question 052101FT1040R

KA 004000K110 [2.7/2.9]

004000K110 ...(KA's)

ANSWER: 075 (1.00)

d.

### REFERENCE :

LP OPS 52102B, Objective 10

KA 006000K201 [3.6/3.9]

006000K201 .. (KA's)

ANSWER: 076 (1.00)

#### b.

#### REFERENCE :

LP OPS-522011, Obj. 28, pg. 82, 90

KA 012000K408 [2.8/3.3]

012000K408 .. (KA's)

ANSWER: 077 (1.00)

a.

REFERENCE :

LP OPS-52201J, pg. 12 KA 012000K611 [2.9/2.9]

012000K611 .. (KA's)

ANSWER: 078 (1.00)

b.

### REFERENCE :

LP OPS-52108D, Obj. 5, pg 7

KA 033000K404 [2.7/2.9]

033000K404 .. (KA's)

ANSWER: 079 (1.00)

a.

#### REFERENCE :

LP OPS-52108, Obj. 16, pg. T-2e

KA 034000K403 [2.6/3.3]

034000K403 ... (KA's)

ANSWER: 080 (1.00)

с.

REFERENCE:

LP OPS-52201G, Fig. 3; Farley Exam Bank 052201G17036

KA 041020A101 [2.9/2.9]

041020A101 ... (KA's)

ANSWER: 081 (1.00)

C,

REFERENCE :

Farley LER 93-001

KA 061000A203 [3.1/3.4]

061000A203 .. (KA's)

ANSWER: 082 (1.00)

a.

### REFERENCE :

LP OPS-52103B, Obj. 12, pg. 31, 32

KA 062000A404 [2.6/2.7]

062000A404 ... (KA's)

ANSWER: 083 (1.00)

c.

REFERENCE :

LP OPS-52102I, Obj. 28, pg. 32

KA 064000A301 [4.1/4.0]

064000A301 .. (KA's)

ANSWER: 084 (1.00)

b.

REFERENCE :

LP OPS-52201F, Obj. 8, Fig. 7

KA 000003G009 [3.6/3.6]

000003G009 .. (KA's)

ANSWER: 085 (1.00)

đ.

REFERENCE:

T.S. 3.1.3.1

KA 000005G008 [3.1/3.8]

4/92 exam

000005G008 ... (KA's)

ANSWER: 086 (1.00)

a,

REFERENCE :

TS 3.4.6.2

KA 000009K320 [3.5/4.3]

000009K320 ... (KA's)

ANSWER: 087 (1.00)

d.

REFERENCE :

FNP-1-EEP-0 Foldout

KA 000009A104 [3.7/3.5]

000009A104 .. (KA's)

ANSWER: 088 (1.00)

d.

REFERENCE :

LP OPS-52530B, Obj. 3, pg. 30 KA 000011A105 [4.3/3.9] 4/92 exam

000011A105 ... (KA's)

ANSWER: 089 (1.00)

a. 3 b. 1 (0.5 each)

REFERENCE :

LP OPS-522011, Obj. 7

KA 000027A204 [3.7/4.3]

000027A204 ... (KA's)

ANSWER: 090 (1.00)

C.

#### **REFERENCE**:

LP	OPS-52201H,	pg. A2-3
KA	000028A108	[3.7/3.8]

000028A108 .. (KA's)

ANSWER: 091 (1.00)

a.

REFERENCE :

LP OPS-52521H, Obj. 1; AOP-3.0, pg. 2 KA 000036A202 [3.7/3.8] 10/92 exam

000036A202 .. (KA's)

ANSWER: 092 (1.00)

b.

REFERENCE :

LP OPS-52530D, Obj. 1 & 9, pg. 33 KA 000038K308 [4.1/4.2] 10/92 exam

000038K308 ... (KA's)

ANSWER: 093 (...00)

d.

### REFERENCE :

LP OPS-52533K, Obj. 2, pg. 5

KA 000004K101 [4.1/4.4]

000040K101 .. (KA's)

ANSWER: 094 (1.00)

đ,

REFERENCE :

FNP-0-SOP-0.8, pg. 2 and FNP-1-ESP-0.0, "Rediagnosis"

KA 000055G012 [3.9/4.0]

10/92 exam

000055G012 ... (KA's)

ANSWER: 095 (1.00)

b.

REFERENCE :

LP OPS-52532A, Obj. 15

KA 000055K302 [4.3/4.6]

10/92 exam

000055K302 ... (KA's)

ANSWER: 096 (1.00)

С.

### REFERENCE :

LP OPS-52533C, Obj. 19, pg. 10

KA 000074K311 [4.0/4.4]

000074K311 ... (KA's)

ANSWER: 097 (1.00)

d.

REFERENCE :

Tech Specs 3/4.0 and 3.7.1.2 KA 000074A202 [4.3/4.6]

000074A202 .. (KA's)

ANSWER KEY

MU	LTIP	LE CHOICE	016	MAT	CHING
001	a			а	3
002	d			b	5
003	đ			С	2
004	С			đ	1
005	С		MU	LTIP	LE CHOICE
006	d		017	а	
007	c		018	b	
008	С		019	b	
009	b		020	b	
010	a		021	b	
011	đ		022	а	
012	MAT	CHING	023	а	
	a	4	024	b	
	b		025	а	
	C	5	026	а	
	d	6	027	С	
MU	LTIP	LE CHOICE	028	С	
013	С		029	а	
014	a		030	a	
015	a		031	С	
			032	а	
			033	Ä	

Page 1

ANSWER KEY

034	b	057	b
035	c	058	đ
036	c	059	đ
037	b	060	d
038	c	061	đ
039	đ	062	đ
040	c	063	b
041	c	064	a
042	đ	065	c
043	a	066	a
044	b	067	b
045	a	068	MATCHING
046	e		a 7
047	¢		b 5
048	e de la construcción de la constru		c 1
049	đ		d 4
050	đ	MU	LTIPLE CHOICE
051	đ	069	c
052	b	070	d
053	b	071	d
054	b	072	MATCHING
055	d		a 4
056	b		b 5

ANSWER KEY

MUI	LTIPLE CHOICE	092	b
073	b	093	đ
074	a	094	đ
075	d	095	b
076	b	096	С
077	a	097	d
078	b		
079	a		
080	c		
081	с		
082	a		
083	c		
084	b		
085	đ		
086	a		

087 d

088 d

089 MATCHING

a 3

b 1

MULTIPLE CHOICE

090 c

000 0

091 a