

**FACILITY COMMENTS ON THE WRITTEN EXAMS**

**Question # 11****1LOT4 RO Initial License Exam**

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	
	Group #	1	
	K/A #	068 G 2.3.11	
	Importance Rating	2.7	

Given the following:

- Preparations to perform a radioactive liquid waste discharge from [LW-TK-7A], SG Drains Tank are in progress.
- Alternate HI-HI alarm setpoints have been implemented for [RM-1LW-104], Liquid Radwaste Effluent radiation monitor due to high background radiation levels.
- When performing a source check on [RM-1LW-104], Liquid Radwaste Effluent radiation monitor, it was observed that the meter indication did NOT move upscale.

Which of the following actions are required to be performed?

- Flush [RM-1LW-104] with water from [LW-TK-7A], SG Drains Tank to the floor drain then re-perform the source check.
- Flush [RM-1LW-104] with water from the [1LW-TK-5A or 5B], Evaporator Test Tanks to the floor drain then re-perform the source check.
- Request health physics perform a calibration check on [RM-1LW-104] detector due to its lack of response to the source check.
- Request Health Physics flash the [RM-1LW-104] detector with a portable source to verify an upscale increase in the existing count rate.

**Answer: C or D**

Technical Reference(s): IOM-17.4A.D, Rev. 4

References to be provided during examination: None

Learning Objective: 1SQS-2379 ELO 7

Question Source: Bank #                      Modified Bank #                      New      X

Question History: Previous NRC Exam

Previous Quiz / Test

Question Cognitive Level: Memory or Fundamental Knowledge      X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41      X

55.43

Comments:

## Answer Key Changes

### Question # 11 (RO Exam)

The answer to Question # 11 on the RO exam was changed to accept choice 'C' in addition to choice 'D'. The basis for this change is as follows:

The focus of the question and basis for the answer was taken from a note in procedure 1/2OM-17.4.AD, "Unit 1 Liquid Waste Discharge To Unit 1 Cooling Tower Blowdown" which states: "The background activity for RM-1LW-104 may be too high to perform a source check using the installed source. In this case, the detector should be flashed with a portable source to obtain an upscale increase in the existing count rate". This note appears in the procedure section that verifies detector response after adjusting the high and high-high alarm setpoints for the radiation monitor.

The note, however, does not indicate who is to perform the action to flash the detector in the event of high background activity. At BVPS, the Health Physics Department is responsible for adjusting radiation detector setpoints in preparation for offsite liquid releases and also performing actions related to flashing or calibrating detectors. The Operators are alternately instructed in procedure 1OM-43.4.C, "Liquid Off-Line Radiation Monitor Startup" that if a check source does not provide an upscale indication to notify Health Physics. Without further detailed instructions, the Operators rely on Health Physics to perform the actions to obtain a proper detector response. According to Health Physics personnel, this action may take the form of flashing or calibrating the detector.

Since the actions taken by Health Physics may include either flashing the detector as directed in procedure 1/2OM-17.4.AD, or calibrating the detector to obtain an upscale indication, then both choices 'C' & 'D' can be considered as correct answers. Further, without the use of a procedural reference to aid in answering the question, it is reasonable to consider that either of the choices could be selected as a correct answer.

Before this question is added to the BVPS exam bank, it will be modified to ensure there is only one correct answer.

UNIT 1 LIQUID WASTE DISCHARGE TO UNIT 1 -  
COOLING TOWER BLOWDOWN

Note:

An alternate "HI HI ALARM SETPOINT" in nCPM may be calculated provided the following conditions are true:

- An alarm condition would exist if the discharge is commenced. This would be due to the initial calculated "HI HI ALARM SETPOINT" being very close (in numerical value) to the monitor's background and
- The Total Tank Concentration (excluding H-3 and noble gases) is less than  $1.49E-4 \mu\text{Ci/ml}$ .

4. If necessary, request Health Physics personnel to calculate the alternate HI and HIHI Alarm setpoints in accordance with the Health Physics Manual. (Otherwise N/A)

Unit 1 \_\_\_\_\_ / \_\_\_\_\_  
Initial / Date

- a. Check that the setpoints are documented on the RWDA-L.

Unit 1 \_\_\_\_\_ / \_\_\_\_\_  
Initial / Date

- b. Have the NSS/ANSS verify the calculated alternate setpoints are correct.

Unit 1 NSS / ANSS \_\_\_\_\_ / \_\_\_\_\_  
Initial / Date

Note:

The background activity for [RM-1LW-104] may be too high to perform a source check using the installed source. In this case, the detector should be flashed with a portable source to obtain an upscale increase in the existing count rate.

5. If [RM-1LW-104], Liquid Waste Effluent Monitor path is to be used, Perform a source check of [RM-1LW-104] and record initials on the RWDA-L, at MONITOR SOURCE CHECKED BY, to indicate satisfactory results. (otherwise N/A)

Unit 1 \_\_\_\_\_ / \_\_\_\_\_  
Initial / Date

LIQUID OFF-LINE RADIATION MONITOR STARTUP

**CAUTION:** RETURNING THE FUNCTION SWITCH TO THE OPER POSITION WHEN INDICATED LEVEL IS GREATER THAN OR EQUAL TO THE ASSOCIATED ALARM SETPOINT WILL CAUSE AN INADVERTENT ACTUATION OF ANY ASSOCIATED AUTOMATIC EMERGENCY SAFETY FUNCTION.

10. Return the Function switch to the OPER position as follows:
    - a. Press the Reset pushbutton.
    - b. Place the Function selector switch in the OPER position.
    - c. When normal background level is indicated, Release the Reset pushbutton.
  11. Check the operation of the detector in response to an actual radioactive source as follows:
    - a. Press and hold the C.S. pushbutton.
    - b. If the check source does NOT provide an upscale indication, Notify Health Physics.
  12. Reset any alarms caused by use of the check source, by pressing the Reset pushbutton.
  13. Place the Power switch in the ON position at the pump control panel (RMS rack).
    - a. Verify that the POWER indicating light is ON.
  14. To start any monitor sample pump except [RM-1AS-100] AND [RM-1RW-100A through D], Perform the following:
    - a. Place the pump control switch in the START position.
    - b. Verify that the PUMP ON light is ON.
    - c. Verify that the HI OR LOW FLOW FAULT lights are OFF.
  15. To start [RM-1AS-100] AND [RM-1RW-100A through D] Sample Pump only, Perform the following:
    - a. Place the pump control switch to the HAND position at the pump control panel (RMS Rack).
    - b. Verify the following indications:
      - 1) The PUMP ON light is ON.
      - 2) The HI FAULT light is OFF.
      - 3) The LOW FLOW FAULT light is OFF.
-

---

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #		3
	Group #		
	K/A #		2.1.12
	Importance Rating		4.0

**Note: This is an open reference question.**

Given the following:

- The Unit is in Mode 1.
- The NO. 2 EDG was declared inoperable 18 hours ago and is expected to be returned to operable status within the next 6 hours.
- A field Operator has just reported that the "A" Motor Driven AFW pump motor leads have been accidentally severed by maintenance workers.

Assuming that all other plant systems and equipment are operable who, by title, if any, is required to be notified by the NSS/ANSS within 1 hour?

- Only the Duty Operations Manager and the NRC via the "Red" phone.
- Only the Duty Operations Manager and Plant General Manager.
- The Duty Operations Manager, Plant General Manager and the NRC via the "Red" phone.
- No prompt notifications are required because both of these pieces of equipment have 72 hour action statements.

**Answer: B**

Technical Reference(s): TS 3.0.3, 3.0.5, 3.7.1.2, 3.8.1.1, NPDAP 5.1

References to be provided during examination: TS 3.0.3, 3.0.5, 3.7.1.2, 3.8.1.1, NPDAP 5.1

Learning Objective: 08-04-006 ELO 5; 04-04-004 ELO 5 & 7

Question Source: Bank #

Modified Bank #

New

X

Question History: Previous NRC Exam

Previous Quiz / Test

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis

X

10 CFR Part 55 Content: 55.41

55.43 X

Comments: With "A" AFW pump OOS and "B" EDG OOS, TS 3.0.5 applies. A TS required S/D is 1 hr notification to NRC per NPDAP 5.1 and OM-48.1.I requires management notifications for LCO's  $\leq$  72 hours.

## **Answer Key Changes**

### **Question # 22 (SRO Exam)**

The answer to Question # 22 on the SRO exam was changed from choice 'C' to 'B'. The revised answer is in agreement with current plant procedures for notifications to plant management and the NRC.

The original answer was based on the assumption that the inoperability of two opposite train components ("B" EDG and "A" AFW pump) would require initiation of a plant shutdown within 1 hour in accordance with Technical Specification 3.0.5. Plant procedure NPDAP 5.1, "REPORT REQUIREMENTS" lists the initiation of a Tech. Spec. required plant shutdown as an immediate notification to the NRC per Report No. 206 on pages 16 and 63. Additionally, plant procedures would also require notifying the Duty Operations Manager and Plant General Manager of any event listed in NPDAP 5.1 requiring offsite notification. Using the assumption that a Technical Specification plant shutdown is the required action, then notifications would be made to the NRC and the above listed plant managers as stated in choice 'C'.

The basis for the change to the answer is that Technical Specification 3.0.5 provides a 2-hour allowance to restore any inoperable components (e.g., EDG and AFW pump) to an operable status. In the event this cannot be satisfied, then action is to be initiated to place the unit in a mode in which the applicable LCO does not apply. The 2-hour time allowance before a plant shutdown is required eliminates choice 'C' as the correct answer. Without the requirement to notify the NRC, then only the Duty Operations Manager and Plant General Manager would be notified within as stated in choice 'B'.

Before this question is added to the BVPS exam bank, it will be modified to ensure there is only one correct answer.

## REPORT REQUIREMENTS

## ATTACHMENT 1 (Continued)

**IMMEDIATE NOTIFICATIONS AND FOLLOW-UP REPORTS**  
 (Immediate Notifications via NRC Red Phone are CAPITALIZED)  
 (Refer to Attachment 5 for report details)

Key Words	Subject	Report No.
RADIOACTIVE RELEASE	RADIOACTIVE RELEASE - INADVERTENT DISCHARGE	142
SAFETY BARRIER DEGRADED	SAFETY BARRIER DEGRADED	154
SAFETY LIMIT	SAFETY LIMIT VIOLATION	162
SECURITY	DISCOVERY OF SIGNIFICANT SAFEGUARDS EVENTS	164
SEISMIC	SEISMIC EVENT	175
Significant Implication	Information of Significant Implication to Public	179
Siren Actuation	Siren Actuation	181
SIREN SYSTEM	SIREN SYSTEM INOPERABILITY	182
Special Nuclear Material	Special Nuclear Material - Calls Not Received During Transport	185
SPECIAL NUCLEAR MATERIAL	SPL NUC MATERIAL - LOSS, THEFT, UNACCOUNTED FOR SNM	188
SPECIAL NUCLEAR MATERIAL	SPECIAL NUCLEAR MATERIAL - RECOVERY	191
SPECIAL NUCLEAR MATERIAL	SNM - SIGNIFICANT INFO ON LOSS OR THEFT	192
TECH SPEC DEVIATION	TECH. SPEC. DEVIATION OR VIOLATION PER 50.54(x)	205
<del>TECH SPEC PLANT SHUTDOWN</del>	<del>TECH. SPEC. REQUIRED PLANT SHUTDOWN (INITIATION OF)</del>	<del>206</del>
Theft	Theft/Unlawful Diversion > 15 lbs Uranium/Thorium	207
Transportation Incident	Radioactive Material Transportation Incident (DOT)	216
Transportation Incident	Radioactive Material Transportation Incident (NRC)	217
Tritium	Tritium - Theft or Unlawful Diversion	219
UNANALYZED PLANT CONDITION	UNANALYZED PLANT CONDITION	221



ATTACHMENT 5 (Continued)  
 MASTER LIST OF REPORTING REQUIREMENTS

<b>No. 203 Tanks Liquid: Outside Tank Activity in excess of 10 Curies.</b> * IMMEDIATELY NOTIFY: Not Required. Report: Submit a special report within 30 days to NRC Region 1 Regional Admin.		Report Type O
SUBMITTAL:	Health Physics Regulatory Affairs	
REFERENCES: TS 3.11.1.4		
<b>No. 204 Operations or Condition Prohibited by the Tech Specs.</b> * IMMEDIATELY NOTIFY: Not Required. Report: Submit LER (NRC Form 368) within 60 days.		Report Type O
PREPARER(S):	Regulatory Affairs	
SUBMITTAL:	Regulatory Affairs	
REFERENCES: 10CFR50.73(a)(2)(i)(B)		
<b>No. 206 TECHNICAL SPECIFICATION DEVIATION OR VIOLATION PER 50.54(x).</b> * IMMEDIATELY NOTIFY: NSS/ANSS CALLS NRC (RED PHONE) WITHIN 1 HOUR, IF POSSIBLE PRIOR TO DEVIATION. Report: Submit LER (NRC Form 368) within 60 days.		Report Type I
PREPARER(S):	Regulatory Affairs	
SUBMITTAL:	Regulatory Affairs	
REFERENCES: 10CFR50.72(b)(1)      10CFR50.73(a)(2)(i)(C)      10CFR50.36      10CFR50.54(x) IEB 85-2      OM 1/2.48.2c		
<b>No. 206 TECH SPEC REQUIRED PLANT SHUTDOWN (INITIATION OF)</b> * IMMEDIATELY NOTIFY: NSS/ANSS CALLS NRC (RED PHONE) WITHIN 1 HOUR. Report: Submit LER (NRC Form 368) within 60 days (Only if plant shutdown is completed).		Report Type I
PREPARER(S):	Regulatory Affairs	
SUBMITTAL:	Regulatory Affairs	
REFERENCES: 10CFR50.72(b)(2)(i)      10CFR50.73(a)(2)(i)(A)      10CFR50.36		
<b>No. 207 Theft - Unlawful Diversion - &gt; 15 lbs at one time or &gt; 160 lbs in one calendar year of uranium or thorium.</b> * IMMEDIATELY NOTIFY: Promptly notify NRC RO. Report: A follow-up report shall be submitted to the NRC and RO within 16 days. Any information which becomes available after the original report is submitted shall be promptly reported (written form) to NRC.		Report Type I
PREPARER(S):	Health Physics	
SUBMITTAL:	Regulatory Affairs	
REFERENCES: 10CFR40.64(c)		
<b>No. 209 Threats (actual or potential) to safe plant operation or personnel performing safety duties.</b> * IMMEDIATELY NOTIFY: Not Required (Also see Report No. 44). Report: Submit LER (NRC Form 366) within 60 days.		Report Type O
PREPARER(S):	Regulatory Affairs	
SUBMITTAL:	Regulatory Affairs	
REFERENCES: 10CFR50.73(a)(2)(iii)      10CFR50.73(a)(2)(x)      EPP/I-1		

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS3/4.0 APPLICABILITYLIMITING CONDITION FOR OPERATION

3.0.1 Compliance with the Limiting Conditions for Operation contained in the succeeding specifications 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, except as provided in Limiting Condition for Operation 3.0.6.

3.0.2 Noncompliance with a specification 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 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 when the conditions for the Limiting Conditions for Operation are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to 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

LIMITING CONDITION FOR OPERATION (continued)

source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied within 2 hours, action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation 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.

This specification is not applicable in MODES 5 or 6.

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to Limiting Condition for Operation 3.0.1 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met 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 allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the OPERABILITY requirements for a Limiting Condition for Operation. The time limits of the ACTION requirements are applicable at the time it is identified that a Surveillance Requirement has not been performed. The ACTION requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the ACTION requirements are less than 24 hours. 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

Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	013K4.13	013K4.13
	Importance Rating	3.7	3.9

Given the following:

- The Unit is operating at 100% power with all systems in their at-power, NSA configurations.
- An automatic Safety Injection occurred due to a Main Steam Line Break downstream of the MSIV's.
- All MSIV's are closed.
- The Operators have transitioned to FR-H.1 - Response To Loss Of Secondary Heat Sink due to a loss of all auxiliary feedwater.
- Safety Injection has not been reset.
- All Safety Injection first out annunciators have cleared.
- The Operators are preparing to start a main feedwater pump.

Under these conditions, resetting \_\_\_\_\_ required to allow the main feedwater pump to start.

- A. only the SI signal is
- B. only the FWI signal is
- C. the SI and FWI signals is
- D. the SI and FWI signals is NOT

**Answer: C or D**

Technical Reference(s): 1OM-11.2.A Issue 4, Rev. 2

References to be provided during examination: None

Learning Objective: 08-02-338 ELO 10.a & 11.a

Question Source:	Bank #	Modified Bank #
	New	X

Question History: Previous NRC Exam

Previous Quiz / Test

Question Cognitive Level: Memory or Fundamental Knowledge: X  
Comprehension or Analysis

10 CFR Part 55 Content: 55.41 X 55.43

Comments:

## Answer Key Changes

### Question # 58 (RO & SRO Exam)

The answer to Question #58 on the RO and SRO exam was changed to accept choice 'C' in addition to choice 'D'. The basis for this change is as follows:

The original intent of the question was to test the knowledge of SI and FWI signal logic including interlocks and resets based on FSAR Figure 7.2-1 Logic Diagram Sheet 8 and procedure IOM-11.2.A, "Precautions and Limitations". FSAR Figure 7.2-1 specifically shows that electrically, if the original SI signal clears after actuation, a feedwater pump can be started prior to resetting the SI or FWI signals. This is possible due to the location of the tap-off for the FWI signal, which is upstream of the retentive memory device for the SI signal. From this standpoint, choice 'D' can be considered a correct answer as the logic to start a feedwater pump.

However, the stem of the question also includes reference to procedure FR-H.1, "Response TO Loss of Secondary Heat Sink". Step 7 of FR-H.1 is designed to establish a source of water to a SG. Specifically, step 7.c states: "If Necessary, Reset SI (both trains)" and includes a check of status light C-4 and D-4 as an indication of the SI signal condition. For the conditions stated in the question ("automatic Safety Injection occurred"), neither status light would indicate that SI is reset. This is shown on FSAR Figure 7.2-1 by the location of the C-4 status light tap-off, which is downstream of the retentive memory device for the SI signal, and status light D-4 which is part of the SI signal reset logic. Without the SI signal reset as indicated by the status lights, the Operator would be expected to then reset the SI signal. Step 7.d next directs the Operator to reset FWI without any check to determine the state of the FWI signal. This is followed by a start of one Main FW pump in step 7.f. As part of Licensed Operator Training, this sequence is the normal practice followed to determine SI and FWI signal status and is the accepted standard for procedure compliance.

Since the question stem does not specify whether it is looking for electrical requirements or adherence to procedure guidance, it is appropriate to consider that either may be used as a basis for answering the question. This then makes both choices 'C' and 'D' acceptable answers.

Before this question is added to the BVPS exam bank, it will be modified to ensure there is only one correct answer.

Number <b>FR-H.1</b>	Title <b>Response To Loss Of Secondary Heat Sink</b>	Issue 1C Revision 1
-------------------------	---	------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

\*\*\*\*\*

CAUTION

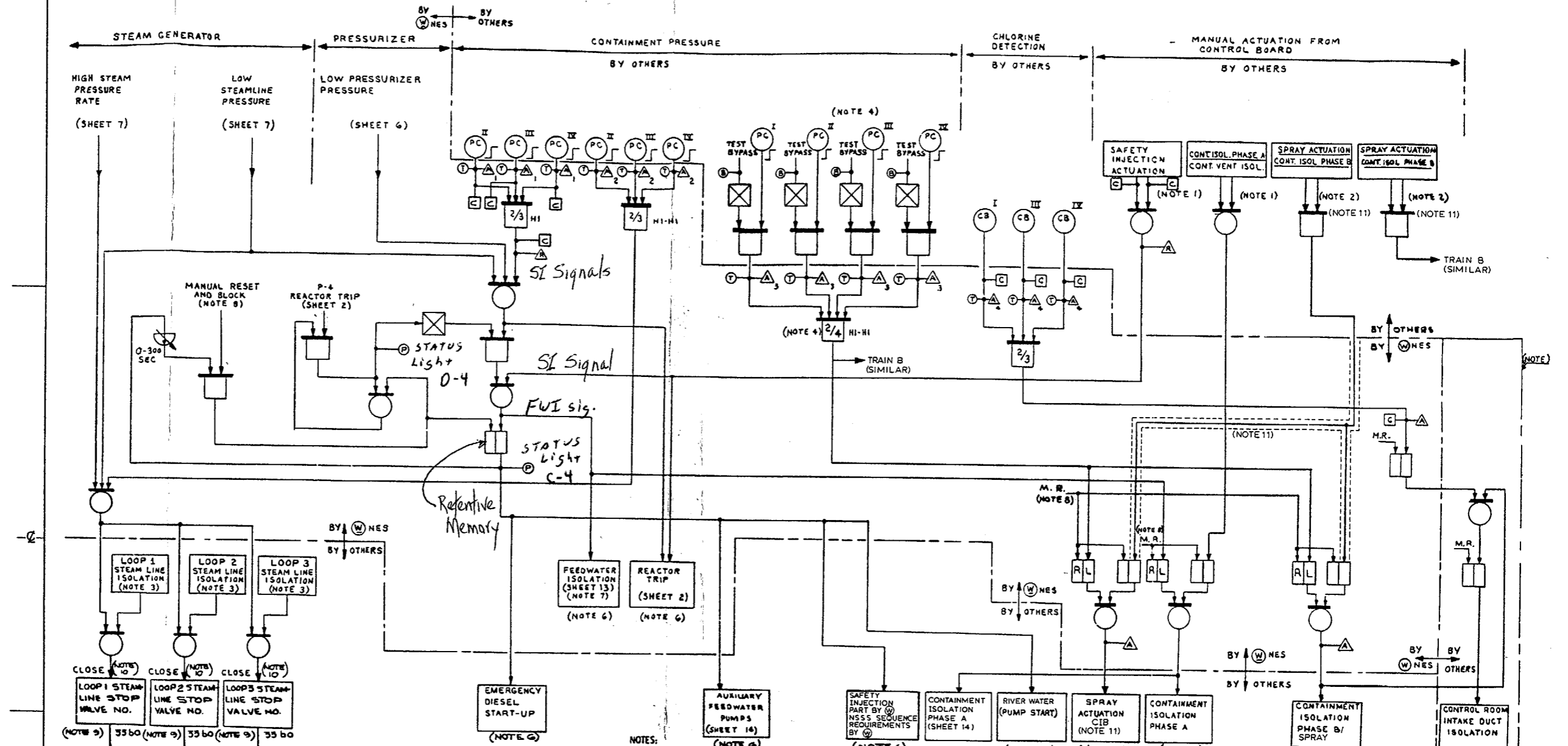
- If offsite power is lost after SI reset, manual actions may be required to restart safeguards equipment.
- Following SI reset, automatic re-initiation of SI will not occur until reactor trip breakers are closed.

\*\*\*\*\*

7. Try To Establish Main FW To At Least One SG

- |   |  |
|---|--|
| <p>a. Check condensate system - IN SERVICE</p> <ul style="list-style-type: none"> <li>• Condensate Pumps - AT LEAST ONE RUNNING</li> <li>• Condenser hotwell level - GREATER THAN 27 INCHES</li> </ul> <p>b. Check FWI - HAS OCCURRED</p> <ul style="list-style-type: none"> <li>• Valves with GREEN FWI mark - CLOSED</li> </ul> | <p>a. Try to place condensate system in service. Refer to 10M-22.4.A, "Condensate System Startup".</p> <p><u>IF NOT, THEN GO TO Step 13.</u></p> <p>b. GO TO Step 7.f.</p> |
|---|--|

(step continued next page)



- NOTES:
1. TWO MOMENTARY CONTROLS; OPERATING OF EITHER CONTROL WILL ACTUATE.
  2. TWO MOMENTARY CONTROLS; ACTUATION IS EFFECTED ONLY IF BOTH CONTROLS ARE OPERATED SIMULTANEOUSLY.
  3. ONE MOMENTARY CONTROL PER LOOP ON THE CONTROL BOARD.
  4. CONTAINMENT PRESSURE BISTABLES FOR SPRAY ACTUATION ARE ENERGIZE-TO-ACTUATE (OTHER BISTABLES ARE DE-ENERGIZE-TO-ACTUATE).
  5. ENCLOSED CIRCUITRY IS NOT PART OF THE SAFEGUARDS SYSTEM.
  6. COMPONENTS ARE ALL INDIVIDUALLY SEALED IN (LATCHED), SO THAT LOSS OF THE ACTUATION SIGNAL WILL NOT CAUSE THESE COMPONENTS TO RETURN TO THE POSITION HELD PRIOR TO THE ADVENT OF THE ACTUATION SIGNAL.
  7. FEEDWATER ISOLATION INCLUDES THE TRIPPING OF ALL MAIN FEEDWATER PUMPS.
  8. THE REDUNDANT MANUAL RESET CONSISTS OF TWO MOMENTARY CONTROLS ON THE CONTROL BOARD, ONE FOR EACH TRAIN. THE MANUAL RESET CONTROLS ARE SUPPLIED BY OTHERS.
  9. LIGHTS SHOULD BE PROVIDED IN THE CONTROL ROOM FOR EACH STEAMLINE STOP VALVE TO INDICATE WHEN THE VALVE IS FULLY CLOSED OR FULLY OPEN.
  10. ALSO CLOSES THE BYPASS VALVE IN PARALLEL WITH THE ASSOCIATED STEAM LINE STOP VALVE.
  11. THE MANUAL ACTUATION CIRCUITS FOR SPRAY AND CONTAINMENT ISOLATION PHASE B ARE NOT REDUNDANT. TRAIN A SHOWN. TRAIN B IS SIMILAR.
- REFERENCES:  
1. DRAWING 365536, SK.6.

FIGURE 7.2-1  
INSTRUMENTATION AND CONTROL SYSTEM  
LOGIC DIAGRAM, SH. 8  
(8700-1.20-65D), (8700-LSK-5-15A,5-15B)  
BEAVER VALLEY POWER STATION UNIT NO. 1  
UPDATED FINAL SAFETY ANALYSIS REPORT

Number FR-H.1	Title Response To Loss Of Secondary Heat Sink	Issue 1C Revision 1
------------------	--	------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7.	(continued from previous page)	
c.	If necessary, reset SI (both trains).	
	<ul style="list-style-type: none"> <li>• Status light "S Inj Act Sig" (Panel 62, C-4) - NOT LIT</li> <li>• Status light "Auto Saf Inj Block" (Panel 62, D-4) - LIT</li> </ul>	
d.	Reset FWI (both trains).	
e.	Open [MOV-1FW-156A,B,C], SG Main FW CNMT Isol Vlvs.	e. <u>IF</u> no [MOV-1FW-156A,B,C], SG Main FW CNMT Isol Vlvs can be opened, <u>THEN GO TO</u> Step 13.
f.	Start one Main FW pump. Refer to 10M-24.4.A, "Steam Generator Feedwater System Startup".	
g.	Feed intact SG to 13% [30% ADVERSE CNMT] narrow range level using [FCV-1FW-479(489)(499)], SG FW Bypass FCV.	g. Locally open [FCV-1FW-479(489)(499)], SG FW Bypass FCV of intact SG.



Examination Outline Cross-reference:	Level	RO	SRO
	Tier #	2	2
	Group #	1	1
	K/A #	061K1.01	061K1.01
	Importance Rating	4.1	4.1

Regarding the AFW system, [1FW-P-3A,] "A" Motor Driven AFW Pump has the capability of feeding   (1)   AFW header(s) and the AFW line to each SG penetrates the CNMT wall through   (2)   CNMT penetration.

- |    |                |                    |
|----|----------------|--------------------|
|    | <u>  (1)  </u> | <u>  (2)  </u>     |
| A. | 1              | the main feed line |
| B. | 1              | its own            |
| C. | 2              | the main feed line |
| D. | 2              | its own            |

**Answer:     A or C**

Technical Reference(s): IOM Figure 24-1 & 24-2

References to be provided during examination:     None

Learning Objective: 08-02-338 ELO 5 & 8

Question Source: \     Bank #  
                                   Modified Bank #  
                                   New                     X

Question History: Previous NRC Exam  
                                   Previous Quiz / Test

Question Cognitive Level: Memory or Fundamental Knowledge:     X  
                                   Comprehension or Analysis

10 CFR Part 55 Content: 55.41   X  
                                   55.43

Comments:

## Answer Key Changes

### Question # 65 (RO & SRO Exam)

The answer to Question # 65 on the RO and SRO exam was changed to accept choice 'A' in addition to the choice 'C'. The basis for this change is as follows:

The intent of the question was to test the knowledge of the AFW piping design in accordance with 1OM-Figure 24-2 (attached) for the Feedwater System. This piping diagram shows that FW-P-3A, "A" Motor Driven AFW Pump is capable of supplying two headers when cross-connected through valve 1FW-040 and hence the rationale for choice 'C' as the correct answer.

However, due to the wording in the stem of the question, it is not clear whether the question is asking for *operational* capability or *design* capability of the system. If the procedural guidance of 1OM-24, "Steam Generator Feedwater System" is considered for the normal operating alignment of the system, then valve 1FW-040 is maintained shut. Furthermore, there is no procedural guidance that directs re-opening this valve under any normal plant conditions. Technical Specification 3.7.1.2.a and b mandate that each Motor Driven AFW Pump must be aligned to a separate supply header for the AFW system to be considered operable in Modes 1 - 4. Given the procedural and Technical Specification requirements, the operational flowpath of the "A" Motor Driven AFW Pump is limited to one header and thus provides justification for choice 'C' as a correct answer.

Given the above and depending on the point of reference the applicant considered in interpreting the meaning of system "capability", either choice 'A' or 'C' can be considered correct.

**CHAPTER 24 VALVE LIST  
SYSTEM DESIGNATOR 1FW**

10M-24.3.B.1  
REVISION 14  
Page 2 of 20

VALVE NO.	VALVE NOMENCLATURE	FIG NO. / GRID	VALVE LOC. / ELEVATION	NSA	INITIALS DATE	2nd INITIALS
23	1B BYPASS FEED ISOLATION	24-1 D4	SERVICE BLDG 767 MFRV ROOM	O	____/____	
24	1G BYPASS FEED ISOLATION	24-1 F4	SERVICE BLDG 767 MFRV ROOM	O	____/____	
25	1A MAIN FEED ISOLATION	24-1 B5	SERVICE BLDG 767 MFRV ROOM	O	____/____	
26	1B MAIN FEED ISOLATION	24-1 D5	SERVICE BLDG 767 MFRV ROOM	O	____/____	
27	1C MAIN FEED ISOLATION	24-1 F5	SERVICE BLDG 767 MFRV ROOM	O	____/____	
33 CHECK	[1FW-P-2] DISCH CHECK	24-2 E7	SFGDS 735 AFW ROOM		____/____	
34 CHECK	[1FW-P-3A] DISCH CHECK	24-2 E2	SFGDS 735 AFW ROOM		____/____	
35 CHECK	[1FW-P-3B] DISCH CHECK	24-2 E4	SFGDS 735 AFW ROOM		____/____	
36	[1FW-P-2] "A" HEADER DISCH ISOLATION	24-2 D7	SFGDS 735 AFW ROOM	LO	____/____	____/____
37	[1FW-P-3A] "A" HEADER DISCH ISOLATION	24-2 D2	SFGDS 735 AFW ROOM	LO	____/____	____/____
38	[1FW-P-3B] "A" HEADER DISCH ISOLATION	24-2 D4	SFGDS 735 AFW ROOM	S	____/____	____/____
39	[1FW-P-2] "B" HEADER DISCH ISOLATION	24-2 D7	SFGDS 735 AFW ROOM	S	____/____	____/____
40	[1FW-P-3A] "B" HEADER DISCH ISOLATION	24-2 D2	SFGDS 735 AFW ROOM	S	____/____	____/____
41	[1FW-P-3B] "B" HEADER DISCH ISOLATION	24-2 D5	SFGDS 735 AFW ROOM	LO	____/____	____/____
42 CHECK	1A SG AUX FEED CHECK	24-1 B7	SFGDS 751 E NEAR CNMT WALL MSVH		____/____	
43 CHECK	1B SG AUX FEED CHECK	24-1 E7	SFGDS 751 CENTER NEAR CNMT WALL MSVH		____/____	
44 CHECK	1C SG AUX FEED CHECK	24-1 G7	SFGDS 751 W NEAR CNMT WALL MSVH		____/____	
50 CHECK	[1FW-P-2] COOLER CHECK	24-2 E7	SFGDS 735 AFW ROOM		____/____	
51 CHECK	[1FW-P-3A] COOLER CHECK	24-2 E2	SFGDS 735 AFW ROOM		____/____	
52 CHECK	[1FW-P-3B] COOLER CHECK	24-2 E4	SFGDS 735 AFW ROOM		____/____	

AUXILIARY FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.2 Three Auxiliary Feedwater (AFW) trains shall be OPERABLE and consist of the following: <sup>(1)</sup>

- a. One motor driven AFW pump with a flow path from WT-TK-10 to each feedwater injection header via the train "A" supply header.
- b. One motor driven AFW pump with a flow path from WT-TK-10 to each feedwater injection header via the train "B" supply header.
- c. One turbine driven AFW pump capable of being powered from two steam supplies <sup>(8)</sup> with a flow path from WT-TK-10 to each feedwater injection header via the designated train supply header.
- d. One feedwater injection header to each steam generator.

APPLICABILITY:

MODES 1, 2, and 3,

MODE 4 when steam generator(s) is relied upon for heat removal.

ACTION:

- a. With one of the two steam supplies to the turbine driven AFW pump inoperable, restore two steam supplies to OPERABLE status within 7 days and within 10 days from discovery of failure to meet the LCO or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With one feedwater injection header inoperable in MODE 1, 2, or 3, be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.

---

(1) Only one AFW train (capable of providing flow to the steam generator(s) relied upon for heat removal), which includes a motor driven pump, is required to be OPERABLE in MODE 4.

(8) With one steam supply inoperable, follow ACTION statement a.