

Level SRO Tier 1 Group 1 K/A# 027 2.4.30 Imp. RO 2.2 Imp. SRO 3.6

- 3. IF Unit 2 is in MODE 1 at 100% power, which set of conditions will require notification of the NRC within 1 hour per 10CFR50.72?
 - a. The "WHITE" pressurizer pressure transmitter (PT-430) fails off-scale high with the pressure control selector switch in the NORMAL position (WHITE-BLUE). RCS pressure drops to 2100 psig during the mitigating actions. A reactor trip does not occur.
 - b. Seat leakage of <0.5 gpm has been verified through pressurizer PORV CV-31231 by acoustic monitor and temperature indication. The leakage is still present with the associated block valve closed. PRT level is rising very slowly. RCS pressure is stable.
 - c. Failure of a pressurizer low level bistable has de-energized all of the pressurizer heaters. The heaters will not turn on in auto or manual control. RCS pressure remains above 2200 psig during the mitigating actions. The bistable is replaced and heaters energized in 55 minutes.
 - d. The PRZR PRESS MASTER CONTROL fails with a constant 90% output. The RO has taken manual control of pressurizer heaters and sprays. RCS pressure remained between 2200 and 2250 psig during the transient. Estimated time to return controller to automatic is 72 hours.

ANSWER: B

- Explanation:
- a Plausible because event caused entry into DNB LCO which seems important.
 - b Correct. These conditions constitute an Unusual Event per F3 and require prompt NRC notification. These conditions also require notification of the NRC resident per SWI-O-28.
 - c Plausible because these conditions require notification of the NRC resident per SWI-O-28 but incorrect because that is only a courtesy notification.
 - d Plausible since this event would disable automatic pressure control which seems important.

Technical References: F3-2, "Classifications of Emergencies"
 T.S. LCO 3.4.9
 SWI-O-28, "Notification of GSPO and NRC Resident Inspector"

Objective: P7410L-050

KA Statement: Emergency Procedures/Plan: Knowledge of which events related to system operations/status should be reported to outside agencies. (Pressurizer Pressure Control Malfunction)

Cog. Level:	HIGH	10CFR55.41:	10CFR55.43:	YES	New Question:	YES
Bank:		Ques. ID:	Modified:		Last NRC Exam:	

Recommend SRO Question #3 be deleted from the examination.

The notification to the NRC was predicated on a Notification of Unusual Event (NUE) declaration per the E-Plan Emergency Action Level (EAL) 1B for a "Failure of a safety or relief valve in a safety-related system to close following reduction of applicable pressure."

The information in the keyed answer stated that the pressurizer PORV has seat leakage and isolation was unsuccessful. However, there was no information provided that indicates whether the PORV opened to reduce RCS pressure. On the far left of Page 3 of F3-2, "Classification of Emergencies," Attachment 1 is the initial logic gate which reads: "PZR safety or relief valve opens and then fails to reseal." Since this condition is not met in the keyed answer choice, the described condition is NOT a NUE.

If this amount of PORV leakage developed at power, it would be addressed by T.S. LCO 3.14.4, "RCS Operational Leakage" and C4 AOP1, "Reactor Coolant Leak." This would require us to notify the NRC Resident Inspector per SWI O-28, "Notification of the GSPO and Resident Inspector," with no specified time limit.

The other answer choices have been reviewed and are still incorrect for the reasons stated on the key. Since there is not adequate information to support a NUE declaration, this question has no correct answer and this question should be deleted from the exam.

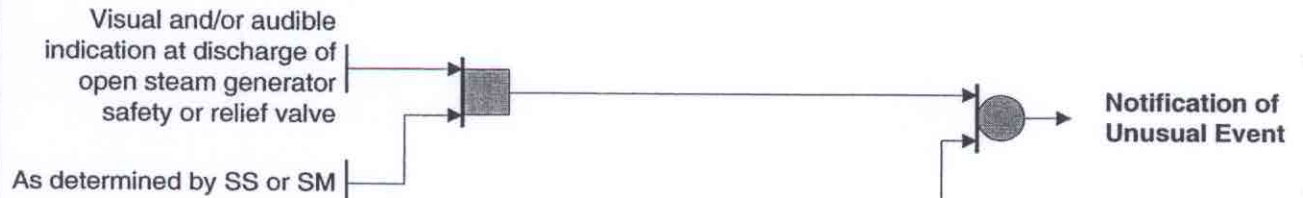
Ref: F3-2, "Classification of Emergencies," Attachment 1, Page 3.
T.S. LCO 3.4.14, "RCS Operational LEAKAGE," page 3.4.14-1
2C4 AOP1, "Reactor Coolant Leak," pages 1 through 8 of 14
SWI O-28, "Notification of the GSPO and Resident Inspector," pages 3 through 5 of 5

Condition 1 : Safety System Functions

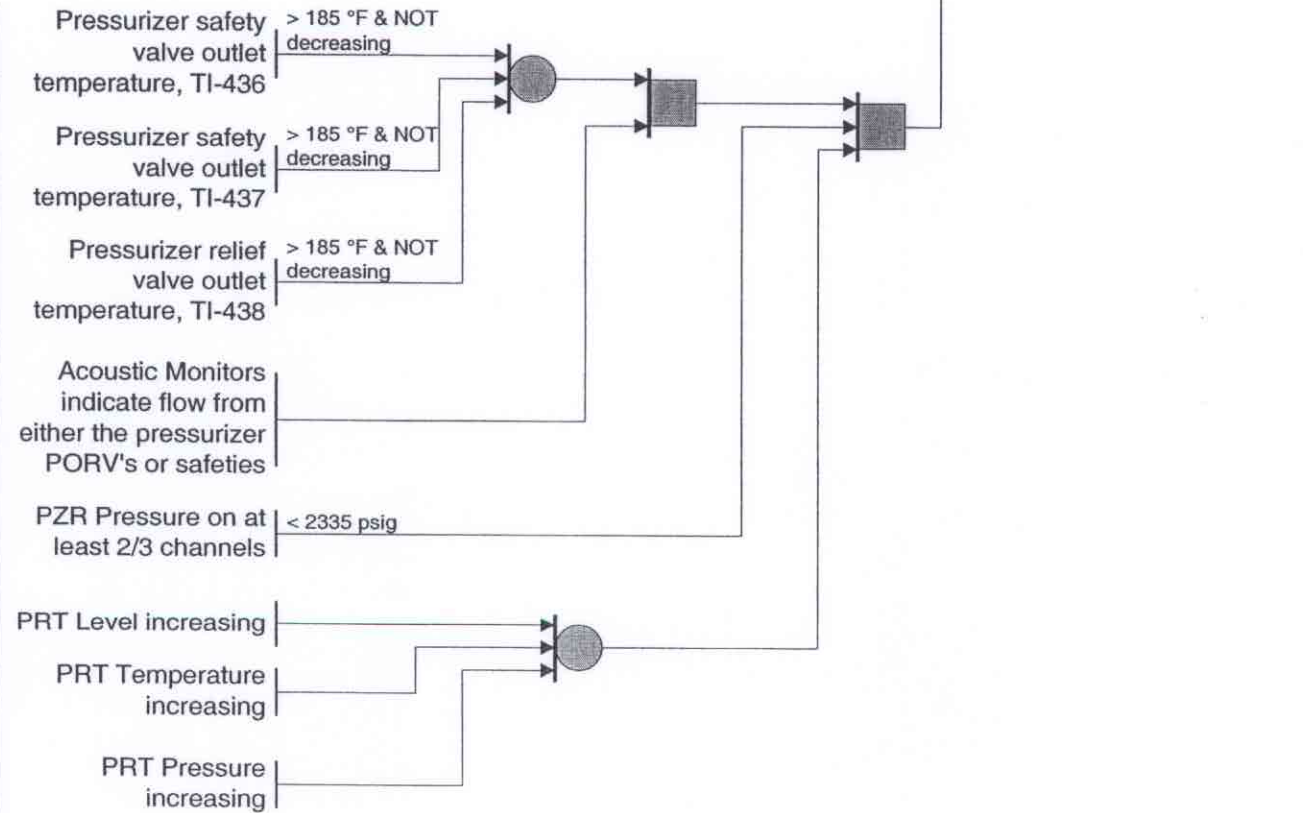
Failure of a safety or relief valve in a safety related system to close following reduction of applicable pressure.

(EAL Ref Manual 1B)

SG safety or relief valve opens and fails to reseal



PZR safety or relief valve opens and then fails to reseal



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Operational LEAKAGE

LCO 3.4.14 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE; and
- d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS unidentified LEAKAGE not within limit.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	B.2.1 Identify LEAKAGE.	54 hours
	<u>OR</u>	
	B.2.2 Be in MODE 5.	84 hours

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<i>CONTINUOUS USE</i>
<ul style="list-style-type: none">• <i>Continuous use of procedure required.</i>• <i>Read each step prior to performing.</i>• <i>Mark off steps as they are completed.</i>• <i>Procedure SHALL be at the work location.</i>

O.C. REVIEW DATE: 12/09/02	OWNER: D. Smith	EFFECTIVE DATE 12/09/02
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1.0 PURPOSE

This procedure describes the symptoms associated with small reactor coolant leakage, the methodology for determining the path of such leakage, and the necessary corrective action.

NOTE:

T.S.3.4.14 RCS Leakage, should be consulted anytime detected or suspected leakage from the reactor coolant system is being investigated or evaluated.

2.0 PROCEDURES

2.1 Symptoms

2.1.1 Control Room

- A. Decreasing pressurizer level or level deviation alarm.
- B. Charging pump speed increase due to increased abnormal make-up.
- C. Decreasing VCT level.
- D. Daily leak rate surveillance.
- E. Increased radiation levels on 2R-2, 7, 11, 12, 15, 19, 22, 30, 37 or 39.
- F. Annunciator **47516-0502** OR **47516-0503**, RHR PUMP HIGH PRESS
- G. Annunciator **47515-0203**, CHARGING PUMP IN AUTO HI/LO SPEED.
- H. Annunciator **47520-0203**, 21 CC SURGE TANK HI/LO LVL

2.1.2 Local

- A. Boric acid accumulation.
- B. Leaking pipes - water or steam.

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2.2 Automatic Actions

- 2.2.1 Charging pump speed increase in response to decreasing pressurizer level.
- 2.2.2 VCT automatic make-up.
- 2.2.3 Letdown isolation on low pressurizer level.

2.3 Immediate Manual Actions

NONE

2.4 Subsequent Manual Actions

- 2.4.1 IF, at any time, RCS inventory can not be maintained by available charging flow, THEN **perform** the following:
 - A. Manually **trip** the reactor - **enter** 2E-0, Reactor Trip or Safety Injection. _____
 - B. WHEN reactor is verified tripped, THEN **initiate** Safety Injection. _____
 - C. **Exit** this procedure. _____
- S 2.4.2 **Start** additional charging pumps as needed to control pressurizer level. _____
- S 2.4.3 IF VCT level cannot be maintained by the make-up system, THEN **align** charging pump suction to the RWST. _____
- 2.4.4 **Use** ERCS "LEAK" Program and/or Control Board indications to **determine** approximate leak rate. _____
- 2.4.5 **Determine** the location of the leak using Figure 1 and the associated tables, if necessary. _____
- 2.4.6 **Isolate** the leak, if possible. _____
- 2.4.7 IF leakage is identified as steam generator tube leakage, THEN **refer** to 2C4 AOP2, Steam Generator Tube Leak. _____

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2.4.8 IF unable to identify the source of the leak using Tables 1, 2, 3, or 4 THEN attempt to locate the leak by sequentially isolating service systems from the RCS using steps A thru E below.

A. **Remove** Letdown from service as follows:

1. **CLOSE** the following:

- a. **CV-31347**, 40 GPM ISOLATION, using **CS-49522**. _____
- b. **CV-31348**, 40 GPM ISOLATION, using **CS-49521**. _____
- c. **CV-31349**, 80 GPM ISOLATION, using **CS-49537**. _____

2. **CLOSE CV-31279**, LETDOWN LINE ISOLATION, using **CS-49667**. _____

3. **CLOSE CV-31230**, LETDOWN LINE ISOLATION, using **CS-49536**. _____

4. **Determine** by ERCS "LEAK" program and/or Control Board indications if the leak is isolated. _____

5. IF the leak is isolated, THEN refer to 2C12.1 AOP3 Loss of Letdown Flow To The VCT. _____

B. IF the leak is not isolated, THEN **remove** Excess Letdown from service as follows:

1. **CLOSE CV-31422**, EXCESS LETDOWN HX INLT, using **CS-46896**. _____

2. **Determine** by ERCS "LEAK" program and/or Control Board indications if the leak is isolated. _____

3. IF the leak is isolated, THEN refer to 2C12.1 to remove Excess Letdown From Service. _____

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C. IF the leak is not isolated, THEN isolate Charging to the RCS as follows:

1. **Place** speed control for all operating charging pumps in "MANUAL." _____

2. IF one (1) charging pump is running, THEN reduce charging pump speed while **CLOSING CV-31211**, CHG LINE FLOW CONT, and maintaining seal injection flow of 6-10 gpm to each RCP. **Continue** until charging line flow control valve is fully CLOSED. _____

3. IF two (2) charging pumps are running, THEN stop one (1) of the pumps as follows:
 - a. **Reduce** charging pump speed while **CLOSING CV-31211**, CHG LINE FLOW CONT, and maintaining seal injection flow of 6-10 gpm to each RCP. **Continue** until the selected charging pump is at minimum speed. _____

 - b. **Adjust CV-31211**, CHG LINE FLOW CONT, until seal injection flow is approximately 9.5 gpm, then **stop** the selected charging pump. _____

 - c. **Adjust** the speed of the inservice charging pump and **CV-31211** to maintain seal injection flow of 6-10 gpm to each RCP. **Continue** until charging line flow control valve is fully CLOSED. _____

4. **Determine** by ERCS "LEAK" program and/or Control Board indications if the leak is isolated. _____

5. IF the leak is isolated, THEN refer to 2C12.1 AOP2, Loss Of Charging Flow To The Regen HX. _____

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- s D. IF the leak if not isolated, THEN CLOSE CV-31420, 21 REGEN HX CHG LINE TO RCS CV, and **perform** the following:
1. **Determine** by ERCS "LEAK" program and/or Control Board indications if the leak is isolated. _____
 2. IF the leak is isolated, THEN refer to 2C12.1 AOP2, Loss of Charging Flow to the Regen HX. _____

NOTE:	Minimize the amount of time that RCP seal injection is isolated.
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- E. IF the leak is not isolated, THEN isolate Charging to the RCP Seals as follows:
1. **Verify OPEN CV-31247**, 21 RCP THERMAL BARRIER HX OUTLET. _____
 2. **Verify OPEN CV-31248**, 22 RCP THERMAL BARRIER HX OUTLET. _____
 3. **Stop** the inservice Charging Pump(s). _____
 4. **Determine** by ERCS "LEAK" program and/or Control Board indications if the leak is isolated. _____
 5. IF the leak is isolated, THEN refer to 2C12.1 AOP1, Loss Of RCP Seal Injection. _____
 6. IF the leak is NOT isolated, THEN restore RCP seal injection. _____

NOTE:	<u>IF</u> shutdown is required by Tech Specs, <u>THEN</u> refer to F3-2 for possible Emergency Plan classification and actions.
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- 2.4.9 **Comply** with T.S.3.4.14. _____
- 2.4.10 **Notify** the GSPO and Resident Inspector of entry into this AOP per SWI O-28. _____

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2.5 Recovery Actions

2.5.1 IF leakage is within the allowable limits of T.S.3.4.14 or has been isolated such that normal operation can continue, THEN **restore** system controls as necessary. _____

2.5.2 **Return** unaffected service systems to normal line-up. _____

3.0 ATTACHMENTS

- 3.1 Figure 1 - Leak Area Identification
- 3.2 Table 1 - Containment Leak Location
- 3.3 Table 2 - Annulus Leak Location
- 3.4 Table 3 - Auxiliary Building Leak Location
- 3.5 Table 4 - Steam Generator Leak Location

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- 3.1.5 Exceeding T.S. LCO out of service **(IT.S. T.S. Required Action Completion)** times
- 3.1.6 Entry into T.S.3.0.C **(IT.S. LCO 3.0.3)**
- 3.1.7 Industrial accidents resulting in transport by ambulance
- 3.1.8 Entry into any AOP listed in Appendix A
- 3.2 In addition to the above notification, the GSPO **SHALL** be notified for the following:
- 3.2.1 Unplanned entry into an LCO Action Statement **(IT.S. Condition)**
- 3.2.2 Going past 50% of an LCO Action Statement **(IT.S. Required Action Completion)** time
- 3.2.3 Challenge to Plant Operation
- Major Equipment Loss or Degradation
 - Plant Transient
- 3.2.4 Human Performance Error potentially Resetting Ops HP Clock (includes mispositionings)
- 3.2.5 Any unplanned reactivity change
- 3.2.6 Personnel Injury
- 3.2.7 Items which, in the SM's opinion, will receive management attention

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- 3.3** When notification of the NRC Resident Inspector is required, use the NRC Resident Inspector call list which is updated by the residents.

If unable to contact any NRC Resident Inspector, call the NRC Operations Center in Bethesda, Maryland via ENS phone. Inform the Duty Officer that you were unable to contact an NRC Resident Inspector and request him/her to have appropriate Region III Section contact Prairie Island.

- 3.4** NRC Resident Inspector notifications should be logged.
- 3.5** Review 5AWI 3.6.0, Reporting and 5AWI 3.6.4, Intra-NSP Notifications Regarding Plant Event or Conditions to determine whether or not there are any additional reporting requirements.

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Appendix A

- 1C4 AOP1 [2C4 AOP1], REACTOR COOLANT LEAK
- 1C4 AOP2 [2C4 AOP2], STEAM GENERATOR TUBE LEAK
- 1C5 AOP1 [2C5 AOP1], UNCONTROLLED WITHDRAWAL OF AN RCCA
- 1C5 AOP2 [2C5 AOP2], UNCONTROLLED INSERTION OF AN RCCA
- 1C5 AOP3 [2C5 AOP3], MISALIGNMENT OF GROUPS WITHIN A BANK
- 1C5 AOP5 [2C5 AOP5], MISALIGNED ROD, STUCK ROD AND/OR RPI FAILURE
- 1C14 AOP1 [2C14 AOP1], LOSS OF COMPONENT COOLING
- 1C15 AOP1 [2C15 AOP1], RHR FLOW RESTORATION
- 1C15 AOP2 [2C15 AOP2], LOSS OF COOLANT INVENTORY WITH RHR IN OPERATION
- 1C15 AOP3 [2C15 AOP3], RHR LOCAL OPERATION WITHOUT CONTROL ROOM INSTRUMENTATION/FLOW CONTROL
- 1C20.5 AOP1 [2C20.5 AOP1], REENERGIZING 4.16KV BUS 15 [25]
- 1C20.5 AOP2 [2C20.5 AOP2], REENERGIZING 4.16KV BUS 16 [26]
- 1C23 AOP1 [2C23 AOP1], AUTO TURBINE RUNBACK
- C28.1 AOP1, STEAM BINDING OF AN AUXILIARY FEEDWATER PUMP
- C35 AOP2, LOSS OF PUMPING CAPACITY OR HEADER WITHOUT SI
- D14.3 AOP1, RESPONSE TO AN OIL SPILL (EMERGENCY RESPONSE ONLY)