

PROCEDURE REQUEST/WORK ORDER

TITLE: Loss of Inventory in the RCS

PROCEDURE  
No. C-8

PURPOSE / JUSTIFICATION:

Provide procedure for potential contingency  
if needed

ASSUMPTIONS / INITIAL CONDITIONS / CRITERIA:

See attached C-8

DISTRIBUTION:

- Superintendent, TMI-2
- Control Room, TMI-2
- On Site Tech Support - Admin Assist.
- On Site Tech Support Group Leader
- J. G. Herbein
- R. C. Arnold
- F. Stern
- R. F. Wilson

Tech Support Files  
Data Reduction & Management  
Group

REVIEW AND APPROVAL REQUIREMENTS / KNOWN REFERENCES

199 015

ASSIGNED TO: Tech Support Procedures

[Signature]  
APPROVAL

CONTINGENCY PLAN C-8

Rev. 0

## Loss of Primary Coolant Inventory

Note: The calculated leakage from the primary (assumed to be through primary relief valves) was \_\_\_\_\_ gpm at \_\_\_\_\_ psig on April \_\_\_\_\_, 1979.

1. Primary coolant inventory includes the volume of water in the Reactor Coolant System and the Makeup and Purification System. Under steady state temperature (RCS) and pressure conditions, the immediate indication of a reduction in Primary Coolant inventory is a decrease in pressurizer level and/or makeup tank level.
2. A reduction in primary coolant inventory can be attributed to numerous conditions; however, in each situation RCS inventory losses must be:
  - a) replenished using water from either the BWST, RC bleed holdup tanks or the Boric Acid-Chemical Addition and Demineralized service water systems
  - b) identified as to source of leakage -- within the containment building (RCS leakage), or outside the containment building (Makeup and purification system leakage)
  - c) contained and, if possible, stopped to prevent unnecessary release of containment water.
3. Immediate Action
  - a) Attempt to maintain RCS inventory (constant pressurizer level) by increasing RCS makeup through the makeup flow control valve MU-V17 to maintain a constant pressurizer level.
  - b) If RCS inventory cannot be maintained with normal makeup through MU-V17:
    - 1) Divert makeup pump suction from the makeup tank to the BWST and secure letdown.
    - 2) Increase RCS makeup through the high pressure injection line by opening the HPI injection valves (MU-V16A,B,C,D) associated with the operating Makeup pump. MU-V17 should be closed; don't exceed pump flow limitations \_\_\_\_\_ gpm.
    - 3) Secure makeup pump recirculation to prevent overflowing the makeup tank.

199 016

3. Immediate Action (continued)

c) If RCS inventory can be maintained with normal makeup through MU-V17:

- 1) Replenish makeup tank inventory using the RC bleed tanks or boric acid (chemical addition) and demineralized s... e water systems as the source of makeup water.

Note: Makeup water should be of sufficient boron concentration to prevent dilution of the RCS.

4. Follow-up Action: To Determine Source of Leakage

a) Determine the location of the leakage (i.e., inside containment/ outside containment).

- 1) Where pressurizer level is constant and RCS makeup (through MU-17) plus RCP seal injection (4 RCP's) is greater than RCS letdown and RCP seal return flow (4 RCP's) leakage in containment.

b) Sources of leakage that should be checked.

<u>Source</u>	<u>Indication</u>
1) RCP seal leakage past third (upper seal) to RC Drain Tank	1) RCP high standpipe level alarm, erratic RCP seal cavity pressures (also high third seal cavity pressures).
2) Steam generator tube failure primary/secondary leakage	2) increasing steam generator level and activity
3) Pressurizer Code Safety valves weeping	3) Increasing temperatures in relief line downstream of code reliefs.
4) PZR electrometic relief block valve (RC-V2) not fully closed	4) Increasing temperature in relief line downstream of PZR electrometic relief valve and possible decreasing RCS pressure.
5) Letdown cooler leak tube failure	5) Leakage to ICCW system - increasing temperature on ICCW return from letdown cooler. Activity in ICCW system.
6) Pipe break inside containment	6) RCS makeup through MU-V17 or MU-V16A,B,C,D considerably greater than letdown and seal return total flow.

4. Follow-up Action: To Determine Source of Leakage (continued)

<u>Source</u>	<u>Indication</u>
7) RCP-ICCW seal heat exchanger leak - tube failure	7) Leakage to ICCW system increasing temperature on ICCW return from RCP-ICCW seal heat exchanger. Activity in ICCW system.
8) Letdown inadvertently being diverted to RC Bleed hold-up tanks	8) Decreasing MU tank level, MU-V8 not in proper lineup.
9) Makeup pump seal failure leakage	9) Degradation in MU pump performance with regard to increasing bearing temperatures
10) Seal return cooler leak, tube failure	10) Activity in the Nuclear Services Closed Cooling Water System.

5. Follow-up Action to Stop Leakage or Contain Leakage

- a) Where leakage is determined to be in the CTMT, measures should be taken to stop/minimize the leakage.
- b) Where leakage is determined to be in the auxiliary building (outside CTMT), the leakage should be stopped by isolating the source where possible.
- c) Where leakage is determined to be into a cooling water system, that portion of the cooling water system should be isolated.

Accession Number 7906140461  
Document Date 04/11/1979  
Estimated Page Count 4  
Document Type TECHNICAL SPECIFICATIONS & TEST REPORTS  
TEST/INSPECTION/OPERATING PROCEDURES  
Title Contingency Plan C-8:loss of primary coolant inventory.  
Author Affiliation METROPOLITAN EDISON CO.  
Author Name  
Availability Publicly Available  
Microfiche Address 00199:014-00199:018  
Sensitivity Non-Sensitive  
Package Number 7906140461