

CONTROLLED COPY CENTRAL FILE

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 ABNORMAL PROCEDURE 2203-1.5
LOSS OF RC MAKEUP

G/11m 143
2203-1.5
Revision 2
09/07/78

Table of Effective Pages

<u>Page</u>	<u>Date</u>	<u>Revision</u>	<u>Page</u>	<u>Date</u>	<u>Revision</u>	<u>Page</u>	<u>Date</u>	<u>Revision</u>
1.0	02/24/77	0	26.0			51.0		
2.0	09/07/78	2	27.0			52.0		
3.0	09/07/78	2	28.0			53.0		
4.0			29.0			54.0		
5.0			30.0			55.0		
6.0			31.0			56.0		
7.0			32.0			57.0		
8.0			33.0			58.0		
9.0			34.0			59.0		
10.0			35.0			60.0		
11.0			36.0			61.0		
12.0			37.0			62.0		
13.0			38.0			63.0		
14.0			39.0			64.0		
15.0			40.0			65.0		
16.0			41.0			66.0		
17.0			42.0			67.0		
18.0			43.0			68.0		
19.0			44.0			69.0		
20.0			45.0			70.0		
21.0			46.0			71.0		
22.0			47.0			72.0		
23.0			48.0			73.0		
24.0			49.0			74.0		
25.0			50.0			75.0		

Unit 1 Staff Recommends Approval

Approval NA Date —
Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval NA Date —
Cognizant Dept. Head

Unit 1 PORC Recommends Approval

NA Date —
Chairman of PORC

Unit 2 PORC Recommends Approval

RP Warren Date 9/1/78
V-Chairman of PORC

Unit 1 Superintendent Approval

NA Date —

Unit 2 Superintendent Approval

JL Leal Date 9/7/78

Manager Generation Quality Assurance Approval NA Date —

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 ABNORMAL PROCEDURE 2203-1.5
LOSS OF RC MAKEUP

1.0 SYMPTOMS

1. Operating MU Pump tripped and standby MU Pump not running or providing sufficient makeup.
2. Makeup flow indication abnormal.
3. MU Pump discharge header pressure high (2850 psig) or low (2400 psig) as indicated on Panel 3.
4. Low seal injection flow to RCP seals as indicated on Panel 3.
5. Decreasing pressurizer level with no change in RCS temperature or letdown flow.

2.0 IMMEDIATE ACTION

A. Automatic Action

1. Decreasing flow caused MU-V32 RCP seal injection flow control valve to open and decreasing pressurizer level will open MU-V17.

B. Manual Action

1. CLOSE MU-V376, Letdown Isolation.
2. Determine cause for loss of R.C. Makeup.
 - a. Operating and Standby MU pumps tripped.
 - b. MU-V17 closed.
 - c. Low Level in MU Tank.

3.0 FOLLOW-UP ACTION

1. MU Pumps Tripped

- a. Verify IC flow to RCP's by flow on IC-5-FI between 550 - 1000 gpm.

- b. Place MU-V17 and 32 control stations to manual and close.

NOTE: The MU system is normally line-up such that the "B" Pump is running powered from BUS 2-1E with the "A" Pump as its backup, or with the "B" Pump running powered from BUS 2-2E with the "C" Pump as its backup, as determined by the Backup Start Selector and System Valve Line-up.

- c. Attempt to restart one of the tripped MU Pumps. If unsuccessful open DH-V5A (B) and maintain pressurizer level with the High Pressure Injection MU Pump controlling flow with MU-V16A, B, C or D.
- d. Slowly re-establish RCP Seal Injection Flow per 2203-1.4 and place MU-V32 control station to auto.

NOTE 1: Limit RC Pump radial bearing temperature decrease to not more than $1^{\circ}\text{F}/\text{min}$.

NOTE 2: If RC pump seal temperatures T_1 or T_4 exceeded 180°F , if T_3 is $>170^{\circ}\text{F}$, or if seal leakage plus seal return is >1.9 gpm, shutdown and inspect the RCP seals.

- e. Re-establish pressurizer level and place MU-V17 control station to auto.

if. Restore letdown flow by opening MU-V376.

2. MU-Pump Operating, MU-V17 Failed Closed

- a. Shift MU-V17 MU flow control station to manual and restore pressurizer level.
- b. If MU-V17 control station has failed, take local control of valve and restore makeup flow. MU-V17 bypass valve MU-V155 may also be used.

c. Restore letdown flow by opening MU-V376.

3. Loss of MU Due to Low Level in MU Tank

NOTE: Loss of reactor coolant may exhibit some similar symptoms. If any doubt exists, follow 2202-1.3, Loss of Reactor Coolant/RCS Pressure.

- a. Trip the operating Makeup Pump and close MU-V32.
- b. Verify IC flow to RCP's by flow on IC-5-FI between 650 - 1000 gpm.
- c. Fill the MU Tank from the applicable RC Bleed/Holdup Tank per 2104-1.2.
- d. If unable to establish MU Tank level in step "c" proceed as follows:
 1. Close MU-V12 and establish suction from the BWST to a MU pump by opening DH-V5A (3), (DH-V147A (3) are locked open).
 2. Start the Backup Make Up Pump. Restore makeup and slowly open MU-V32 to re-establish seal injection to the RCP seals per 2203-1.4.
 3. If RC pump seal temperatures T_1 or T_4 exceeded 180°F , if T_3 is $>170^{\circ}\text{F}$, or if seal leakage plus seal return is >1.9 gpm, shutdown and inspect the RCP seals.
- e. Restore letdown flow by opening MU-V376.