

# CONTROLLED COPY CENTRAL FILE

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## THREE MILE ISLAND NUCLEAR STATION UNIT #2 EMERGENCY PROCEDURE 2202-2.6

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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

R.P. Warren Date 10/6/79  
v - Chairman of PORC

Unit 1 Superintendent Approval

NA Date     

Unit 2 Superintendent Approval

J. L. L. L. L. Date 10/6/79

Manager Generation Quality Assurance Approval

NA Date

THREE MILE ISLAND NUCLEAR STATION  
UNIT #2 EMERGENCY PROCEDURE 2202-2.6  
OTSG TUBE RUPTURE

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DO NOT REMOVE

1.0 SYMPTOMS

- A. Initial loss of reactor coolant pressure and decrease in pressurizer level becoming stable after short period of time.
- B. Make-up tank level decreasing
- C. VA-R748 off gas monitor alarm.
- D. Secondary sample analysis indicates activity in the secondary side.

2.0 IMMEDIATE ACTION

A. Automatic Action

1. MU-V17 will open to compensate for reduced pressurizer level.

B. Manual Action

1. Verify MU-V17 is maintaining pressurizer level at 220". Close MU-V376 and start an additional make-up pump if pressurizer level drops to 200".
2. Verify VA-R748 alarm.
3. Notify Unit I Control Room and isolate steam to Unit I by closing AS-V23.
4. Direct chemistry department to sample both OTSG's and analyze for radioactivity  $\alpha$ ,  $\gamma$ ,  $^3\text{H}$ , I-133, Cs-137) to determine which OTSG has the leak.
5. Using an RM-14, or equivalent instrument, take a gamma reading in each steam line outside the Reactor Building. Attempt to take the readings on each steam line as close to the same relative position as possible.

6. Based on the readings taken in 4 above, attempt to determine which OTSG has the leak.
7. If make-up-tank level is decreasing at greater than 10 GPM (1 inch/3 minutes) and VA-R748 is in alarm, immediately begin reducing load at 10%/minute.
8. CLOSE the affected OTSG's atmospheric dump valve isolation valve (MS-V1A or B) to eliminate the potential of leakage and an unwarranted release.
9. If desired to aid in determining which OTSG is leaking, dump all MSR drains to the condenser per 2106-3.1.

C. Follow-Up Action

1. If make-up-tank level is not decreasing at greater than 10 GPM, calculate the RCS leak rate per Surveillance Procedure 2301-3D1. If the identified leak rate exceeds 10 GPM or primary to secondary OTSG tube leakage exceeds 1 GPM or unidentified leakage exceeds 1 GPM proceed with Technical Specification 3.4.6.2 Action Statement.
2. If make-up-tank level is decreasing at greater than 10 GPM and VA-R748 is in alarm proceed as outlined below.
  - a. At 15% power place diamond in manual and fully insert the regulating groups 7, 6, and 5 (this is to reduce likelihood of lifting secondary safety valves).
  - b. While reducing Rx Power to zero by inserting rod groups 7, 6, and 5, go to manual on the turbine bypass valves and open the turbine bypass valves to take steam from the turbine and thereby reduce load.



**CAUTION:** Do not increase OTSG Levels to 97-99% on the Operating Levels to avoid a possible R.C.S. Boron Dilution Accident during subsequent plant cooldown.

- c. Trip the turbine. Then place the turbine bypass valves back to automatic and verify the turbine bypass valves maintain header pressure at 895 psig.
- d. Follow up on chemistry analysis requested in Step 4 of manual action. Verify that gamma analysis has been performed in accordance with HP-1950 on samples taken from below listed points. For a large rupture (greater than 50 gpm leakage) the leaking OTSG level will hang up. For smaller leaks (Sodium-24) chemistry analysis will have to be used to determine which OTSG has the leak.

Steam Generator Inlet A

Steam Generator Inlet B

Main Steam A

Main Steam B

Secondary Side Stm. Gen A

Secondary Side Stm. Gen B

- e. Isolate the effected OTSG by closing the following on the effected OTSG when RCS Th is  $<545^{\circ}\text{F}$ .

Main FW Reg. Valve                      FW-V30 A or B

Main FW Block Outlet Valve              FW-V17 A or B

S.U. FW Reg. Valve                      FW-V25 A or B

S.U. FW Block Inlet Valve                FW-V25 A or B

S.U. FW Block Outlet Valve	FW-V19 A or B
Bypass FW S.V. Valve	FW-V66 A or B
Emerg. FW Reg. Valve	EF-V11 A or B
Emerg. FW Block Valve	EF-V12 A or B
Emerg. FW Reg. Valve Bypass	EF-V33 A or B
Emerg. FW Block Valve Bypass	EF-V32 A or B
Turbine Bypass Valves	MS-V25 A or B
	MS-V26 A or B
Turbine Bypass Block Valves	MS-V23 A or B
	MS-V24 A or B
Main Stm. Isolation Valves	MS-V4 A or B
	MS-V7 A or B
Stm. Gen. Reheat Stm.	MS-V15 A or B
Isolation Valves	

Assure the FW pump for the unaffected OTSG is running, or run the FW pumps off of Auxiliary steam.

**CAUTION:** The "A" FW Pump Turbine receives HP Steam from the "B" OTSG and the "B" FW Pump Turbine receives HP Steam from the "A" OTSG.

**NOTE:** Monitor isolated steam generator pressure, and if it approaches 1050 psig (MS relief valve setpoint) re-establish a flowpath to the condenser via the turbine bypass valves.

- f. Take manual control of main and startup reg. valves and adjust unaffected OTSG level as needed to obtain a Tave of 532°F.

- g. Place Pressurizer Pressure Controller in manual and adjust output to maintain RCS Pressure at 1850 psig. Turn pressurizer heater banks 4 & 5 off.

NOTE: This will aid in lowering primary to sec. leak rate.

- h. Open the MU pump suction valve from the BWST DH-V5 A and B and isolate MU-V12 if required, due to low make-up-tank level.
- i. Begin a cooldown to cold shutdown as soon as possible in accordance with 2102-3.2 to minimize inleakage to the affected OTSG.
- j. Open breakers for the following sump pumps to terminate any potential radioactive release:

Turbine Building Sump Pumps

SD-P-1A Unit 3B MCC 2-31A

SD-P-1B Unit 9C MCC 2-41A

Control Building Area Sump Pumps

SD-P-3A Unit 4B MCC 2-31C

SD-P-3B Unit 5C MCC 2-41C

- k. CLOSE the following valves:

\_\_\_ SD-V48 Control Building area sump discharge to non-radioactive waste treatment building sump.

\_\_\_ SD-V38 Turbine Building Sump discharge to non-radioactive waste treatment building sump.

\_\_\_ WDL-V1160 Secondary Chem. Lab drain to control and service building sump.



1. OPEN or insure OPEN the following valves:

\_\_\_ WT-V123A(B) Cond. Polisher reg. sump discharge to  
WDL misc.

CAUTION: Insure spool piece is in place between  
WDL-V403(404) and WDL-V361.

\_\_\_ WDL-V403(404) Cond. Polisher reg. sump discharge to  
WDL Misc. spool piece isol.

\_\_\_ WDL-V361 Con. polisher reg. sump discharge to WDL-F  
8A/B.

\_\_\_ SD-V29A Control Building area sump discharge to  
condensate polisher regeneration sump.

\_\_\_ SD-V28A Turbine Building sump discharge to Cond.  
polisher reg. sump.

\_\_\_ WDL-V1159 Secondary Chem Lab Drain to Cont. Drain  
Tanks.

- m. Insure WT-R3894 and 3895 are operating properly to  
direct radioactive wastes to the WDL Misc. System.
- n. CLOSE BREAKERS OPENED IN STEP h.
- o. Notify Health Physics to begin surveys of the Control  
Building area and Turbine Building to determine the  
need for controlled areas. Initiate Emergency Plan  
if required, as a result of the surveys.