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THREE MILE ISLAND NUCLEAR STATION
UNIT #2 EMERGENCY PROCEDURE 2202-1.4
LOSS OF RC FLOW/RC PUMP TRIP

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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 2/7/79

Chairman of PORC

Unit 1 Superintendent Approval

NA Date —

Unit 2 Superintendent Approval

J B Fogarty Date 2/8/79

Manager Generation Quality Assurance Approval NA Date —

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THREE MILE ISLAND NUCLEAR STATION

UNIT #2 EMERGENCY PROCEDURE 2202-1.4

LOSS OF RC FLOW/RC PUMP TRIP

1.0 SYMPTOMS

1.1 Annunciator Alarm for Auto Trip of R.C.P.

1.1.1 Instantaneous Phase Overcurrent

1.1.2 Time Delay Phase Overcurrent

1.1.3 Thermal Overload

1.1.4 Running Undervoltage

1.1.5 Phase Balance

1.1.6 Differential Overcurrent.

1.1.7 Loss of Seal Injection and I.C. Cooling Water.

1.2 R.C. Pump Light above Control Switch goes from red to green.

1.3 Conditions requiring manual trip of R.C. Pump.

1.3.1 Motor Guide bearing temperature exceed 185°F.

RCP	Computer Point	
	Upper Bearing	Lower Bearing
1A	0434	0438
2A	0435	0439
1B	0436	0440
2B	0437	0441

1.3.2 Motor thrust bearing temperature exceed 200°F.

RCP	Computer Point	
	Downthrust	Upthrust

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1A	0426	0430
2A	0427	0431
1B	0428	0432
2B	0429	0433

1.3.3 Motor stator temp exceeds 302°F (150°C).

RCP	Computer Point
1A	0442
2A	0443
1B	0444
2B	0445

1.3.4 RCP seal staging water temp exceeds 185°F.

RCP	Computer Point
1A	0418
2A	0419
1B	0420
2B	0421

1.3.5 Air cooler leak detector alarms.

1.3.6 Shaft vibration exceeds:

a. 26 mils for 1 or 2 pump per loop operation or

b. 30 mils for first 4 hours of 1 pump per loop operation.

1.3.7 Either seal cavity pressure exceeds 2500 psig.

1.3.8 Loss of total seal injection and Intermediated Closed Cooling Flow.

1.3.9 Seal staging flow plus seal leakage flow exceeds 1.91 g.p.m.

1.3.10 Loss of cooling water to the motors.

1.3.11 Motor stand vibration > 3 mills.

2.0 IMMEDIATE ACTION

2.1 Automatic Action.

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2.1.1 Loss of one (1) RC Pump or one (1) pump per loop will result in a runback to 75% or 45% neutron power respectively. If the ICS cannot respond quickly enough to avoid exceeding the RPS setpoints, a Reactor and Turbine trip will result.

2.1.2 Loss of two (2) RC Pumps in one loop or loss of more than two (2) pumps will result in a Reactor and Turbine trip initiated by the RPS.

2.1.3 Lift pumps and back-stop pumps Auto-start on loss of RC pump.

2.1.4 Emergency Feedwater Pumps Auto-Start and EFW flow occurs upon loss of four (4) RC Pumps. Steam Generator level will increase to 50% on operating range.

2.1.5 If the Reactor does not trip and both feedwater Control Stations are in Auto and not on low level limits, the feed flow will be ratioed according to the number of pumps still operating.

2.2 Manual Action.

2.2.1 Verify that the unit has runback to the Power Level allowable for the RC Pump Combination.

NOTE: If any ICS station in Hand, run station back in manual.

2.2.2 If a condition arises which necessitates manual tripping of a pump, reduce to appropriate power levels if possible prior to tripping pump, start the oil pumps and trip R.C. pump.

2.2.3 Verify Feedwater flows are rationed approximately 2.41 to 1 for loss of one RC pump.

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2.2.4 Verify Lift Pumps and Back-Stop Pumps have Auto-Started, if not, start the oil pumps.

2.2.5 If any of the following ICS stations are in Hand (Steam Generator/ Reactor Demand, either Feedwater Demand, Main or Startup Feedwater Valve Demand, Feedpump Speed, Reactor Master, and/or Diamond) runback the appropriate ICS stations corresponding to plant conditions.

3.0 FOLLOW-UP ACTION

3.1 After pump reaches zero speed, shutdown lift pumps and Back-Stop pumps.

NOTE: Coastdown may take as long as 30 minutes on last pump shutdown. Time is shorter as number of pumps still in operation increases.

3.2 If all for (4) RC Pumps are tripped, proceed as outlined in 2202-2.1 "Blackout."

3.3 Adjust the nuclear overpower trip setpoint for the allowable pump combination per 2311-6.

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TMI DOCUMENTS

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Wilda R. Mullinix, NRC

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