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2203-2.2
Revision 7
10/25/78

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THREE MILE ISLAND NUCLEAR STATION
UNIT #2 ABNORMAL PROCEDURE 2203-2.2
TURBINE TRIP

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Unit 1 Staff Recommends Approval

Approval N/A Date —

Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval N/A Date —

Cognizant Dept. Head

Unit 1 PORC Recommends Approval

N/A Date —

Chairman of PORC

Unit 2 PORC Recommends Approval

RPJ for [illegible] Date 10/25/78

Chairman of PORC

Unit 1 Superintendent Approval

N/A Date —

Unit 2 Superintendent Approval

[illegible] Date 10/25/78

Manager Generation Quality Assurance Approval N/A Date —

TMI 58-A Rev 2/77

THREE MILE ISLAND NUCLEAR STATION

UNIT #2 ABNORMAL PROCEDURE 2203-2.2

TURBINE TRIP

1.0 SYMPTOMS

1. ICS in the tracking mode.
2. Turbine throttle, intercept and reheat stop valves closed.
3. Generator breakers open and megawatts electric to zero.
4. Reactor power decreasing.
5. Any one of the following cause a turbine trip:
   a. Generator trip
   b. Reactor trip
   c. Both feed pumps tripped
   d. Loss of all three Secondary Closed Cooling Water Pumps
   e. Vacuum <18 - 22" Hg
   f. Loss of 2 of 3 TURBINE SPEED SIGNALS
   g. Overspeed (1998 RPM)
   h. Thrust bearing failure trip >75 - 80 psig pressure
   i. Low bearing oil pressure trip <5-7 psig
   j. EHC loss of D.C. power
   k. High vibration (greater than 14 mils. for 10 Sec.)
6. Pressurizer level increasing above 240", steam pressure increasing above 885 psig, and T avg. increasing above 582°F.

2.0 IMMEDIATE ACTION

A. Automatic Action

1. Turbine throttle, govenor, intercept and reheat stop valves close and Generator breakers open.

2. Turbine bypass valves or atmospheric relief open to control 885 PSI header pressure.

3. Pressurizer Power Operated Relief Valve open.

4. ICS trips to track and run back at 20%/min. or if the turbine trip is from loss of feedwater pump(s), the run back is 50%/min. to 15% power.

5. If both the main feed pumps have tripped, the steam driven emergency feed pump & two motor driven emergency feed pumps will start.

6. The feed demand will control O.T.S.G. at minimum level (30").

7. The Seal Oil Backup Pump, Bearing Oil Lift Pumps and Turning Gear Oil Pump will start as turbine speed decays.

8. Extraction valves on all feedwater heaters close, and extraction line drain valves open.

B. Manual Action

1. Verify that the Turbine Stop Valves are closed, generator breakers and field breakers are open. Verify the start of the Seal Oil Backup Pump, the Turning Gear Oil Pump, the Bearing Lift Pumps, and verify closed extraction steam valves:

3 Stage EXV 23 A/B and 22 A/B	8 Stage EXV 29 A/B
11 Stage EXV 6 A/B	10 Stage EXV 1 A/B
13 Stage EXV 16 A/B and 11 A/B	

2. If any feedwater stations are in hand, total feedwater should be reduced manually to that corresponding to 15% neutron power.

3. If Diamond Power or Reactor Master is in hand, run rods in manually to 15% neutron power.

4. 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.

3.0 FOLLOW-UP ACTION

1. Monitor pressurizer level, R.C. pressure, R.C. temperature, OTSG level, and steam header pressure.

2. Utilize pressurizer heaters and spray control R.C. pressure @2155 PSIG and steam header pressure setpoint @885 PSIG to control T avg. @582°F. Adjust makeup and letdown flows to control pressurizer level @240". Adjust feed flow to control OTSG levels #30".

3. If vacuum is lost in main condenser, verify atmospheric reliefs are controlling header pressure at 885 PSI and reduce reactor power to zero. (Hot Standby) Add required makeup to makeup tank as T avg. is reduced to 532°F.

4. If turbine trip is due to loss of both feed pumps, verify emergency feed pumps started and are delivering water to the OTSG's. Control EF-V11A/B to maintain OTSG levels at 30".

5. If Low Heater Drain Tank Level Alarm is received, STOP Heater Drain Pumps.

6. If possible, vacuum should be maintained until the unit coasts down to approximataly 10% of rated speed.

7. OPEN/Insure open the drain valves (MS-V281A/B, MS-V282A/B, MS-V283, MS-V284, MS-V285A/B, and MS-V286A/B) immediately and keep them open until the turbine metal parts and piping are cool.
8. Place Turning Gear Control Switch in Auto and verify engagement of turning gear unless low bearing or low lift oil pressure exists.
9. Manually throttle cooling water thru seal oil coolers (SC-V21 or SC-V25) to maintain seal oil temperature 90^{o}-110^{o}F. Colder oil may seriously damage seal rings and allow a H_2 leak.
10. Notify H.P./Chemistry to sample R.C. Letdown for Dose Equivalent Iodine between 2 and 6 hours after a power change of greater than 15% power in a one hour period.