

G/1.01.143

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 ABNORMAL PROCEDURE 2203-1.8
VIBRATION AND LOOSE PARTS MONITORING SYSTEM

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|-------------|-------------|-----------------|-------------|-------------|-----------------|-------------|-------------|-----------------|
| 1.0 | 05/03/77 | 0 | 26.0 | | | 51.0 | | |
| 2.0 | 10/25/78 | 2 | 27.0 | | | 52.0 | | |
| 3.0 | 10/25/78 | 2 | 28.0 | | | 53.0 | | |
| 4.0 | 10/25/78 | 2 | 29.0 | | | 54.0 | | |
| 5.0 | 10/25/78 | 2 | 30.0 | | | 55.0 | | |
| 6.0 | 10/25/78 | 2 | 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 | | |

TMI 25-A Rev 2/77

THREE MILE ISLAND NUCLEAR STATION

UNIT #2 - ABNORMAL PROCEDURE 2203-1.8

Vibration and Loose Parts Monitor System

1.0 SYMPTOMS

- a) Alarm lights in monitor cabinet on 305' elev. of Control Bldg. (Cable Room) Vibration or Loose Parts Indicator energized for one or more channels.
(Channels 1 thru 12)
Nuclear Noise Indicator energized for one or both channels.
(Channels 13 thru 14)
- b) Abnormal noises heard over local (in cabinet) or remote (Panel 8, Control Room) speakers.
- c) Sudden increase in amplitude (a change which exceeds two times the background trace) noted on the chart recorders for one or more channels.
(Channels 1 thru 12) Determine increase in amplitude in accordance with Appendix I of 2105-1.13.

2.0 IMMEDIATE ACTION

- A. Automatic Action - None
- B. Manual Action
 - 1) Report alarm and affected channels to Shift Foreman/Supervisor.
 - 2) Attempt to reset the alarm lights by pressing the reset pushbutton at the loose parts monitor panel.

3.0 FOLLOW UP ACTION

1. Record the alarming channel or channels in accordance with 2105-1.13.
2. Determine type and degree of noise.
 - a. If the noise is loud on more than one channel (ie heard repeatedly)

1. TRIP THE REACTOR

2. Using the cassette recorder obtain one minute of data for each sample using the order below:

| <u>Sample</u> | Recorder | Channel | Selection | |
|---------------|----------|----------|-----------|----------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
| 1 | 1 | 3 | 5 | 9 |
| 2 | 2 | 4 | 6 | 10 |
| 3 | 7 | 11 | 8 | 12 |
| 4 | 13 | 14 | 5 | 6 |

NOTE: Record tape footage from recorder meter for each sample, date and time.

3. If noise continues selectively TRIP Reactor Coolant Pumps until noise stops and record Unit status. (ie. RCP combination running and/or other abnormal conditions). Trip remaining Pumps.

NOTE: If Reactor Coolant Pumps were selectively tripped immediately notify the Unit Superintendent. Limit time of reduced pump operation in accordance with B & W recommendations.

4. Cooldown per 2202-1.1 and 2102-3.3.
- b. If the noise is intermittent or periodic on more than one channel
 1. Determine location based on loudest channel.

2. Using the cassette recorder obtain one minute of data for each sample using the order below:

| <u>Sample</u> | Recorder | Channel | Selection | |
|---------------|----------|----------|-----------|----------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
| 1 | 1 | 3 | 5 | 9 |
| 2 | 2 | 4 | 6 | 10 |
| 3 | 7 | 11 | 8 | 12 |
| 4 | 13 | 14 | 5 | 6 |

NOTE: Record tape footage from recorder meter for each sample, date and time.

3. Check the following Unit parameters for abnormalities:

1. R.C. Flow
2. R.C. Pressure
3. R.C. Pump Seal Flow
4. R. C. Pump Vibration
5. R. C. Pump and Motor Bearing Temperatures
6. Power Range Power level
7. CRDM Drive Temperatures
8. MU-R-720 Readings
9. Letdown Filter dP
10. Letdown Sample (Upstream of Filter)
11. Secondary Sample
12. Feedwater Control Valves dP's
13. VA-R-748 Readings

NOTE: Some power levels have much more background noise than others. (There is considerably more background noise at 15% power.)

If significant abnormalities exist in condition 3.1.-3.13 record condition and TRIP the Reactor.

4. If the noise appears to be in one of the Steam Generators reduce Reactor Power and selectively TRIP on appropriate Reactor Coolant Pump. (ie. If noise is loudest on A(B) Steam Generator start by tripping RC-P-1A(RC-P-1B).

NOTE: If Reactor Coolant Pumps were selectively tripped immediately notify the Unit Superintendent. Limit time of reduced pump operation in accordance with B & W recommendations.

5. If noise persists reduce Reactor Power and trip a Reactor Coolant Pump in the other loop (if two operating).
 6. If noise continues TRIP the REACTOR and remaining Reactor Coolant Pumps until noise stops.
 7. Cooldown per 2202-1.1 and 2102-3.3.
- c. If noise is either a soft thumping, grinding or popping on more than one channel, or a loud noise on only one channel.
1. Determine location based on noise observed.
 2. Using the cassette recorder obtain one minute of data for each sample using the order below:

| <u>Sample</u> | <u>Recorder Channel</u> | | <u>Selection</u> | |
|---------------|-------------------------|----------|------------------|----------|
| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
| 1 | 1 | 3 | 5 | 9 |
| 2 | 2 | 4 | 6 | 10 |
| 3 | 7 | 11 | 8 | 12 |
| 4 | 13 | 14 | 5 | 6 |

NOTE: Record tape footage from recorder meter for each sample, date and time.

3. Check the following Unit parameters for abnormalities:

1. R.C. Flow
2. R.C. Pressure
3. R.C. Pump Seal Flow
4. R.C. Pump Vibration
5. P.C. Pump and Meter Reading Temperatures
6. Power Range Power Level
7. CRDM Drive Temperature
8. MU-R-720 Readings
9. Letdown Filter dP
10. Letdown Sample (upstream of filter)
11. Secondary Sample
12. Feedwater Control Valves dP's
13. VA-R-748 Reading

NOTE: Some power levels have much more background noise than others. (There is considerably more background noise at 15% power.)

Additional checks to be made, if deemed necessary by the Shift Foreman/Shift Supervisor.

1. 3D Core Power Maps
 2. Primary and Secondary Samples
 3. Entry into the Reactor Building to confirm abnormal sounds by local observation.
4. If abnormalities exist record condition and Shift Supervisor/foreman will evaluate whether to continue operation or TRIP

Reactor. If all conditions are normal the Supervisor of Operations, Unit Superintendent-Technical Support and Unit/Station Superintendent will evaluate continued operation.

3. Strip Charts (LPV Monitor) should be checked for time of occurrence, so that alarm may be correlated with a possible large electrical impulse or maintenance personnel action which may produce spurious alarm.
4. Should all observations and plant parameters indicate normal operation, but LPV monitor system still indicates abnormal conditions, the system will be thoroughly checked for equipment failure. If the LPV Monitor System is found to be operating properly, further action will be based on Shift Supervisor, Supervisor of Operations, Station/Unit Superintendent and Technical Service Personnel decisions.