

AP 1001

Figure 1001-8

Three Mile Island Nuclear Station

Special Operating Procedure

SIDE 1

SOP No. 2-43

(From SOP Log Index)

Unit No. 1&2

Date \_\_\_\_\_

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

1. Title Self-Reader Dismeter Usage & Read
2. Purpose (Include purpose of SOP) Establish Exposure Control Keeping

## 3. Attach procedure to this form written according to the following format.

## A. Limitations and Precautions

1. Nuclear Safety
2. Environmental Safety
3. Personnel Safety
4. Equipment Protection

Attached

## B. Prerequisites

## C. Procedure

4. Generated by R. W. Dulis Date 4/5/79

## 5. Duration of SOP - Shall be no longer than 90 days from the effective date of the SOP or (a) or (b) below - whichever occurs first.

(a) SOP will be cancelled by incorporation into existing or new permanent procedure submitted by MA ☐(b) SOP is not valid after MA ☐  
(fill in circumstances which will result in SOP being cancelled)

## 6. (a) Is the procedure Nuclear Safety Related?

If "yes", complete Nuclear Safety Evaluation. (Side 2 of this form) Yes ☐ No ☐

## (b) Does the procedure affect Environmental Protection?

If "yes", complete Environmental Evaluation. (Side 2 of this form) Yes ☐ No ☐(c) Does the procedure affect radiation exposure to personnel? Yes ☐ No ☐

NOTE: If all answers are "no", the change may be approved by the Shift Supervisor. If any questions are answered "yes", the change must be approved by the Unit Superintendent.

## 7. Review and Approval

Approved - Shift Supervisor \_\_\_\_\_

Reviewed - List members of PORC contacted

Unit

Unit

Date

Date

Date

Date

Date

Approved - Unit Superintendent \_\_\_\_\_

## 8. SOP is Cancelled

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Shift Supervisor/Shift Foreman

Date

# "EVALUATION"

AP-1001

Three Mile Island Nuclear Station

SIDE 2

Figure 1001-8

Nuclear Safety/Environmental Impact Evaluation

SOP No. \_\_\_\_\_

1. Title \_\_\_\_\_

## 2. Nuclear Safety Evaluation

Does this SOP:

- (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? ..... yes ☐ no ☐
- (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? ..... yes ☐ no ☐
- (c) reduce the margin of safety as defined in the basis for any technical specification? ..... yes ☐ no ☐

Details of Evaluation (Explain why answers to above questions are "no". Attach additional pages if required.)

Evaluation By \_\_\_\_\_ Date \_\_\_\_\_

## 3. Environmental Impact Evaluation

Does this SOP:

- (a) possibly involve a significant environmental impact? ..... yes ☐ no ☐
- (b) have a significant adverse effect on the environment? ..... yes ☐ no ☐
- (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. .... yes ☐ no ☐

Details of Evaluation

Evaluation By \_\_\_\_\_ Date \_\_\_\_\_

\* NOTE: If these questions are "yes", the change must receive N.R.C. approval.

## 4. Review (PORC review of evaluation is required only when requested by the Station Superintendent/Unit Superintendent. If this review is made, the PORC must consist of two off-site members.)

1. \_\_\_\_\_

2. \_\_\_\_\_  
Off-Site Members

\_\_\_\_\_  
PORC Chairman Signature

\_\_\_\_\_  
Date

## 5. Approval

\_\_\_\_\_  
Station Superintendent/Unit Superintendent

\_\_\_\_\_  
Date

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THREE MILE ISLAND NUCLEAR STATION  
STATION HEALTH PHYSICS PROCEDURE 1641  
Self-Reader Dosimeter Usage and Record Keeping

1.0 PURPOSE

- 1.1 The purpose of this procedure is to explain the method used for dosimeter radiation exposure record keeping for personnel at Three Mile Island (TMI) during conditions resulting from the Unit Number 2 accident.

2.0 DISCUSSION

- 2.1 Self Reading Dosimeters are pencil shaped ionization chambers that are calibrated to discharge at a predictable rate when exposed to gamma or neutron radiation.
- 2.2 This method exposure determination is useful for daily radiation exposure record keeping.

3.0 REFERENCES

- 3.1 W.B. Johnson Dosimeter Manual
- 3.2 TMI Radiation Protection Manual - AP 1003
- 3.3 General Public Utilities Radiation Exposure Monitoring Procedure Manual (Self-Reader Dosimetry - TMI)
- 3.4 HPP 1772

4.0 EQUIPMENT

- 4.1 Dosimeters
- 4.2 Log Sheets (Form 1641-1, 1641-2)
- 4.3 Dosimeter Charger

5.0 OPERATING PROCEDURES

- 5.1 Self-Reading Dosimeter Issue

- 5.1.1 Self-reading dosimeters will be charged as per H.P.P. 1772.
- 5.1.2 Self-reading dosimeters will be issued to all personnel entering the Controlled Area at the Access Control Point's in Unit No. 1 and Unit no. 2
- 5.2 Self Reading Neutron Dosimeter and High Range Dosimeters
  - 5.2.1 The self reading neutron and high range dosimeter(s) will be worn between the neck and waist lines. These will be issued to persons at the discretion of Radiation Protection Supervision. on as required by RWP
  - 5.2.2 To read the dosimeter, point it at a source of light and observe the position of the image of the quartz fiber on the scale.  
(See Figure 1615-1)
- 5.3 Self Reading Low Range Gamma Dosimeter
  - 5.3.1 The self reading low range gamma dosimeter will be worn between the neck and waistlines. On occasion additional dosimeters may be worn where exposures are expected to be greatest.
  - 5.3.2 A self reading low range gamma dosimeter, 0-200 MR range, will be issued to all personnel working in radiation areas.
  - 5.3.3 To read the dosimeter, point it at a source of light and observe the position of the image of the quartz fiber on the scale. (See Figure 1641-1)
  - 5.3.4 In the event a dosimeter would be dropped, lost or reads off scale, it must be immediately reported to Radiation Protection Personnel who will complete Sections A, C and D of the Contamination/Exposure Report (Form 1612-1).
- 5.4 Rezero of Dosimeters
  - 5.4.1 Insert the base of the dosimeter in the socket located on the top of the dosimeter charger and press down on the dosimeter firmly and observe the position of the hairline crossing vertically through the horizontal scale.



- 5.4.2 While observing the hairline, rotate the potentiometer to position the hairline to zero.
- 5.4.3 Remove the dosimeter from the socket and observe the dosimeter reading to verify that the hairline is on zero.
- 5.4.4 If the dosimeter hairline is not on zero repeat steps 5.4.1 through 5.4.3
- 5.5 Permanent TMI Personnel Dosimeter Radiation Exposure Record Keeping
  - 5.5.1 All personnel shall have a "Daily Self-Reader Exposure Form" (Form TMI-95) on file, located at the Access Control Point.
  - 5.5.2 Locate your "Daily Self-Reader Dosimeter Exposure Form" (Form TMI-95).
  - 5.5.3 Locate the appropriate DAY Column 1 and log RWP Number; in Column 2 and your current dosimeter reading under the "EXPOSURE IN" Column 3
  - 5.5.4 Upon exiting the Controlled Area, enter your dosimeter reading under the "EXPOSURE OUT" Column 4.
  - 5.5.5 Enter the difference between the "EXPOSURE IN" AND "EXPOSURE OUT" dosimeter readings, 4 - 3 under the "EXPOSURE THIS ENTRY" Column 5.  
 NOTE: Space is provided on Form TMI95 for seventy (70) entries, corresponding to an individual entering and exiting the RWP area seventy (70) in one day. If more than seventy (70) entries are made to the controlled area in one day, the additional entries will be documented on a "SECOND", Form TMI-95. Form TMI-95 may be obtained at the Access Control Point.
  - 5.5.6 Upon exiting the Controlled Area enter the Total Weekly Exposure 6 readings in the "TOTAL WEEKLY EXPOSURE COLUMN " (6 Line above + Column 6) in 6
  - 5.5.7 On back of form TMI-95 Sum Exposures by Marking with an X the correct # of Boxes Last box marked + column 6 to observe Proximity to Qt dose.
- 5.6 TMI Visitors Dosimeter Radiation Exposure Record Keeping
  - 5.6.1 Upon entering the controlled area, a visitor will be issued a TMI form 95
  - 5.6.2 A Rad. Chem. Tech./Jr. or other suitably qualified personnel, will enter the visitors "SOCIAL SECURITY NUMBER" and name, last name first
  - 5.6.3 Place the form in alphabetical order in the "VISITORS SELF-READING DOSIMETER EXPOSURE BOX" located at the Access Control Point.
  - 5.6.4 Enter the appropriate DAY in 1 and log your current dosimeter reading under the "EXPOSURE-IN" Column 3 of Form TMI-95
  - 5.6.5 Upon exiting the controlled area, enter your dosimeter reading under the "EXPOSURE OUT" Column 4 Form TMI-95

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- 5.6.6 Enter the difference between the "EXPOSURE IN" and "EXPOSURE OUT" 4 - 3, under the difference Column 5, Form TMI-95
- 5.6.7 Upon exiting the Controlled Area enter the "TOTAL WEEKLY EXPOSURE" reading in the "TOTAL WEEKLY EXPOSURE" Column (column 6 above + Column 5)  
Note: At the conclusion of the report period, (Daily) the Form TMI-95.
- 5.7.7. On back of Form TMI-95 Sum Exposures by marking with an X the correct # of boxes last box marked + column 6 to observe Proximity to Qf dose.

COMPANY \_\_\_\_\_

| QUARTERLY LIMIT | MREM  |
|-----------------|-------|
| 100             | 100   |
| 200             | 200   |
| 300             | 300   |
| 400             | 400   |
| 500             | 500   |
| 600             | 600   |
| 700             | 700   |
| 800             | 800   |
| 900             | 900   |
| 1000            | 1000  |
| 1100            | 1100  |
| 1200            | 1200  |
| 1300            | 1300  |
| 1400            | 1400  |
| 1500            | 1500  |
| 1600            | 1600  |
| 1700            | 1700  |
| 1800            | 1800  |
| 1900            | 1900  |
| 2000            | 2000  |
| 2100            | 2100  |
| 2200            | 2200  |
| 2300            | 2300  |
| 2400            | 2400  |
| 2500            | 2500  |
| 2600            | 2600  |
| 2700            | 2700  |
| 2800            | 2800  |
| 2900            | 2900  |
| 3000            | 3000  |
| 3100            | 3100  |
| 3200            | 3200  |
| 3300            | 3300  |
| 3400            | 3400  |
| 3500            | 3500  |
| 3600            | 3600  |
| 3700            | 3700  |
| 3800            | 3800  |
| 3900            | 3900  |
| 4000            | 4000  |
| 4100            | 4100  |
| 4200            | 4200  |
| 4300            | 4300  |
| 4400            | 4400  |
| 4500            | 4500  |
| 4600            | 4600  |
| 4700            | 4700  |
| 4800            | 4800  |
| 4900            | 4900  |
| 5000            | 5000  |
| 5100            | 5100  |
| 5200            | 5200  |
| 5300            | 5300  |
| 5400            | 5400  |
| 5500            | 5500  |
| 5600            | 5600  |
| 5700            | 5700  |
| 5800            | 5800  |
| 5900            | 5900  |
| 6000            | 6000  |
| 6100            | 6100  |
| 6200            | 6200  |
| 6300            | 6300  |
| 6400            | 6400  |
| 6500            | 6500  |
| 6600            | 6600  |
| 6700            | 6700  |
| 6800            | 6800  |
| 6900            | 6900  |
| 7000            | 7000  |
| 7100            | 7100  |
| 7200            | 7200  |
| 7300            | 7300  |
| 7400            | 7400  |
| 7500            | 7500  |
| 7600            | 7600  |
| 7700            | 7700  |
| 7800            | 7800  |
| 7900            | 7900  |
| 8000            | 8000  |
| 8100            | 8100  |
| 8200            | 8200  |
| 8300            | 8300  |
| 8400            | 8400  |
| 8500            | 8500  |
| 8600            | 8600  |
| 8700            | 8700  |
| 8800            | 8800  |
| 8900            | 8900  |
| 9000            | 9000  |
| 9100            | 9100  |
| 9200            | 9200  |
| 9300            | 9300  |
| 9400            | 9400  |
| 9500            | 9500  |
| 9600            | 9600  |
| 9700            | 9700  |
| 9800            | 9800  |
| 9900            | 9900  |
| 10000           | 10000 |

130 264

1 2 3 4 5 6

[illegible]

NAME: \_\_\_\_\_

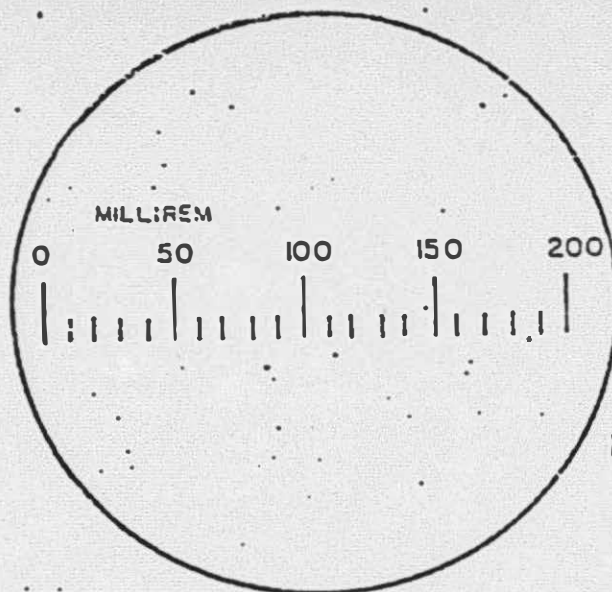
QUARTERLY ACCUMULATIVE EXPOSURE

| MREM |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 5    | 55  | 105 | 155 | 205 | 255 | 305 | 355 | 405 | 455 | 505 | 555 | 605 | 655 | 705 | 755 | 805 | 855 | 905 | 955  | 1000 |
| 10   | 60  | 110 | 160 | 210 | 260 | 310 | 360 | 410 | 460 | 510 | 560 | 610 | 660 | 710 | 760 | 810 | 860 | 910 | 960  | 1010 |
| 15   | 65  | 115 | 165 | 215 | 265 | 315 | 365 | 415 | 465 | 515 | 565 | 615 | 665 | 715 | 765 | 815 | 865 | 915 | 965  | 1015 |
| 20   | 70  | 120 | 170 | 220 | 270 | 320 | 370 | 420 | 470 | 520 | 570 | 620 | 670 | 720 | 770 | 820 | 870 | 920 | 970  | 1020 |
| 25   | 75  | 125 | 175 | 225 | 275 | 325 | 375 | 425 | 475 | 525 | 575 | 625 | 675 | 725 | 775 | 825 | 875 | 925 | 975  | 1025 |
| 30   | 80  | 130 | 180 | 230 | 280 | 330 | 380 | 430 | 480 | 530 | 580 | 630 | 680 | 730 | 780 | 830 | 880 | 930 | 980  | 1030 |
| 35   | 85  | 135 | 185 | 235 | 285 | 335 | 385 | 435 | 485 | 535 | 585 | 635 | 685 | 735 | 785 | 835 | 885 | 935 | 985  | 1035 |
| 40   | 90  | 140 | 190 | 240 | 290 | 340 | 390 | 440 | 490 | 540 | 590 | 640 | 690 | 740 | 790 | 840 | 890 | 940 | 990  | 1040 |
| 45   | 95  | 145 | 195 | 245 | 295 | 345 | 395 | 445 | 495 | 545 | 595 | 645 | 695 | 745 | 795 | 845 | 895 | 945 | 995  | 1045 |
| 50   | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 |

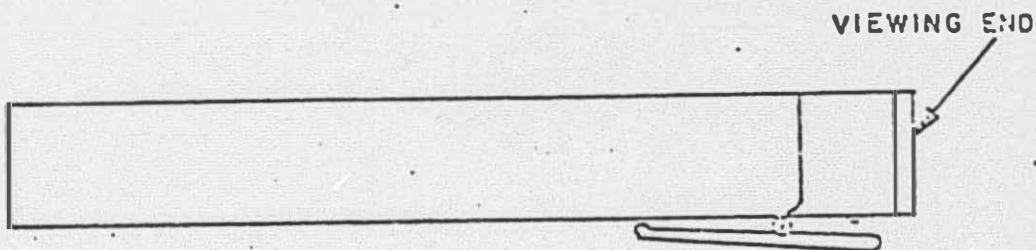
\* PRIOR TO EXCEEDING 1000 MREM, "AUTHORIZATION FOR ADDITIONAL EXPOSURE" FORM MUST BE COMPLETED.



1641  
Revision 0  
04/11/77



TYPICAL  
MAGNIFIED SCALE



SELF READING DOSIMETER

FIGURE 1641-1

CONTAMINATION/EXPOSURE REPORT

1641  
Revision 0  
04/11/77

☐ LOSS OF PERSONAL DOSIMETRY

☐ PERSONNEL CONTAMINATION

Name \_\_\_\_\_ Company \_\_\_\_\_

SS# \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Address (If not Met-Ed) \_\_\_\_\_

A. LOSS OF PERSONAL DOSIMETRY

Section 1 - Film Badge/TLD

1. Date Issued \_\_\_\_\_ Date Lost \_\_\_\_\_
2. Dosimeter reading covering lost Film Badge/TLD period \_\_\_\_\_ mrem
3. Reading entered on individuals Radiation Record: Yes \_\_\_\_\_ No \_\_\_\_\_
4. Individual restricted from controlled area: Yes \_\_\_\_\_ No \_\_\_\_\_

Section 2 - Self Reading Dosimeter

1. Dosimeter Lost ☐ Dosimeter Off Scale ☐ Date \_\_\_\_\_
2. Film Badge/TLD Evaluated: \_\_\_\_\_ mrem
3. Film Badge/TLD Reissued: Yes \_\_\_\_\_ No \_\_\_\_\_
4. Individual restricted from controlled areas: Yes \_\_\_\_\_ No \_\_\_\_\_

B. PERSONNEL CONTAMINATION:

1.

| Contaminated Body Areas | Survey Results Highest DPM |
|-------------------------|----------------------------|
|                         |                            |
|                         |                            |
|                         |                            |
|                         |                            |
|                         |                            |

B. PERSONNEL CONTAMINATION: (Cont'd)

2. Method of Decontamination: \_\_\_\_\_

3.

| Decontaminated Body Areas | Survey Results Highest DPM |
|---------------------------|----------------------------|
|                           |                            |
|                           |                            |
|                           |                            |
|                           |                            |
|                           |                            |
|                           |                            |

4. Sample for Urine Bio Collected: Yes \_\_\_\_\_ No \_\_\_\_\_

5. Individual sent for Whole Body Count: Yes \_\_\_\_\_ No \_\_\_\_\_

C. INVESTIGATION REPORT: (Include R.W.P. #)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Form Completed By: \_\_\_\_\_

D. RESULTS OF INVESTIGATION: (Completed by Radiation Protection Supervisor/Foreman)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Approved By RP Supv/Foreman \_\_\_\_\_

cc: F. H. Grice  
J. G. Herbein  
Department Head  
HP Lab  
Original to Individual's File Folder