Please remove: (1) Index and/or Revision Control Page(s) and (2) Procedure or Procedure Page(s) listed below and insert the revised material.

| | INSTRUCTIONS | | | |
|---|---|---|---|---|
| | REMOVE | | INSERT | |
| | Rev. | Date | Rev. | Date |
| Revision Control Sheet | 7 | 7-9-82 | 8 | 7-12-82 |
| EPIP 3.3b | 0 | 5-13-81 | 1 | 6-15-82 |

Subsequent to making the above changes, sign and date the notice below, detach it at the bottom line and return it to the addressee.

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*NRC -NRR* (℠)
*1 of 10*        NOTICE OF RECEIPT OF REVISION NOTIFICATION

TO: DAEC SUPPORT SERVICES
    P.O. Box 351, Cedar Rapids, Iowa 52406

This acknowledges receipt of revision notification to the Procedure(s)_____

____EPIP 3.3b_____

dated___7-12-82_____and updating of Procedure(s) in accordance with the notification

instructions
                                        Date:_____
Signature:_____

## REVISION CONTROL SHEET

Revision No. ___8___

Revision Date ___7-12-82___

| Page/Proc | Date | Rev. | Page/Proc | Date | Rev. | Page/Proc | Date | Rev. |
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| 1.2 | 6/9/82 | 2 | | | | | | |
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| 3.1 | 3/1/82 | 2 | | | | | | |
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| 3.3a | 10/21/81 | 1 | | | | | | |
| 3.3b | 6/15/82 | 1 | | | | | | |
| 4.1 | 5/13/82 | 2 | | | | | | |
| 4.2 | 5/11/81 | 0 | | | | | | |
| 4.3 | 10/19/81 | 1 | | | | | | |
| 4.4 | 5/11/81 | 0 | | | | | | |
| 4.5 | 5/13/82 | 0 | | | | | | |
| 5.1 | 11/24/81 | 1 | | | | | | |
| 5.2 | 11/24/81 | 1 | | | | | | |
| 6.1 | 5/11/81 | 0 | | | | | | |
| 6.2 | 5/11/81 | 0 | | | | | | |
| 6.3 | 3/1/82 | 1 | | | | | | |
| 6.4 | 3/3/82 | 2 | | | | | | |

1.0 PURPOSE

This procedure provides instructions for estimating the downwind dose rates resulting from noble gas and radioiodine releases during an emergency at DAEC.

2.0 APPLICABILITY

This procedure applies to immediate specific steps to be taken by radiological assessment personnel during a release of radioactive material (after the first hour following shutdown) to the environment.

3.0 RESPONSIBILITIES

3.1 Site Radiation Protection Coordinator

Perform dose projection calculations until the EOF is manned.

Evaluate the results of dose projection calculations.

Initially identify the need for field survey data to backup projected dose calculations.

3.2 Emergency Coodinator

Initially advise local and State authorities of the results of dose projection calculations and provide protective action recommendations as required.

3.3 IELP Radiological Assessment Coordinator

Perform dose projection calculations.

Provide protective action recommendations as required.

4.0 INTRODUCTION

The major objective of this procedure is to perform the offsite dose estimate for comparison with protective action guidelines to determine the appropriate emergency action to be taken following an accidental atmospheric release of radioactive material. As a result of this objective the procedure has been developed with five major parts. The first consists of the main body of the procedure and contains general information about the procedure, general instructions for its use and the protective action guidelines. The second part consists of a Data Summary Sheet, Attachment I, which contains all the monitor data necessary for the dose projections. The third part, Attachment II, consists of a summary Table to be completed during the dose estimation procedure. This table contains all the information necessary for comparison with the protective action guidelines. The completion of this table requires a number of calculations to be performed. These calculations are set up in detail on Calculation Sheets which comprise the fourth part of the procedure, Attachment III. The, Data

Summary Sheet, Summary Table, and the Calculation Sheets are designed to be used together, that is, the Calculation Sheets are required to complete the Summary Table while information from the Data Summary Sheet and Summary Table is required in many of the calculations performed on the Calculation Sheets. When calculations are required the Summary Table references the appropriate segment of the Calculation Sheets to be completed, likewise when data is required from the Data Summary Sheet and Summary Table the appropriate Data Summary Sheet or Summary Table line number is referenced on the Calculation Sheet. The fifth part, Attachment IV, contains all the figures referenced in the Calculation Sheets.

## NOTE

A supply of Data Summary Sheets, Summary Tables, and Calculation Sheets are to be maintained in the Technical Support Center (TSC) and Emergency Operations Facility (EOF) for emergency use.

5.0 INSTRUCTIONS

5.1 If an off-site radiological release has been identified, use the simplified method EPIP 3.3a for the initial dose calculation (within the first hour following shutdown). Subsequent dose calculations shall be made utilizing the methods contained within this procedure.

5.2 If an accidental atmospheric release of radioactive material has been identified or there is a significant change in the release rate a dose projection is to be performed as follows.

5.2.1 Complete Data Summary Sheet.

5.2.2 Complete Section I of the Summary Table, General Information, using Calculation Sheet I where referenced.

5.2.3 Complete Section II of the Summary Table, Release Information, to determine the total gaseous release rate from the Reactor Building Stacks, the Offgas Stack, and the Turbine Building Roof Exhaust. Use Calculation Sheet II, where referenced, to perform the necessary release rate calculations.

When multiple monitor ranges are available complete the calculations for ONE range ONLY. For the Reactor Building Stack Monitors use the range which gives a reading nearest mid-scale. For the Offgas Stack Monitors use the range which gives the highest reading.

5.2.4 Complete Section III of the Summary Table, Dose Information. Use Calculation Sheet III, where referenced, to perform all necessary calculations. Calculation Sheet III is divided into five sections of which only two are to be completed. Section I is always completed and determines, based on the atmospheric stability, which one of the remaining four sections is to be used to perform the dose estimation. The Calculation Sheet subsections referenced in Section III of the Summary Table are those of the appropriate section for dose estimation as determined by Section I. That is, Sections II through V of Calculation Sheet III have the same format only the constants which are dependent on atmospheric stability are different.

5.2.5 Complete Section IV of the Summary Table if an estimate of the release rate is to be made from a field exposure rate measurement.

5.2.6 Report the results of the dose estimation calculations, i.e., supply copies of the Summary Table, to the Emergency Coordinator and/or the Site Radiation Protection Coordinator or the Radiological Assessment Coordinator.

5.2.7 The Site Radiation Protection Coordinator or the Radiological Assessment Coordinator shall compare the dose estimates from the Summary Table to the following Protective Action Guidelines and initiate the appropriate action.

## PROTECTIVE ACTION GUIDELINES

| Projected Exposure to An Individual In the Population | Recommended Action |
|---|---|
| Whole Body = less than 1 Rem or Thyroid = less than 5 Rem. | 1. No protective action required. <br><br> 2. Issue an advisory to seek shelter and await further instructions or voluntarily evacuate. <br><br> 3. Monitor environmental radiation levels. |
| Whole Body = 1 to 5 Rem or Thyroid = 5 to 25 Rem | 1. Seek shelter and await further instructions. <br><br> 2. Consider evacuation, particularly for children and pregnant women. <br><br> 3. Monitor environmental radiation levels. <br><br> 4. Control access. |
| Whole Body = 5 Rem and above or Thyroid = 25 Rem and above | 1. Conduct evacuation of populations in the predetermined area. <br><br> 2. Monitor environmental radiation levels and adjust area for evacuation based on these controls. <br><br> 3. Control access. |

6.0 REFERENCES

1. Duane Arnold Energy Center Emergency Plan

2. IELP Corporate Emergency Response Plan

7.0 ATTACHMENTS

1. Data Summary Sheet

2. Summary Table

3. Calculation Sheets

4. Figures

APPROVED BY: _____  DATE: _____
Radiation Protection Supervisor

REVIEWED BY: _____  DATE: _____
ALARA Coordinator

APPROVED BY: _____  DATE: _____
Operations Supervisor

REVIEWED BY: _____  DATE: _____
Chairman, Operations Committee

APPROVED BY: _____  DATE: _____
Plant Supertintendent - Nuclear

## ATTACHMENT I, DATA SUMMARY SHEET

Date: _____     Recorded By: _____
Time: _____     Calculation Number: _____

I. METEROLOGICAL DATA

1. Wind Direction[a] _____ (Wind from)

2. Wind speed[a] _____ mph

3. $\Delta T$[b] _____ °F

4. Time after shutdown _____ (hours)

5. Time release started _____ (24 hour clock)

NOTES:

[a] Obtain wind speed and direction from met panel in control room or Cedar Rapids Flight Service at ⟍

[b] Obtain from atmospheric $\Delta T$ recorder readout in control room.

II. RELEASE DATA

A. Reactor Building Stacks

1. ARM 9163[a] _____ mR/hr

2. RANGE: (Use range which gives reading nearest mid-scale).

HIGH ▢     INTERMEDIATE ▢     NORMAL ▢

3. A Stack Flow _____ CFM[b]

4. B Stack Flow _____ CFM[b]

5. C Stack Flow _____ CFM[b]

6. Total Stack Flow _____ CFM[b] (sum lines 3, 4 and 5)

7. 182C _____ CPM[c]

8. 1C-182B _____ CPM[c]

NOTES: a - Obtain ARM reading from Control Room panel 1C-10, ARM RT9163 or other refuel floor ARM.

ATTACHMENT I, DATA SUMMARY SHEET (continued)

b - Exhaust flow obtained from local panel (C stack only) on refuel floor (Reactor Bldg. El. 855'0") or control room panel 1C-23 (all stacks)

c - Normal and Intermediate range - obtain monitor readings from local panel reactor building El 855'0" (gaseous channel) directly from instrument. May also be obtained from data printer in cph, if so divide by 60 to obtain cpm. It may be possible to observe these readings from the CAS via the security TV camera.

High range - obtain monitor reading from the temporary high range instrument located in a metal cabinet at the Secuirty Control Point adjacent to the ingress turnstyle.

B. Offgas Stack

1. RANGE: (Use range which gives highest reading).

HIGH [____] (Complete Lines 3 and 4)    NORMAL [____] (Complete Lines 2 and 4)

2. Normal Range 4116 A or B _____ CPS[a]

3. High Range _____ CPM[b]

4. Stack Flow _____ CFM[c]

NOTES:

[a] Normal range - obtain monitor reading from control room panel 1C-02.

[b] High range - obtain monitor reading from temporary high range instrument located in metal cabinet No. 5 at the Security Control Point adjacent to the ingress turnstyle.

[c] Stack flow obtained from control room panel 1C-02.

ATTACHMENT I, DATA SUMMARY SHEET (continued)

C. Turbine Building Vent

1. Dose Rate Outside Shield[a] _____ mR/hr

2. Dose Rate Inside Shield[a] _____ mR/hr

3. Exhaust Flow[b] _____ % flow

4. Number of fans operating: Slow speed _____,
   high speed _____. (Use only if % flow, line 3, is
   unavailable.)

NOTES:

[a] Exposure rate is obtained with teletector probe outside and inserted in shield
access hole as appropriate. Shield is located on the exhaust of RCF 33, 35 next to
condensate demin. panel.

[b] Percent of maximum exhaust flow obtained from flow indicator on I-beam adjacent to
samplers.

D. Miscellaneous Data

1. Is Standby Gas Treatment for Offgas Stack Exhaust in operation:

   YES |___|          NO |___|

2. Anticipated duration of release _____ hours. (If no estimate is
   available use 1.77 hours.)

3. Iodine activity to noble gas activity ratio-optional, to be completed
   only if known to be different than default valves.

   3a. _____ Reactor Building Stacks and Turbine Building Vent

   3b. _____ Offgas Stack

III. Field Exposure Rate Information

1. Time of measurement after shutdown _____ hours.

2. Distance from release point to measurement location _____ meters.

3. Exposure rate _____ mR/hr.

ATTACHMENT II, SUMMARY TABLE

Calculations Performed By: _____

I.  GENERAL INFORMATION

1.  Calculation Number: _____ Date: _____ Time: _____

2.  Time after Shutdown: _____ hours

3.  Wind Direction (direction wind is blowing from): _____ deg.
    (Data Summary Sheet Section I, line 1).

4.  Down Wind Direction: _____ deg. (Calc. Sheet I, Sec. A, line 1)

5.  Wind Speed: _____ meters/sec. (Calc. sheet I, Sec. A, line 2)

6.  $\Delta T$: _____°F, Stability Class: _____(Calc. Sheet I.,
    sec. B)

7.  Down wind Sector _____ (Calc. Sheet I, Section A, Line 3)

8.  Time release started _____ hr. (24 hr. clock).

II. RELEASE INFORMATION

1.  Exposure Time _____ hours (Data Summary Sheet, Section II.D,
    line 2).

2.  Release rate Reactor Bldg. Stack: _____Ci/sec (Calc. Sheet II,
    sec. I)

3.  Release rate - offgas stack _____Ci/sec (Calc. Sheet II, Sec. II)

4.  Release rate - Turbine Bldg. Roof Exhaust: _____Ci/sec (Calc.
    Sheet II, Sec. III.)

5.  Total Gaseous Release Rate: _____ Ci/sec (add release rates
    from previous three lines)

## III. DOSE INFORMATION

Cal. sheet III, section number
for remainder of dose
calculations: _____
(From calc. sheet III, section I)

**Down Wind Location**

| | Site Bndry | Point of max. X/Q for Offgas Stack release[a,e] | 2mi | 5mi | 10mi | No. 1 | No. 2 | No. 3 |
|---|---|---|---|---|---|---|---|---|
| 1. Distance to location, meters (miles) (Calc. Sheet III, subsection A)[b] | ___ | ___ | 3218 (2) | 8045 (5) | 16090 (10) | ___ | ___ | ___ |
| 2. Normalized concentration, X/Q, sec/m³, Ground level release (Calc. Sheet III, Subsect. B)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 3. Normalized concentration, X/Q, sec/m³, Elevated release (Calc. Sheet III, Subsect. C)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 4. Whole body dose rate mrem/hr (Calc. Sheet III, Subsect. D)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 5. Whole body dose, mrem (Calc. Sheet III, Subsect. E)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 6. Thyroid dose commitment,[c] mrem (Calc. Sheet III, Subsect. F)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 7. Plume width, meters (miles) (Calc. Sheet III, Subsect. G)[b] | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8. Plume arrival time, hr (Calc. Sheet III, Subsect. H)[b] | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

NOTE: a,b,c,d and e -- see next page

EMERGENCY PLAN IMPLEMENTING PROCEDURE
FOLLOW-UP DOSE PROJECTIONS
ATTACHMENT II, SUMMARY TABLE (continued)
EPIP 3.3b
Page 10 of 98
Revision 1
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ATTACHMENT II, SUMMARY TABLE (continued)

NOTES:

[a]For stability class FG the distance to the maximum $X/Q$ is greater than 10 miles. In order to limit the dose information to the EPZ a distance of 10 miles is used for class FG.

[b]Calculation sheet subsection refers to the subsection of the Calculation Sheet III section as given in the heading of this table and also in Calc. Sheet III, Section I.

[c]The thyroid dose commitment given is for an infant, i.e., the worst case. The adult dose commitment is obtained by multiplying by 0.58.

[d]Additional locations may be added at users discretion.

[e]Maximum $X/Q$ is the location corresponding to the point of maximum ground level $X/Q$ for an offgas stack (elevated) release.

IV. Release Rate From Exposure Rate (Field Measurement)

Estimated total gaseous release rate _____ Ci/sec (Calc. Sheet IV)

Caution: This estimate should be considered to be a lower limit of the release rate.

ATTACHMENT III, CALCULATION SHEET I

GENERAL INFORMATION

A. Wind Speed

1. Downwind direction: _____ deg. (180° different from wind direction).

2. Wind Speed _____ mph (Data Summary Sheet, Section I, line 2) x 0.447 =

   |_____| Meters/sec (To Summary Table Sec. I, line 4)

3. Sector designation

| Down Wind Drection, deg. | Sector |
|---|---|
| 348.750 - 11.25 | A |
| 11.25 - 33.75 | B |
| 33.75 - 56.25 | C |
| 56.25 - 78.75 | D |
| 78.75 - 101.25 | E |
| 101.25 - 123.75 | F |
| 123.75 - 146.25 | G |
| 146.25 - 168.75 | H |
| 168.75 - 191.25 | J |
| 191.25 - 213.75 | K |
| 213.75 - 236.25 | L |
| 236.25 - 258.75 | M |
| 258.75 - 281.25 | N |
| 281.25 - 303.75 | P |
| 303.75 - 326.25 | Q |
| 326.25 - 348.75 | R |

B. Stability Class

1. #T |_____| °F - (obtained from Data Summary Sheet, Section I, line 3) (To Summary Table, Sec. I, line 7)

2. Stability class is determined from the following table as a function of #T.

   Stability class |_____| (To Summary Table, Sec I, line 7)

| #T Range, °F | Stability Class |
|---|---|
| -1.26 or less | AB |
| -1.26 to -1.11 | C |
| -1.11 to 1.11 | DE |
| 1.11 of greater | FG |

ATTACHMENT III, CALCULATION SHEET II          Page 1 of 5

RELEASE INFORMATION

I. Reactor Building Stack Releases

1. Complete Subsection A, B, OR, C (one subsection ONLY) as determined by the following criteria on the range indicated on Data Summary Sheet Section II, Line 2.

   Normal Range - complete Subsection A

   Intermediate Range - complete Subsection B

   High Range - complete Subsection C

A. Normal Range

   1. ARM 9163 reading _____ mR/hr[a] x 70 = _____ background cpm

   2. Total Stack Flow _____ CFM[b]

   3. 182C _____ cpm[c] - background cpm (line 1) = _____ corrected cpm.

   4. 182C _____ corrected cpm (line 3) x _____ CFM Total Stack

      Flow (line 2) x 2.36 x 10$^{-11}$ = |_____| Ci/sec = Total Reactor

      building Gaseous Release Rate (To Summary Table, Sec. 1I, line 2)

NOTES:

[a]Obtain ARM reading from DATA Summary Sheet, Section II.A, line 1.

[b]Obtain Total Stack Flow from Data Summary Sheet, Section II.A, line 6

[c]Obtain 182C monitor reading from Data Summary Sheet, Section II.A, line 7.

ATTACHMENT III, CALCULATION SHEET II (continued)     Page 2 of 5

B. Intermediate Range

Use either of two options for determination of background count rate - options given by lines 1 and 2, line 1 is preferred

1. 182B (RM15/HP260)[a] _____ background cpm

   or

2. ARM reading [b] _____ mR/hr x 0.46 = _____ background cpm.

3. 182C (RM15/HP260)[c]

   _____ cpm[c] - _____ background cpm (line 1 or 2) = _____ corrected

   cpm.

4. 182C _____ corrected cpm (line 3) x _____ Total Stack Flow cfm[d]
   x _____

   AFCF[e] x 1.18 x $10^{-5}$ = [ _____ ]  Ci/sec Total Reactor Building Gaseous Release Rate (To Summary Table, Sec. II, line 2)

NOTES:

[a]Obtain monitor reading from Data Summary sheet, Section II.A, line 8.

[b]Obtain ARM reading from Data Summary Sheet, Section II.A, line 1.

[c]Obtain monitor reading from Data Summary Sheet, Section II.A, line 7.

[d]Exhaust flow obtained from Data Summary Sheet, Section II.A, line 6.

[e]Activity Response Conversion Factor (ARCF) obtained from Figure 1 using time after shutdown from Summary Table, Section I, line 2.

C. HIGH RANGE (RM16/HP200)

1. 182B (RM16/HP200)[a] _____ background cpm.

2. _____ 182C (RM16/HP200)[b] cpm - _____ background cpm
   (line C.1) = _____ corrected cpm.

3. 182C _____ corrected cpm (line 2) x _____ CFM[c] Total Stack

   Flow x _____ ARCF[d] x 6.74 x $10^{-5}$ = [ _____ ] Ci/sec.

   Total Reactor Building Gaseous Release Rate (To Summary Table, Sec. II, line 2)

ATTACHMENT III, CALCULATION SHEET II (continued)       Page 3 of 5

NOTES:

[a]Obtain monitor reading from Data Summary Sheet, Section II.A, line 8.

[b]Obtain monitor reading from Data Summary Sheet, Section II.A, line 7.

[c]Exhaust flow obtained from Data Summary Sheet, Section II.A, line 6.

[d]Activity Response Conversion Factor (ARCF) obtained from Figure 2 using time after shutdown from Summary Table, Section I, line 2.

II. Offgas Stack Releases

1.  Complete line 2 OR 3 (ONE ONLY) as determined by the following criteria on the range selected (see Data Summary Sheet Section II.B, line 1):

    Normal Range - Complete line 2

    High Range - Complete line 3

2.  Normal Range (RM4116 A or B)

    _____ cps[a] x _____ cfm[b] x 9.44 x 10$^{-11}$

    = | _____ | Ci/sec. Total offgas stack release rate
                       (to Summary Table Sec. II, line 3)

3.  High Range (RM16/HP200)

    _____ cpm[a] x _____ cfm[b] x _____ARCF[c] x 6.74 x 10$^{-5}$

    = | _____ | Ci/sec Total offgas stack release rate
                       (To Summary Table, Sec. II, line 3)

NOTES:

[a]Monitor readings obtained from Data Summary Sheet Section IIB, line 2 or 3.

[b]Stack flow obtained from Data Summary Sheet Section IIB, line 4.

[c]Activity Response Conversion Factor (ARCF) obtained from Figure 2 using time after shutdown from Summary Table, Section I, line 2.

ATTACHMENT III, CALCULATION SHEET II (continued)      Page 4 of 5

III. Turbine Building Roof Exhaust (RCF 33, 35)

1. _____ mR/hr outside shield [a] x 2.5 x $10^{-4}$

= _____ mR/hr adjusted bkg.

2. _____ mR/hr inside shield[b] - _____ adjusted bkg (line 1)

= _____ net mR/hr.

3. Two options for obtaining exhaust flow:

   flow indicator reading available. (go to line 4).

   flow indicator reading not available. (go to line 5).

4. _____ % flow[c] x 720 = _____ cfm (go to line 6)

5. _____ number of fans slow speed[d] x 18,000 + _____ number of fans

   high speed[d] x 36,000 = _____ cfm

6. _____ net mR/hr (line 2) x 3.37 x $10^{-5}$ x _____ ARCF[e] _____ x cfm

   (line 4 or 5) = | _____ | Ci/sec. Total Turbine Bldg. Gaseous Release
                   | _____ | Rate (To Summary Table Sec. II, line 4)

NOTES:

[a] Obtain reading from Data Summary Sheet, Section IIC, line 1.

[b] Obtain reading from Data Summary Sheet, Section IIC, line 2.

[c] Obtain % flow from Data Summary Sheet, Section IIC, line 3.

[d] Obtain number of fans operating at slow and high speeds from Data Summary Sheet, Section IIC, line 4.

[e] Activity Response Conversion Factor (ARCF) obtained from Figure 3 using time after shutdown from Summary Table, Section I, line 2.

ATTACHMENT III, CALCULATION SHEET III          Page 5 of 5

DOSE INFORMATION

I.  Section for the remaining calculations [____] - Appropriate section is determined

from the following table based on the atmospheric stability class. Complete ONLY
ONE section.

| Stability Class (from Summary Table, Section I, line 6) | Section |
|---|---|
| AB | II (page 18 of 98) |
| C | III (page 31 of 98) |
| DE | IV (page 44 of 98) |
| FG | V (page 56 of 98) |

ATTACHMENT III, CALCULATION SHEET III (continued)

II. Dose information for atmospheric stability class AB

A. Variable distance and Xu/Q Values

1. Obtain distance to site boundary and Xu/Q for ground level and elevated releases from following Table using the down wind direction from Summary Table, Section I, line 4.

Distance = _____ m        $\frac{Xu}{Q}$ (Ground Level Rel.) = _____ $\frac{1}{m^2}$

$\frac{Xu}{Q}$ (Elevated Rel.) = _____ $\frac{1}{m^2}$

| Down Wind Direction deg. | Distance to Site Bdy, meters | $\frac{Xu}{Q}$, $\frac{1}{m^2}$ Ground Level Rel. | $\frac{Xu}{Q}$, $\frac{1}{m^2}$ Elevated Rel. |
|---|---|---|---|
| 0 - 11.25 | 1200 | $3.8 \times 10^{-6}$ | $3.7 \times 10^{-6}$ |
| 11.25 - 33.75 | 1600 | $1.9 \times 10^{-6}$ | $1.9 \times 10^{-6}$ |
| 33.75 - 56.25 | 700 | $1.4 \times 10^{-5}$ | $1.2 \times 10^{-5}$ |
| 56.25 - 78.75 | 610 | $1.9 \times 10^{-5}$ | $1.5 \times 10^{-5}$ |
| 78.75 - 101.25 | 490 | $3.2 \times 10^{-5}$ | $2.0 \times 10^{-5}$ |
| 101.25 - 123.75 | 450 | $4.0 \times 10^{-5}$ | $2.2 \times 10^{-5}$ |
| 123.75 - 146.25 | 480 | $3.3 \times 10^{-5}$ | $2.1 \times 10^{-5}$ |
| 146.25 - 168.75 | 500 | $3.0 \times 10^{-5}$ | $1.9 \times 10^{-5}$ |
| 168.75 - 191.25 | 460 | $3.9 \times 10^{-5}$ | $2.2 \times 10^{-5}$ |
| 191.25 - 213.75 | 500 | $3.0 \times 10^{-5}$ | $1.9 \times 10^{-5}$ |
| 213.75 - 236.25 | 630 | $1.8 \times 10^{-5}$ | $1.4 \times 10^{-5}$ |
| 236.25 - 258.75 | 720 | $1.3 \times 10^{-5}$ | $1.2 \times 10^{-5}$ |
| 258.75 - 281.25 | 670 | $1.5 \times 10^{-5}$ | $1.3 \times 10^{-5}$ |
| 281.25 - 303.75 | 730 | $1.3 \times 10^{-5}$ | $1.1 \times 10^{-5}$ |
| 303.75 - 326.25 | 980 | $6.2 \times 10^{-6}$ | $5.8 \times 10^{-6}$ |
| 326.25 - 348.75 | 1300 | $3.1 \times 10^{-6}$ | $3.0 \times 10^{-6}$ |
| 348.75 - 360.00 | 1200 | $3.8 \times 10^{-6}$ | $3.7 \times 10^{-6}$ |

2. Distance to point of maximum $\frac{Xu}{Q}$ for offgas stack release = 400 m.

ATTACHMENT III, CALCULATION SHEET III (continued)

B. <u>Normalized concentration, Ground Level Release</u> - Results for Summary Table, Section III, Line 2.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

2. $5.3 \times 10^{-5}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at point of max X/Q for offgas stack release

3. $3.8 \times 10^{-7}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 2 miles

4. $4.0 \times 10^{-8}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 5 miles

5. $7.4 \times 10^{-9}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a]Obtain $\frac{Xu}{Q}$ for ground level release from Section II, Subsection A, line 1.

[b]Obtain wind speed from Summary Table, Section I, line 5.

[c]Obtain ground level release $\frac{Xu}{Q}$ for additional locations using Figure 4 and appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

C. <u>Normalized concentration, Elevated Release</u> - Results for Summary Table, Section III, line 3.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

2. 2.4 x 10⁻⁵ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at point of max X/Q for offgas stack release

3. 3.5 x 10⁻⁷ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 2 miles

4. 3.9 x 10⁻⁸ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 5 miles

5. 7.6 x 10⁻⁹ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a] Obtain $\frac{Xu}{Q}$ for elevated release from Section II, Subsection A, line 1.

[b] Obtain wind speed from Summary Table, Section I, line 5.

[c] Obtain elevated release $\frac{Xu}{Q}$ for additional locations using Figure 5 and appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

D. <u>Whole body dose rate</u> - Results from Summary Table Section III, line 4.

1. _____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ = _____ $\frac{Ci}{sec}$

2a. _____ $FI^m$ x _____ $DFI^d$ = _____

2b. (1 - _____ $FI^m$ x _____ $DFNG^e$ = _____

2c. _____ (line 2a) + _____ (line 2b) = _____ DF

3. $\frac{Du}{Q}$ for site boundary:

   3a. _____ $FI^c$ x _____ $DUOQI^f$ x _____ $TCFI^g$ = _____

   3b. (1 - _____ $FI^c$) x _____ $DUOQNG^h$ x _____ $TCFNG^i$ = _____

   3c. _____ (line 3a) + _____ (line 3b) = _____

4. $\frac{Du}{Q}$ for location of maximum $\frac{Xu}{Q}$:

   4a. _____ $FI^c$ x 18.0 x _____ $TCFI^g$ = _____

   4b. (1 - _____ $FI^c$) x 9.20 x _____ $TCFNG^i$ = _____

   4c. _____ (line 4a) + _____ (line 4b) = _____

5. $\frac{Du}{Q}$ for 2 miles:

   5a. _____ $FI^c$ x 0.360 x _____ $TCFI^g$ = _____

   5b. (1 - _____ $FI^c$) x 0.250 x _____ $TCFNG^i$ = _____

   5c. _____ (line 5a) + _____ (line 5b) = _____

6. $\frac{Du}{Q}$ for 5 miles:

   6a. _____ $FI^c$ x 5.00 x $10^{-2}$ x _____ $TCFI^g$ = _____

   6b. (1 - _____ $FI^c$) x 3.40 x $10^{-2}$ x _____ $TCFNG^i$ = _____

   6c. _____ (line 6a) + _____ (line 6b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

7. $\frac{Du}{Q}$ for 10 miles:

7a. _____ FI$^c$ x 2.10 x $10^{-2}$ x _____ TCFI$^g$ = _____

7b. (1 - _____ FI$^c$) x 1.50 x $10^{-2}$ x _____ TCFNG$^i$ = _____

7c. _____ (line 7a) + _____ (line 7b) = _____

8. $\frac{Du}{Q}$ for additicnal location No. 1

8a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

8b. (1 - _____ FI$^c$) x _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

8c. _____ (line 8a) + _____ (line 8b) = _____

9. $\frac{Du}{Q}$ for additional location No. 2

9a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

9b. (1 - _____ FI$^c$) x _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

9c. _____ (line 9a) + _____ (line 9b) = _____

10. $\frac{Du}{Q}$ for additional location No. 3

10a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

10b. (1 - _____ FI$^c$) x _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

10c. _____ (line 10a) + _____ (line 10b) = _____

11a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

11b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 3)+ _____ $\frac{m^l}{sec}$ = _____

11c. _____ (line 11a) + _____ (line 11b)

= | _____ | $\frac{mrem}{hr}$ at site boundary

ATTACHMENT III, CALCULATION SHEET III (continued)

12a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

12b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 4)+ _____ $\frac{m^l}{sec}$ = _____

12c. _____ (line 12a) + _____ (line 12b)

= |‾‾‾‾‾‾‾| $\frac{mrem}{hr}$ at point of max $\frac{Du}{Q}$ for offgas stack release
|_____|

13a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

13b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 5)+ _____ $\frac{m^l}{sec}$ = _____

13c. _____ (line 13a) + _____ (line 13b)

= |‾‾‾‾‾‾‾| $\frac{mrem}{hr}$ at 2 miles
|_____|

14a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

14b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 6)+ _____ $\frac{m^l}{sec}$ = _____

14c. _____ (line 14a) + _____ (line 14b)

= |‾‾‾‾‾‾‾| $\frac{mrem}{hr}$ at 5 miles
|_____|

15a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

15b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 7)+ _____ $\frac{m^l}{sec}$ = _____

15c. _____ (line 15a) + _____ (line 15b)

= |‾‾‾‾‾‾‾| $\frac{mrem}{hr}$ at 10 miles
|_____|

ATTACHMENT III, CALCULATION SHEET III (continued)

16a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

16b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 8) + _____ $\frac{m^l}{sec}$ = _____

16c. _____ (line 16a) + _____ (line 16b)

= $\boxed{\phantom{xxxx}}$ $\frac{mrem}{hr}$ at additional location No. 1

17a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

17b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 9) + _____ $\frac{m^l}{sec}$ = _____

17c. _____ (line 17a) + _____ (line 17b)

= $\boxed{\phantom{xxxx}}$ $\frac{mrem}{hr}$ at additional location No. 2

18a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

18b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 10) + _____ $\frac{m^l}{sec}$ = _____

18c. _____ (line 18a) + _____ (line 18b)

= $\boxed{\phantom{xxxx}}$ $\frac{mrem}{hr}$ at additional location No. 3

NOTES:

[a]Reactor building stack release rate from Summary Table, Section II, line 2.

[b]Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c]Iodine activity to noble gas activity ratio-obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment is in operation (See Data Summary Sheet, Section II.D, line 1) then use 0.003.

[d]Obtain iodine dose factor (DFI) for time after shutdown (Summary Table, Section I, line 2) from Figure 6.

[e]Obtain noble gas dose factor (DFNG) for time after shutdown (Summary Table, Section I, line 2) from Figure 7.

ATTACHMENT III, CALCULATION SHEET III (continued)

[f]Obtain $\frac{Du}{Q}$ for iodine (DUOQI) from Figure 8 using the appropriate distance from Summary Table, Section III, line 1.

[g]Obtain time correction factor for iodine (TCFI) from Figure 9 using time after shutdown (Summary Table, Section I, line 2).

[h]Obtain $\frac{Du}{Q}$ for noble gas (DUOQNG) from Figure 10 using the appropriate distance from Summary Table, Section III, line 2.

[i]Obtain the noble gas time correction factor (TCFNG) from Figure 11 using time after shutdown (Summary Table, Section I, line 2).

[j]Obtain appropriate $\frac{X}{Q}$ for ground level release from Summary Table, Section III, line 2.

[k]Obtain offgas stack release rate from Summary Table, Section II, line 3.

[l]Obtain wind speed from Summary Table, Section I, line 5.

[m]Iodine activity to noble gas activity ratio, obtain from Data Summary Sheet, Section IID, line 3a. If unknown use 0.3.

    E. <u>Whole body dose</u> - Results for Summary Table Section III, line 5.

        1. _____ $\frac{mrem}{hr}$ (from Section IID, line 11c) x _____ hr[a]

          = [_____] mrem at site boundary

        2. _____ $\frac{mrem}{hr}$ (from Section IID, line 12c) x _____ hr[a]

          = [_____] mrem at point of max X/Q for offgas stack release

        3. _____ $\frac{mrem}{hr}$ (from Section IID, line 13c) x _____ hr[a]

          = [_____] mrem at 2 miles

        4. _____ $\frac{mrem}{hr}$ (from Section IID, line 14c) x _____ hr[a]

          = [_____] mrem at 5 miles

ATTACHMENT III, CALCULATION SHEET III (continued)

5. _____ $\frac{mrem}{hr}$ (from Section IID, line 15c) x _____ $hr^a$

= |_____| mrem at 10 miles

6. _____ $\frac{mrem}{hr}$ (from Section IID, line 16c) x _____ $hr^a$

= |_____| mrem at additional location No. 1

7. _____ $\frac{mrem}{hr}$ (from Section IID, line 17c) x _____ $hr^a$

= |_____| mrem at additional location No. 2

8. _____ $\frac{mrem}{hr}$ (from Section IID, line 18c) x _____ $hr^a$

= |_____| mrem at additional location No. 3

NOTE:

[a]Obtain exposure time from Summary Table, Section II, line 1.

F. <u>Thyroid Dose Commitment</u> - Result for Summary Table, Section III, line 6.

1. (_____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ ) x _____ $FIG^d$ = _____ $\frac{Ci}{sec}$

2. _____ $\frac{Ci^c}{sec}$ x _____ $FIE^e$ _____ $\frac{Ci}{sec}$

3a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 1) = _____ $\frac{Ci}{m^3}$

3b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 1) = _____ $\frac{Ci}{m^3}$

3c. _____ (line 3a) + _____ (line 3b) = _____ $\frac{Ci}{m^3}$

ATTACHMENT III, CALCULATION SHEET III (continued)

4a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 2) = _____ $\frac{Ci}{m^3}$

4b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 2) = _____ $\frac{Ci}{m^3}$

4c. _____ (line 4a) + _____ (line 4b) = _____ $\frac{Ci}{m^3}$

5a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 3) = _____ $\frac{Ci}{m^3}$

5b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 3) = _____ $\frac{Ci}{m^3}$

5c. _____ (line 5a) + _____ (line 5b) = _____ $\frac{Ci}{m^3}$

6a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 4) = _____ $\frac{Ci}{m^3}$

6b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 4) = _____ $\frac{Ci}{m^3}$

6c. _____ (line 6a) + _____ (line 6b) = _____ $\frac{Ci}{m^3}$

7a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 5) = _____ $\frac{Ci}{m^3}$

7b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 5) = _____ $\frac{Ci}{m^3}$

7c. _____ (line 7a) + _____ (line 7b) = _____ $\frac{Ci}{m^3}$

8a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 6) = _____ $\frac{Ci}{m^3}$

8b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 6) = _____ $\frac{Ci}{m^3}$

8c. _____ (line 8a) + _____ (line 8b) = _____ $\frac{Ci}{m^3}$

ATTACHMENT III, CALCULATION SHEET III (continued)

9a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 7) = _____ $\frac{Ci}{m^3}$

9b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIC, line 7) = _____ $\frac{Ci}{m^3}$

9c. _____ (line 9a) + _____ (line 9b) = _____ $\frac{Ci}{m^3}$

10a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIB, line 8) = _____ $\frac{Ci}{m^3}$

10b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m}$ (Sect. IIC, line 8) = _____ $\frac{Ci}{m^3}$

10c. _____ (line 10a) + _____ (line 10b) = _____ $\frac{Ci}{m^3}$

11. _____ $\frac{Ci}{m^3}$ (line 3c) x _____ $hr^g$ x $3.8 \times 10^8$

x _____ $TCFI^f$ = | _____ | mrem at site boundary

12. _____ $\frac{Ci}{m^3}$ (line 4c) x _____ $hr^g$ x $3.8 \times 10^8$

x _____ $TCFI^f$ = | _____ | mrem at point of max X/Q

13. _____ $\frac{Ci}{m^3}$ (line 5c) x _____ $hr^g$ x $3.8 \times 10^8$

x _____ $TCFI^f$ = | _____ | mrem at 2 miles

14. _____ $\frac{Ci}{m^3}$ (line 6c) x _____ $hr^g$ x $3.8 \times 10^8$

x _____ $TCFI^f$ = | _____ | mrem at 5 miles

15. _____ $\frac{Ci}{m^3}$ (line 7c) x _____ $hr^g$ x $3.8 \times 10^8$

x _____ $TCFI^f$ = | _____ | mrem at 10 miles

ATTACHMENT III, CALCULATION SHEET III (continued)

16. _____ $\frac{Ci}{m^3}$ (line 8c) x _____ hr[g] x 3.8 x 10^{8}

   x _____ TCFI[f] = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 1

17. _____ $\frac{Ci}{m^3}$ (line 9c) x _____ hr[g] x 3.8 x 10^{8}

   x _____ TCFI[f] = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 2

18. _____ $\frac{Ci}{m^3}$ (line 10c) x _____ hr[g] x 3.8 x 10^{8}

   x _____ TCFI[f] = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 3

NOTES:

[a]Reactor building stack release rate from Summary Table, Section II, line 2.

[b]Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c]Offgas stack release rate from Summary Table, Section II, line 3.

[d]Iodine activity fraction for ground level release, obtain from Data Summary Sheet Section IID, line 3a. If unknown use 0.3.

[e]Iodine activity fraction for elevated release-obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment (see Data Summary Sheet, Section II.D, line 1) is in operation then use 0.003.

[f]Obtain TCFI from Figure 12 using time after shutdown (Summary Table, Section I, line 2).

[g]Obtain exposure time from Summary Table, Section II, line 1.

   G.  Plume width - The following are the plume widths to be placed in the Summary Table, Section III, line 8.

| Point of maximum X/Q for Offgas Stack release | 2mi | 5mi | 10mi |
|---|---|---|---|
| 470 | 3200 | 6200 | 11000 (meters) |
| (0.29) | (2.0) | (3.9) | (6.8) (miles) |

NOTE:

Obtain remaining plume widths from Figure 13 using the appropriate distances from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

H. <u>Plume arrival time</u> - Results for Summary Table Section III, line 8.

1. $2.78 \times 10^{-4} \times$ _____ $m^a \div$ _____ $\frac{m^b}{sec} =$ |_____| hr to Site Boundary

2. $0.111$ divided by _____ $\frac{m^b}{sec} =$ |_____| hr to point of max X/Q for offgas stack release

3. $0.894$ divided by _____ $\frac{m^b}{sec} =$ |_____| hr to 2 miles

4. $2.23$ divided by _____ $\frac{m^b}{sec} =$ |_____| hr to 5 miles

5. $4.47$ divided by _____ $\frac{m^b}{sec} =$ |_____| hr to 10 miles

6. $2.78 \times 10^{-4} \times$ _____ $m^a \div$ _____ $\frac{m^b}{sec} =$ |_____| hr to additional location No.1

7. $2.78 \times 10^{-4} \times$ _____ $m^a \div$ _____ $\frac{m^b}{sec} =$ |_____| hr to additional location No.2

8. $2.78 \times 10^{-4} \times$ _____ $m^a \div$ _____ $\frac{m^b}{sec} =$ |_____| hr to additional location No.3

NOTES:

[a]Obtain appropriate distance from Summary Table, Section III, line 1.

[b]Obtain wind speed from Summary Table, Section I, line 5.

ATTACHMENT III, CALCULATION SHEET III (continued)

III. Dose information for atmospheric stability class C

A. Variable distance and Xu/Q values.

1. Obtain distance to site boundary and Xu/Q for ground level and elevated releases from following table using the down wind direction from Summary Table, Section I, line 4.

Distance _____ m     $\frac{Xu}{Q}$ (Ground Level Rel.) _____ $\frac{1}{m^2}$

$\frac{Xu}{Q}$ (Elevated Rel.) _____ $\frac{1}{m^2}$

| Down Wind<br>Direction deg. | Distance to<br>Site Bdy, meters | $\frac{Xu}{Q}$ , $\frac{1}{m^2}$<br>Ground Level Rel. | Elevated Rel. |
|---|---|---|---|
| 0 - 11.25 | 1200 | $3.2 \times 10^{-5}$ | $1.3 \times 10^{-5}$ |
| 11.25 - 33.75 | 1600 | $2.0 \times 10^{-5}$ | $1.1 \times 10^{-5}$ |
| 33.75 - 56.25 | 700 | $8.2 \times 10^{-5}$ | $7.5 \times 10^{-6}$ |
| 56.25 - 78.75 | 610 | $1.0 \times 10^{-4}$ | $5.0 \times 10^{-6}$ |
| 78.75 - 101.25 | 490 | $1.5 \times 10^{-4}$ | $2.0 \times 10^{-6}$ |
| 101.25 - 123.75 | 450 | $1.8 \times 10^{-4}$ | $1.2 \times 10^{-6}$ |
| 123.75 - 146.25 | 480 | $1.5 \times 10^{-4}$ | $1.8 \times 10^{-6}$ |
| 146.25 - 168.75 | 500 | $1.4 \times 10^{-4}$ | $2.4 \times 10^{-6}$ |
| 168.75 - 191.25 | 460 | $1.7 \times 10^{-4}$ | $1.4 \times 10^{-6}$ |
| 191.25 - 213.75 | 500 | $1.4 \times 10^{-4}$ | $2.4 \times 10^{-6}$ |
| 213.75 - 236.25 | 630 | $1.0 \times 10^{-4}$ | $5.4 \times 10^{-6}$ |
| 236.25 - 258.75 | 720 | $7.8 \times 10^{-5}$ | $7.6 \times 10^{-6}$ |
| 258.75 - 281.25 | 670 | $8.8 \times 10^{-5}$ | $6.7 \times 10^{-6}$ |
| 281.25 - 303.75 | 730 | $7.8 \times 10^{-5}$ | $7.8 \times 10^{-6}$ |
| 303.75 - 326.25 | 980 | $4.6 \times 10^{-5}$ | $1.2 \times 10^{-5}$ |
| 326.25 - 348.75 | 1300 | $2.8 \times 10^{-5}$ | $1.2 \times 10^{-5}$ |
| 348.75 - 360.00 | 1200 | $3.2 \times 10^{-5}$ | $1.3 \times 10^{-5}$ |

2. Distance to point of maximum $\frac{Xu}{Q}$ for offgas stack release = 1200m.

ATTACHMENT III, CALCULATION SHEET III (continued)

B. Normalized concentration, Ground level release - Results for Summary Table, Section III, line 2.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

2. 3.2 x 10⁻⁵ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at point of max X/Q for offgas release

3. 6.0 x 10⁻⁶ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 2 miles

4. 1.2 x 10⁻⁶ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 5 miles

5. 3.7 x 10⁻⁷ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a] Obtain $\frac{Xu}{Q}$ for ground level release from Section III, Subsection A, line 1.

[b] Obtain wind speed from Summary Table Section I, line 5.

[c] Obtain ground level release $\frac{Xu}{Q}$ for additional locations using Figure 14 and appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

C. Normalized concentration, Elevated release - Results for Summary Table, Section III, line 3.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at site boundary

2. 3.3 x 10⁻⁵ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at point of max X/Q for offgas stack release

3. 5.1 x 10⁻⁶ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at 2 miles

4. 1.2 x 10⁻⁶ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at 5 miles

5. 3.7 x 10⁻⁷ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ $m/sec^b$ = | _____ | $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a] Obtain $\frac{Xu}{Q}$ for elevated release from Section III, Subsection A, line 1.

[b] Obtain wind speed from Summary Table, Section I, line 5.

[c] Obtain elevated release $\frac{Xu}{Q}$ for additional locations using Figure 15 and appropriate distances from Summary Table, Section III, line 1.

D. Whole body dose rate - Results for Summary Table, Section III, line 5.

1. _____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ = _____ $\frac{Ci}{sec}$

2a. _____ $FI^m$ x _____ $DFI^d$ = _____

2b. (1 - _____ $FI^m$) x _____ $DFNG^e$ = _____

2c. _____ (line 2a) + _____ (line 2b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

3. $\frac{Du}{Q}$ for site boundary:

3a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

3b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

3c. _____ (line 3a) + _____ (line 3b) = _____

4. $\frac{Du}{Q}$ for location of maximum $\frac{Xu}{Q}$ for offgas stack release:

4a. _____ FI$^c$ x 12.0 x _____ TCFI$^g$ = _____

4b. (1 - _____ FI$^c$) x 8.50 x _____ TCFNG$^i$ = _____

4c. _____ (line 4a) + _____ (line 4b) = _____

5. $\frac{Du}{Q}$ for 2 miles:

5a. _____ FI$^c$ x 8.30 x _____ TCFI$^g$ = _____

5b. (1 - _____ FI$^c$) x 5.90 x _____ TCFNG$^i$ = _____

5c. _____ (line 5a) + _____ (line 5b) = _____

6. $\frac{Du}{Q}$ for 5 miles

6a. _____ FI$^c$ x 1.85 x _____ TCFI$^g$ = _____

6b. (1 - _____ FI$^c$) x 1.30 x _____ TCFNG$^i$ = _____

6c. _____ (line 6a) + _____ (line 6b) = _____

7. $\frac{Du}{Q}$ for 10 miles

7a. _____ FI$^c$ x 0.440x _____ TCFI$^g$ = _____

7b. (1 - _____ FI$^c$) x 0.320 x _____ TCFNG$^i$ = _____

7c. _____ (line 7a) + _____ (line 7b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

8. $\frac{Du}{Q}$ for additional location No. 1:

    8a. _____ $FI^c$ x _____ $DUOQI^f$ x _____ $TCFI^g$ = _____

    8b. (1 - _____ $FI^c$) X _____ $DUOQNG^h$ x _____ $TCFNG^i$ = _____

    8c. _____ (line 8a) + _____ (line 8b) = _____

9. $\frac{Du}{Q}$ for additional location No. 2:

    9a. _____ $FI^c$ x _____ $DUOQI^f$ x _____ $TCFI^g$ = _____

    9b. (1 - _____ $FI^c$) X _____ $DUOQNG^h$ x _____ $TCFNG^i$ = _____

    9c. _____ (line 9a) + _____ (line 9b) = _____

10. $\frac{Du}{Q}$ for additional location No. 3:

    10a. _____ $FI^c$ x _____ $DUOQI^f$ x _____ $TCFI^g$ = _____

    10b. (1 - _____ $FI^c$) X _____ $DUOQNG^h$ x _____ $TCFNG^i$ = _____

    10c. _____ (line 10a) + _____ (line 10b) = _____

11a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

11b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 3c) + _____ $\frac{m^l}{sec}$ = _____

11c. _____ (line 11a) + _____ (line 11b)

    . = | _____ | $\frac{mrem}{hr}$ at site boundary

12a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

12b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 4c) + _____ $\frac{m^l}{sec}$ = _____

12c. _____ (line 12a) + _____ (line 12b)

    = | _____ | $\frac{mrem}{hr}$ at point of max $\frac{Xu}{Q}$

ATTACHMENT III, CALCULATION SHEET III (continued)

13a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

13b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 5c) ÷ _____ $\frac{m^l}{sec}$ = _____

13c. _____ (line 13a) + _____ (line 13b)

= |_____| $\frac{mrem}{hr}$ at 2 miles

14a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

14b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 6) ÷ _____ $\frac{m^l}{sec}$ = _____

14c. _____ (line 14a) + _____ (line 14b)

= |_____| $\frac{mrem}{hr}$ at 5 miles

15a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

15b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 7c) ÷ _____ $\frac{m^l}{sec}$ = _____

15c. _____ (line 15a) + _____ (line 15b)

= |_____| $\frac{mrem}{hr}$ at 10 miles

16a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

16b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 8c) ÷ _____ $\frac{m^l}{sec}$ = _____

16c. _____ (line 16a) + _____ (line 16b)

= |_____| $\frac{mrem}{hr}$ at additional location No. 1

17a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

17b. _____ $\frac{C_i^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 9c) + _____ $\frac{m^l}{sec}$ = _____

17c. _____ (line 17a) + _____ (line 17b) = _____

= ☐ $\frac{mrem}{hr}$ at additional location No. 2

18a. _____ $\frac{C_i}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

18b. _____ $\frac{C_i^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 10c) + _____ $\frac{m^l}{sec}$ = _____

18c. _____ (line 18a) + _____ (line 18b)

= ☐ $\frac{mrem}{hr}$ at additional location No. 3

NOTES:

[a] Reactor building stack release rate from Summary Table, Section II, line 2.

[b] Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c] Iodine activity to noble gas activity ratio-obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment is in operation (See Data Summary Sheet, Section II.D, line 1) then use 0.003.

[d] Obtain iodine dose factor (DFI) for time after shutdown (Summary Table, Section I, line 2) from Figure 6.

[e] Obtain noble gas dose factor (DFNG) for time after shutdown (Summary Table, Section I, line 2) from Figure 7.

[f] Obtain $\frac{Du}{Q}$ for iodine (DUOQI) from Figure 16 using the appropriate distance from Summary Table, Section III, line 1.

[g] Obtain time correction factor for iodine (TCFI) from Figure 9 using time after shutdown (Summary Table, Section I, line 2).

[h] Obtain $\frac{Du}{Q}$ for noble gas (DUOQNG) from Figure 17 using the appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

[i]Obtain the noble gas time correction factor (TCFNG) from Figure 11 using time after shutdown (Summary Table, Section I, line 2).

[j]Obtain appropriate $\frac{X}{Q}$ for ground level release from Summary Table, Section III, line 2.

[k]Obtain offgas stack release rate from Summary Table, Section II, line 3.

[l]Obtain wind speed from Summary Table, Section I, line 5.

[m]Iodine activity to noble gas activity ratio - obtain from Data Summary Sheet, Section IID, line 3a. If unknown use 0.3.

    E. <u>Whole body dose</u> - Results for Summary Table Section III, line 5.

       1. _____ $\frac{mrem}{hr}$ (from Section IIID, line 11C) x _____ hr[a]

         = [_____] mrem at site boundary

       2. _____ $\frac{mrem}{hr}$ (from Section IIID, line 12C) x _____ hr[a]

         = [_____] mrem at point of max X/Q for offgas stack release

       3. _____ $\frac{mrem}{hr}$ (from Section IIID, line 13C) x _____ hr[a]

         = [_____] mrem at 2 miles

       4. _____ $\frac{mrem}{hr}$ (from Section IIID, line 14C) x _____ hr[a]

         = [_____] mrem at 5 miles

       5. _____ $\frac{mrem}{hr}$ (from Section IIID, line 15C) x _____ hr[a]

         = [_____] mrem at 10 miles

       6. _____ $\frac{mrem}{hr}$ (from Section IIID, line 16C) x _____ hr[a]

         = [_____] mrem at additional location No. 1

ATTACHMENT III, CALCULATION SHEET III (continued)

7. _____ $\frac{mrem}{hr}$ (from Section IIID, line 17C) x _____ hr[a]

= | _____ | mrem at additional location No. 2

8. _____ $\frac{mrem}{hr}$ (from Section IIID, line 18C) x _____ hr[a]

= | _____ | mrem at additional location No. 3

NOTE:

[a]Obtain exposure time from Summary Table, Section II, line 1.

F. <u>Thyroid Dose Commitment</u> - Result for Summary Table, Section III, line 6.

1. ( _____ $\frac{Ci}{sec}$[a] + _____ $\frac{Ci}{sec}$[b] ) x _____ FIG[d] = _____ $\frac{Ci}{sec}$

2. _____ $\frac{Ci}{sec}$[c] x _____ FIE[e] _____ $\frac{Ci}{sec}$

3a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 1) = _____ $\frac{Ci}{m^3}$

3b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 1) = _____ $\frac{Ci}{m^3}$

3c. _____ (line 3a) + _____ (line 3b) = _____ $\frac{Ci}{m^3}$

4a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 2) = _____ $\frac{Ci}{m^3}$

4b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 2) = _____ $\frac{Ci}{m^3}$

4c. _____ (line 4a) + _____ (line 4b) = _____ $\frac{Ci}{m^3}$

5a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 3) = _____ $\frac{Ci}{m^3}$

5b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 3) = _____ $\frac{Ci}{m^3}$

5c. _____ (line 5a) + _____ (line 5b) = _____ $\frac{Ci}{m^3}$

ATTACHMENT III, CALCULATION SHEET III (continued)

6a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 4) = _____ $\frac{Ci}{m^3}$

6b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 4) = _____ $\frac{Ci}{m^3}$

6c. _____ (line 6a) + _____ (line 6b) = _____ $\frac{Ci}{m^3}$

7a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 5) = _____ $\frac{Ci}{m^3}$

7b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 5) = _____ $\frac{Ci}{m^3}$

7c. _____ (line 7a) + _____ (line 7b) = _____ $\frac{Ci}{m^3}$

8a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 6) = _____ $\frac{Ci}{m^3}$

8b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 6) = _____ $\frac{Ci}{m^3}$

8c. _____ (line 8a) + _____ (line 8b) = _____ $\frac{Ci}{m^3}$

9a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 7) = _____ $\frac{Ci}{m^3}$

9b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 7) = _____ $\frac{Ci}{m^3}$

9c. _____ (line 9a) + _____ (line 9b) = _____ $\frac{Ci}{m^3}$

10a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 8) = _____ $\frac{Ci}{m^3}$

10b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 8) = _____ $\frac{Ci}{m^3}$

10c. _____ (line 10c) + _____ (line 10c) + _____ $\frac{Ci}{m^3}$

11. _____ $\frac{Ci}{m^3}$ (line 3c) x _____ hr$^g$ x 3.8 x 10$^8$

x _____ TCFI$^f$ = |_____| mrem at site boundary

12. _____ $\frac{Ci}{m^3}$ (line 4c) x _____ hr$^g$ x 3.8 x 10$^8$

x _____ TCFI$^f$ = |_____| mrem at point of max X/Q

ATTACHMENT III, CALCULATION SHEET III (continued)

6a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 4) = _____ $\frac{Ci}{m^3}$

6b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 4) = _____ $\frac{Ci}{m^3}$

6c. _____ (line 6a) + _____ (line 6b) = _____ $\frac{Ci}{m^3}$

7a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 5) = _____ $\frac{Ci}{m^3}$

7b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 5) = _____ $\frac{Ci}{m^3}$

7c. _____ (line 7a) + _____ (line 7b) = _____ $\frac{Ci}{m^3}$

8a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 6) = _____ $\frac{Ci}{m^3}$

8b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 6) = _____ $\frac{Ci}{m^3}$

8c. _____ (line 8a) + _____ (line 8b) = _____ $\frac{Ci}{m^3}$

9a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 7) = _____ $\frac{Ci}{m^3}$

9b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 7) = _____ $\frac{Ci}{m^3}$

9c. _____ (line 9a) + _____ (line 9b) = _____ $\frac{Ci}{m^3}$

10a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IIIB, line 8) = _____ $\frac{Ci}{m^3}$

10b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IIIC, line 8) = _____ $\frac{Ci}{m^3}$

10c. _____ (line 10c) + _____ (line 10c) + _____ $\frac{Ci}{m^3}$

11. _____ $\frac{Ci}{m^3}$ (line 3c) x _____ hr[g] x 3.8 x 10^{8}

    x _____ TCFI[f] = | _____ | mrem at site boundary

12. _____ $\frac{Ci}{m^3}$ (line 4c) x _____ hr[g] x 3.8 x 10^{8}

    x _____ TCFI[f] = | _____ | mrem at point of max X/Q

ATTACHMENT III, CALCULATION SHEET III (continued)

13. _____ $\frac{Ci}{m^3}$ (line 5c) x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = |‾‾‾‾‾‾‾|
                    |_____| mrem at 2 miles

14. _____ $\frac{Ci}{m^3}$ (line 6c) x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = |‾‾‾‾‾‾‾|
                    |_____| mrem at 5 miles

ATTACHMENT III, CALCULATION SHEET III (continued)

15. _____ $\frac{Ci}{m^3}$ (line 7c) x _____ hr[g] x $3.8 \times 10^8$

   x _____ TCFI[f] = | ‾‾‾‾‾‾ |
   | _____ | mrem at 10 miles

16. _____ $\frac{Ci}{m^3}$ (line 8c) x _____ hr[g] x $3.8 \times 10^8$

   x _____ TCFI[f] = | ‾‾‾‾‾‾ |
   | _____ | mrem at additional location No. 1

17. _____ $\frac{Ci}{m^3}$ (line 9c) x _____ hr[g] x $3.8 \times 10^8$

   x _____ TCFI[f] = | ‾‾‾‾‾‾ |
   | _____ | mrem at additional location No. 2

18. _____ $\frac{Ci}{m^3}$ (line 10c) x _____ hr[g] x $3.8 \times 10^8$

   x _____ TCFI[f] = | ‾‾‾‾‾‾ |
   | _____ | mrem at additional location No. 3

NOTES:

[a]Reactor building stack release rate from Summary Table, Section II, line 2.

[b]Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c]Offgas stack release rate from Summary Table, Section II, line 3.

[d]Iodine activity fraction for ground level release, - obtain from Data Summary Sheet Section IID, line 3a. If unknown use 0.3.

[e]Iodine activity fraction for elevated release - obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment (see Data Summary Sheet, Section II.D, line 1) is in operation then use 0.003.

[f]Obtain TCFI from Figure 12 using time after shutdown (Summary Table, Section I, line 2).

[g]Obtain exposure time from Summary Table, Section II, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

G. Plume width - The following are the plume widths to be placed in the Summary Table, Section III, line 7.

Point of maximum X/Q
for Offgas Stack release      2mi          5mi          10mi

720 meters                    1900         2700         6600 (meters)
(0.45)                        (1.2)        (1.7)        (4.1)(miles)

NOTE:

Obtain remaining plume widths from Figure 18 using the appropriate distances from Summary Table, Section III, line 1.

H. Plume arrival time - Results for Summary Table Section III, line 8.

1.  $2.78 \times 10^{-4} \times$ _____ $m^a$ + _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to Site Boundary

2.  0.333 divided by _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to point of max X/Q for offgas stack release

3.  0.894 divided by _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to 2 miles

4.  2.23 divided by _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to 5 miles

5.  4.47 divided by _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to 10 miles

6.  $2.78 \times 10^{-4} \times$ _____ $m^a$ + _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to additional location No. 1

7.  $2.78 \times 10^{-4} \times$ _____ $m^a$ + _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to additional location No. 2

8.  $2.78 \times 10^{-4} \times$ _____ $m^a$ + _____ $\dfrac{m^b}{sec}$ = $\boxed{\phantom{xx}}$ hr to additional location No. 3

NOTES:

aObtain appropriate distance from Summary Table, Section III, line 1.

bObtain wind speed from Summary Table, Section I, line 5.

ATTACHMENT III, CALCULATION SHEET III (continued)

IV. <u>Dose information for atmospheric stability class DE</u>

    A. <u>Variable distance and Xu/Q values.</u>

        1. Obtain distance to site boundary and Xu/Q for ground level and elevated releases from following table using the down wind direction from Summary Table, Section I, line 3.

Distance _____ m      $\frac{Xu}{Q}$ (Ground Level Rel.)_____ $\frac{1}{m^2}$

         $\frac{Xu}{Q}$ (Elevated Rel.) _____ $m\frac{1}{2}$

| Down Wind<br>Direction deg. | Distance to<br>Site Bdy, meters | $\frac{Xu}{Q}$ , $\frac{1}{m^2}$ | |
| --- | --- | --- | --- |
| | | Ground Level Rel. | Elevated Rel. |
| 0 - 11.25 | 1200 | $1.5 \times 10^{-4}$ | $3.4 \times 10^{-7}$ |
| 11.25 - 33.75 | 1600 | $9.5 \times 10^{-5}$ | $1.6 \times 10^{-6}$ |
| 33.75 - 56.25 | 700 | $3.5 \times 10^{-4}$ | $1.8 \times 10^{-9}$ |
| 56.25 - 78.75 | 610 | $4.4 \times 10^{-4}$ | $8.0 \times 10^{-10}$ |
| 78.75 - 101.25 | 490 | $6.1 \times 10^{-4}$ | $2.1 \times 10^{-10}$ |
| 101.25 - 123.75 | 450 | $7.3 \times 10^{-4}$ | $1.6 \times 10^{-11}$ |
| 123.75 - 146.25 | 480 | $6.4 \times 10^{-4}$ | $1.6 \times 10^{-10}$ |
| 146.25 - 168.75 | 500 | $6.0 \times 10^{-4}$ | $2.6 \times 10^{-10}$ |
| 168.75 - 191.25 | 460 | $6.9 \times 10^{-4}$ | $6.5 \times 10^{-11}$ |
| 191.25 - 213.75 | 500 | $6.0 \times 10^{-4}$ | $2.6 \times 10^{-10}$ |
| 213.75 - 236.25 | 630 | $4.3 \times 10^{-4}$ | $9.0 \times 10^{-10}$ |
| 236.25 - 258.75 | 720 | $3.4 \times 10^{-4}$ | $2.6 \times 10^{-9}$ |
| 258.75 - 281.25 | 670 | $3.7 \times 10^{-4}$ | $1.2 \times 10^{-9}$ |
| 281.25 - 303.75 | 730 | $3.3 \times 10^{-4}$ | $3.0 \times 10^{-9}$ |
| 303.75 - 326.25 | 980 | $2.1 \times 10^{-4}$ | $6.8 \times 10^{-8}$ |
| 326.25 - 348.75 | 1300 | $1.3 \times 10^{-4}$ | $6.0 \times 10^{-7}$ |
| 348.75 - 360.00 | 1200 | $1.5 \times 10^{-4}$ | $3.4 \times 10^{-7}$ |

        2. Distance to point of maximum $\frac{Xu}{Q}$ for offgas stack release = 4000m.

ATTACHMENT III, CALCULATION SHEET III (continued)

B. <u>Normalized concentration, Ground level release</u> - Results for Summary Table, Section III, line 2.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

2. $2.2 \times 10^{-5}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at point of max X/Q for offgas release

3. $3.1 \times 10^{-6}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 2 miles

4. $7.2 \times 10^{-6}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 5 miles

5. $2.4 \times 10^{-7}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a]Obtain $\frac{Xu}{Q}$ for ground level release from Section IV, Subsection A, line 1.

[b]Obtain wind speed from Summary Table Section I, line 5.

[c]Obtain ground level release $\frac{Xu}{Q}$ for additional locations using Figure 19 and appropriate distance from Summary Table, Section III, line 1.

C. <u>Normalized concentration, Elevated release</u> - Results for Summary Table, Section III, line 3.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

ATTACHMENT III, CALCULATION SHEET III (continued)

2.  $7.0 \times 10^{-6}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at point of max X/Q for offgas stack release

3.  $6.6 \times 10^{-6}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at 2 miles

4.  $4.7 \times 10^{-6}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at 5 miles

5.  $2.0 \times 10^{-6}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at 10 miles

6.  _____ $\dfrac{1^c}{m^2}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at additional location No. 1

7.  _____ $\dfrac{1^c}{m^2}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at additional location No. 2

8.  _____ $\dfrac{1^c}{m^2}$ ÷ _____ m/sec$^b$ = $\boxed{\phantom{xxxxx}}$ $\dfrac{sec}{m^3}$ at additional location No. 3

NOTE:

$^a$Obtain $\dfrac{Xu}{Q}$ for elevated release from Section IV, Subsection A, line 1.

$^b$Obtain wind speed from Summary Table, Section I, line 5.

$^c$Obtain elevated release $\dfrac{Xu}{Q}$ for additional locations using Figure 20 and appropriate distances from Summary Table, Section III, line 1.

D.  Whole body dose rate - Results for Summary Table, Section III, line 4.

1.  _____ $\dfrac{Ci^a}{sec}$ + _____ $\dfrac{Ci^b}{sec}$ = _____ $\dfrac{Ci}{sec}$

2a.  _____ $FI^m$ x _____ $DFI^d$ = _____

2b.  $(1 -$ _____ $FI^m$ x _____ $DFNG^e$ = _____

2c.  _____ (line 2a) + _____ (line 2b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

3. $\frac{Du}{Q}$ for site boundary:

3a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

3b. (1 - _____ FI$^c$) x _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

3c. _____ (line 3a) + _____ (line 3b) = _____

4. $\frac{Du}{Q}$ for location of maximum $\frac{Xu}{Q}$ for offgas stack release:

4a. _____ FI$^c$ x 11.0 x _____ TCFI$^g$ = _____

4b. (1 - _____ FI$^c$) x 7.2 x _____ TCFNG$^i$ = _____

4c. _____ (line 4a) + _____ (line 4b) = _____

5. $\frac{Du}{Q}$ for 2 miles:

5a. _____ FI$^c$ x 11.1 x _____ TCFI$^g$ = _____

5b. (1 - _____ FI$^c$) x 8.0 x _____ TCFNG$^i$ = _____

5c. _____ (line 5a) + _____ (line 5b) = _____

6. $\frac{Du}{Q}$ for 5 miles

6a. _____ FI$^c$ x 7.4 x _____ TCFI$^g$ = _____

6b. (1 - _____ FI$^c$) x 4.1 x _____ TCFNG$^i$ = _____

6c. _____ (line 6a) + _____ (line 6b) = _____

7. $\frac{Du}{Q}$ for 10 miles

7a. _____ FI$^c$ x 2.6 x _____ TCFI$^g$ = _____

7b. (1 - _____ FI$^c$) x 1.85 x _____ TCFNG$^i$ = _____

7c. _____ (line 7a) + _____ (line 7b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

8. $\frac{Du}{Q}$ for additional location No. 1:

8a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

8b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

8c. _____ (line 8a) + _____ (line 8b) = _____

9. $\frac{Du}{Q}$ for additional location No. 2:

9a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

9b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

9c. _____ (line 9a) + _____ (line 9b) = _____

10. $\frac{Du}{Q}$ for additional location No. 3:

10a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

10b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

10c. _____ (line 10a) + _____ (line 10b) = _____

11a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

11b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 3) + _____ $\frac{m^l}{sec}$ = _____

11c. _____ (line 11a) + _____ (line 11b)

= | _____ | $\frac{mrem}{hr}$ at site boundary

12a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

12b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 4) + _____ $\frac{m^l}{sec}$ = _____

12c. _____ (line 12a) + _____ (line 12b)

= | _____ | $\frac{mrem}{hr}$ at point of max $\frac{Xu}{Q}$

ATTACHMENT III, CALCULATION SHEET III (continued)

13a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

13b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 5) + _____ $\frac{m^l}{sec}$ = _____

13c. _____ (line 13a) + _____ (line 13b)

= | _____ | $\frac{mrem}{hr}$ at 2 miles

14a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

14b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 6) + _____ $\frac{m^l}{sec}$ = _____

14c. _____ (line 14a) + _____ (line 14b)

= | _____ | $\frac{mrem}{hr}$ at 5 miles

15a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

15b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 7) + _____ $\frac{m^l}{sec}$ = _____

15c. _____ (line 15a) + _____ (line 15b)

= | _____ | $\frac{mrem}{hr}$ at 10 miles

16a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

16b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 8) + _____ $\frac{m^l}{sec}$ = _____

16c. _____ (line 16a) + _____ (line 16b)

= | _____ | $\frac{mrem}{hr}$ at additional location No. 1

ATTACHMENT III, CALCULATION SHEET III (continued)

17a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

17b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 9) + _____ $\dfrac{m^l}{sec}$ = _____

17c. _____ (line 17a) + _____ (line 17b)

= $\boxed{\phantom{xxxxxxxxxx}}$ $\dfrac{mrem}{hr}$ at additional location No. 2

18a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

18b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 10) + _____ $\dfrac{m^l}{sec}$ = _____

18c. _____ (line 18a) + _____ (line 18b)

= $\boxed{\phantom{xxxxxxxxxx}}$ $\dfrac{mrem}{hr}$ at additional location No. 3

NOTES:

[a] Reactor building stack release rate from Summary Table, Section II, line 2.

[b] Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c] Iodine activity to noble gas activity ratio - obtain from Data Sumary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment is in operation (See Data Summary Sheet, Section II.D, line 1) then use 0.003.

[d] Obtain iodine dose factor (DFI) for time after shutdown (Summary Table, Section I, line 2) from Figure 6.

[e] Obtain noble gas dose factor (DFNG) for time after shutdown (Summary Table, Section I, line 2) from Figure 7.

[f] Obtain $\dfrac{Du}{Q}$ for iodine (DUOQI) from Figure 21 using the appropriate distance from Summary Table, Section III, line 1.

[g] Obtain time correction factor for iodine (TCFI) from Figure 9 using time after shutdown (Summary Table, Section I, line 2).

[h] Obtain $\dfrac{Du}{Q}$ for noble gas (DUOQNG) from Figure 22 using the appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

[i]Obtain the noble gas time correction factor (TCFNG) from Figure 11 using time after shutdown (Summary Table, Section I, line 2).

[j]Obtain appropriate $\frac{X}{Q}$ for ground level release from Summary Table, Section III, line 2.

[k]Obtain offgas stack release rate from Summary Table, Section II, line 3.

[l]Obtain wind speed from Summary Table, Section I, line 5.

[m]Iodine activity to noble gas activity ratio - obtain from Data Summary Shet Section IID, line 3a. If unknown use 0.3.

E. Whole body dose - Results for Summary Table Section III, line 5.

1. _____ $\frac{mrem}{hr}$ (from Section IVD, line 11C) x _____ hr[a]

   = | _____ | mrem at site boundary

2. _____ $\frac{mrem}{hr}$ (from Section IVD, line 12C) x _____ hr[a]

   = | _____ | mrem at point of max X/Q for offgas stack release

3. _____ $\frac{mrem}{hr}$ (from Section IVD, line 13C) x _____ hr[a]

   = | _____ | mrem at 2 miles

4. _____ $\frac{mrem}{hr}$ (from Section IVD, line 14C) x _____ hr[a]

   = | _____ | mrem at 5 miles

5. _____ $\frac{mrem}{hr}$ (from Section IVD, line 15C) x _____ hr[a]

   = | _____ | mrem at 10 miles

6. _____ $\frac{mrem}{hr}$ (from Section IVD, line 16C) x _____ hr[a]

   = | _____ | mrem at additional location No. 1

ATTACHMENT III, CALCULATION SHEET III (continued)

7. _____ $\frac{mrem}{hr}$ (from Section IVD, line 17C) x _____ $hr^a$

= | _____ | mrem at additional location No. 2

8. _____ $\frac{mrem}{hr}$ (from Section IVD, line 18C) x _____ $hr^a$

= | _____ | mrem at additional location No. 3

NOTE:

[a]Obtain exposure time from Summary Table, Section II, line 1.

F. <u>Thyroid Dose Commitment</u> - Result for Summary Table, Section III, line 6.

1. ( _____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ ) x _____ $FIG^d$ = _____ $\frac{Ci}{sec}$

2. _____ $\frac{Ci^c}{sec}$ x _____ $FIE^e$ _____ $\frac{Ci}{sec}$

3a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 1) = _____ $\frac{Ci}{m^3}$

3b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 1) = _____ $\frac{Ci}{m^3}$

3c. _____ (line 3a) + _____ (line 3b) = _____ $\frac{Ci}{m^3}$

4a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 2) = _____ $\frac{Ci}{m^3}$

4b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 2) = _____ $\frac{Ci}{m^3}$

4c. _____ (line 4a) + _____ (line 4b) = _____ $\frac{Ci}{m^3}$

5a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 3) = _____ $\frac{Ci}{m^3}$

5b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. IVB, line 3) = _____ $\frac{Ci}{m^3}$

5c. _____ (line 5a) + _____ (line 5b) = _____ $\frac{Ci}{m^3}$

ATTACHMENT III, CALCULATION SHEET III (continued)

6a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 4) = _____ $\dfrac{Ci}{m^3}$

6b. _____ $\dfrac{Ci}{sec}$ (line 2) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 4) = _____ $\dfrac{Ci}{m^3}$

6c. _____ (line 6a) + _____ (line 6b) = _____ $\dfrac{Ci}{m^3}$

7a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 5) = _____ $\dfrac{Ci}{m^3}$

7b. _____ $\dfrac{Ci}{sec}$ (line 2) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 5) = _____ $\dfrac{Ci}{m^3}$

7c. _____ (line 7a) + _____ (line 7b) = _____ $\dfrac{Ci}{m^3}$

8a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 6) = _____ $\dfrac{Ci}{m^3}$

8b. _____ $\dfrac{Ci}{sec}$ (line 2) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 6) = _____ $\dfrac{Ci}{m^3}$

8c. _____ (line 8a) + _____ (line 8b) = _____ $\dfrac{Ci}{m^3}$

9a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 7) = _____ $\dfrac{Ci}{m^3}$

9b. _____ $\dfrac{Ci}{sec}$ (line 2) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 7) = _____ $\dfrac{Ci}{m^3}$

9c. _____ (line 9a) + _____ (line 9b) = _____ $\dfrac{Ci}{m^3}$

10a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 8) = _____ $\dfrac{Ci}{m^3}$

10b. _____ $\dfrac{Ci}{sec}$ (line 2) x _____ $\dfrac{sec}{m^3}$ (Sect. IVB, line 8) = _____ $\dfrac{Ci}{m^3}$

10c. _____ (line 10a) + _____ (line 10b) = _____ $\dfrac{Ci}{m^3}$

11. _____ $\dfrac{Ci}{m^3}$ (line 3) x _____ $hr^g$ x $3.8$ x $10^8$

x _____ $TCFI^f$ = | _____ | mrem at site boundary

12. _____ $\dfrac{Ci}{m^3}$ (line 4) x _____ $hr^g$ x $3.8$ x $10^8$

x _____ $TCFI^f$ = | _____ | mrem at point of max X/Q

ATTACHMENT III, CALCULATION SHEET III (continued)

13. _____ $\frac{Ci}{m^3}$ (line 5) x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at 2 miles

14. _____ $\frac{Ci}{m^3}$ (line 6) x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at 5 miles

15. _____ $\frac{Ci}{m^3}$ (line 7) x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at 10 miles

16. _____ $\frac{Ci}{m^3}$ (line 8) x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 1

17. _____ $\frac{Ci}{m^3}$ (line 9) x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 2

18. _____ $\frac{Ci}{m^3}$ (line 10)x _____ hr$^g$ x 3.8 x 10$^8$

 x _____ TCFI$^f$ = $\boxed{\phantom{xxxxxx}}$ mrem at additional location No. 3

NOTES:

[a]Reactor building stack release rate from Summary Table, Section II, line 2.

[b]Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c]Offgas stack release rate from Summary Table, Section II, line 3.

[d]Iodine activity fraction for ground level release - obtain from Data Summary Sheet Section IID, line 3a. If unknown use 0.3.

[e]Iodine activity fraction for elevated release - obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment (see Data Summary Sheet, Section II.D, line 1) is in operation then use 0.003.

ATTACHMENT III, CALCULATION SHEET III (continued)

[f] Obtain TCFI from Figure 12 using time after shutdown (Summary Table, Section I, line 2).

[g] Obtain exposure time from Summary Table, Section II, line 1.

G. Plume width - The following are the plume widths to be placed in the Summary Table, Section III, line 7.

| Point of maximum X/Q<br>for Offgas Stack release | | 2mi | 5mi | 10mi |
| --- | --- | --- | --- | --- |
| 1400<br>(0.87) | | 1100<br>(0.68) | 2400<br>(1.5) | 4300 (meters)<br>(2.7)(miles) |

NOTE:

Obtain remaining plume widths from Figure 23 using the appropriate distances from Summary Table, Section III, line 2.

H. Plume arrival time - Results for Summary Table Section III, line 9.

1. $2.78 \times 10^{-4}$ x _____ $m^a$ + _____ $\frac{m^b}{sec}$ = |____| hr to Site Boundary

2. 1.11 divided by _____ $\frac{m^b}{sec}$ = |____| hr to point of max X/Q for offgas stack release

3. 0.894 divided by _____ $\frac{m^b}{sec}$ = |____| hr to 2 miles

4. 2.23 divided by _____ $\frac{m^b}{sec}$ = |____| hr to 5 miles

5. 4.47 divided by _____ $\frac{m^b}{sec}$ = |____| hr to 10 miles

6. $2.78 \times 10^{-4}$ x _____ $m^a$ + _____ $\frac{m^b}{sec}$ = |____| hr to additional location No. 1

7. $2.78 \times 10^{-4}$ x _____ $m^a$ + _____ $\frac{m^b}{sec}$ = |____| hr to additional location No. 2

8. $2.78 \times 10^{-4}$ x _____ $m^a$ + _____ $\frac{m^b}{sec}$ = |____| hr to additional location No. 3

NOTES:

[a] Obtain appropriate distance from Summary Table, Section III, line 1.

[b] Obtain wind speed from Summary Table, Section I, line 5.

ATTACHMENT III, CALCULATION SHEET III (continued)

V.. Dose information for atmospheric stability class FG

A. Variable distance and Xu/Q values.

1. Obtain distance to site boundary and Xu/Q for ground level and elevated releases from following table using the down wind direction from Summary Table, Section I, line 4.

Distance _____ m  $\frac{Xu}{Q}$ (Ground Level Rel.)_____ $\frac{1}{m^2}$

$\frac{Xu}{Q}$ (Elevated Rel.) _____ $\frac{1}{m^2}$

| Down Wind<br>Direction deg. | Distance to<br>Site Bdy, meters | $\frac{Xu}{Q}$ , $\frac{1}{m^2}$ | |
|---|---|---|---|
| | | Ground Level Rel. | Elevated Rel. |
| 0 - 11.25 | 1200 | $9.5 \times 10^{-4}$ | 0.0 |
| 11.25 - 33.75 | 1600 | $6.2 \times 10^{-4}$ | 0.0 |
| 33.75 - 56.25 | 700 | $2.1 \times 10^{-3}$ | 0.0 |
| 56.25 - 78.75 | 610 | $2.6 \times 10^{-3}$ | 0.0 |
| 78.75 - 101.25 | 490 | $3.6 \times 10^{-3}$ | 0.0 |
| 101.25 - 123.75 | 450 | $4.1 \times 10^{-3}$ | 0.0 |
| 123.75 - 146.25 | 480 | $3.7 \times 10^{-3}$ | 0.0 |
| 146.25 - 168.75 | 500 | $3.5 \times 10^{-3}$ | 0.0 |
| 168.75 - 191.25 | 460 | $3.9 \times 10^{-3}$ | 0.0 |
| 191.25 - 213.75 | 500 | $3.5 \times 10^{-3}$ | 0.0 |
| 213.75 - 236.25 | 630 | $2.5 \times 10^{-3}$ | 0.0 |
| 236.25 - 258.75 | 720 | $2.0 \times 10^{-3}$ | 0.0 |
| 258.75 - 281.25 | 670 | $2.2 \times 10^{-3}$ | 0.0 |
| 281.25 - 303.75 | 730 | $2.0 \times 10^{-3}$ | 0.0 |
| 303.75 - 326.25 | 980 | $1.2 \times 10^{-3}$ | 0.0 |
| 326.25 - 348.75 | 1300 | $8.3 \times 10^{-4}$ | 0.0 |
| 348.75 - 360.00 | 1200 | $9.5 \times 10^{-4}$ | 0.0 |

2. Distance to point of maximum $\frac{Xu}{Q}$ for offgas stack release = 16090m.

ATTACHMENT III, CALCULATION SHEET III (continued)

B. Normalized concentration, Ground level release - Results for Summary Table, Section III, line 2.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at site boundary

2. $2.0 \times 10^{-5}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at point of max X/Q for offgas release

3. $2.1 \times 10^{-4}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 2 miles

4. $5.5 \times 10^{-5}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 5 miles

5. $2.0 \times 10^{-5}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = |_____| $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a] Obtain $\frac{Xu}{Q}$ for ground level release from Section V, Subsection A, line 1.

[b] Obtain wind speed from Summary Table Section I, line 5.

[c] Obtain ground level release $\frac{Xu}{Q}$ for additional locations using Figure 24 and appropriate distance from Summary Table, Section III, line 1.

ATTACHMENT III, CALCULATION SHEET III (continued)

C. Normalized concentration, Elevated release - Results for Summary Table, Section III, line 3.

1. _____ $\frac{1^a}{m^2}$ ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at site boundary

2. 1.7 x 10-4 ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at point of max X/Q for offgas stack release

3. 1.7 x 10-11 ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at 2 miles

4. 2.2 x 10-7 ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at 5 miles

5. 1.7 x 10-6 ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at 10 miles

6. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at additional location No. 1

7. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at additional location No. 2

8. _____ $\frac{1^c}{m^2}$ ÷ _____ m/sec[b] = $\boxed{\phantom{xxxxxx}}$ $\frac{sec}{m^3}$ at additional location No. 3

NOTE:

[a]Obtain $\frac{Xu}{Q}$ for elevated release from Sectopm V. Subsection A, line 1.

[b]Obtain wind speed from Summary Table, Section I, line 5.

[c]Obtain elevated release $\frac{Xu}{Q}$ for additional locations using Figure 25 and appropriate distances from Summary Table, Section III, line 1.

D. Whole body dose rate - Results for Summary Table, Section III, line 4.

1. _____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ = _____ $\frac{Ci}{sec}$

2a. _____ FI[m] x _____ DFI[d] = _____

2b. (1 - _____ FI[m]) x _____ DFNG[e] = _____

2c. _____ (line 2a) + _____ (line 2b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

3. $\frac{Du}{Q}$ for site boundary:

   3a. _____ FIC x _____ DUOQI[f] x _____ TCFI[g] = _____

   3b. (1 - _____ FIC) X _____ DUOQNG[h] x _____ TCFNG[i] = _____

   3c. _____ (line 3a) + _____ (line 3b) = _____

4. $\frac{Du}{Q}$ for location of maximum $\frac{Xu}{Q}$

   4a. _____ FIC x 4.2 x _____ TCFI[g] = _____

   4b. (1 - _____ FIC) x 3.0 x _____ TCFNG[i] = _____

   4c. _____ (line 4a) + _____ (line 4b) = _____

5. $\frac{Du}{Q}$ for 2 miles:

   5a. _____ FIC x 6.8 x _____ TCFI[g] = _____

   5b. (1 - _____ FIC) x 4.8 x _____ TCFNG[i] = _____

   5c. _____ (line 5a) + _____ (line 5b) = _____

6. $\frac{Du}{Q}$ for 5 miles

   6a. _____ FIC x 5.3 x _____ TCFI[g] = _____

   6b. (1 - _____ FIC) x 3.7 x _____ TCFNG[i] = _____

   6c. _____ (line 6a) + _____ (line 6b) = _____

7. $\frac{Du}{Q}$ for 10 miles

   7a. _____ FIC x 4.2 x _____ TCFI[g] = _____

   7b. (1 - _____ FIC) x 3.0 x _____ TCFNG[i] = _____

   7c. _____ (line 7a) + _____ (line 7b) = _____

8. $\frac{Du}{Q}$ for additional location No. 1

   8a. _____ FIC x _____ DUOQI[f] x _____ TCFI[g] = _____

   8b. (1 - _____ FIC) X _____ DUOQNG[h] x _____ TCFNG[i] = _____

   8c. _____ (line 8a) + _____ (line 8b) = _____

ATTACHMENT III, CALCULATION SHEET III (continued)

9. $\frac{Du}{Q}$ for additional location No. 2

9a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

9b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

9c. _____ (line 9a) + _____ (line 9b) = _____

10. $\frac{Du}{Q}$ for additional location No. 3

10a. _____ FI$^c$ x _____ DUOQI$^f$ x _____ TCFI$^g$ = _____

10b. (1 - _____ FI$^c$) X _____ DUOQNG$^h$ x _____ TCFNG$^i$ = _____

10c. _____ (line 10a) + _____ (line 10b) = _____

11a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

11b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 3c) + _____ $\frac{m^l}{sec}$ = _____

11c. _____ (line 11a) + _____ (line 11b)

= $\boxed{\phantom{xxxxxxxx}}$ $\frac{mrem}{hr}$ at site boundary

12a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

12b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 4c) + _____ $\frac{m^l}{sec}$ = _____

12c. _____ (line 12a) + _____ (line 12b)

= $\boxed{\phantom{xxxxxxxx}}$ $\frac{mrem}{hr}$ at point of max $\frac{Xu}{Q}$

13a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

13b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 5c) + _____ $\frac{m^l}{sec}$ = _____

13c. _____ (line 13a) + _____ (line 13b)

= $\boxed{\phantom{xxxxxxxx}}$ $\frac{mrem}{hr}$ at 2 miles

ATTACHMENT III, CALCULATION SHEET III (continued)

14a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

14b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 6c)+ _____ $\dfrac{m^l}{sec}$ = _____

14c. _____ (line 14a) + _____ (line 14b)

= | _____ | $\dfrac{mrem}{hr}$ at 5 miles

15a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

15b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 7c)+ _____ $\dfrac{m^l}{sec}$ = _____

15c. _____ (line 15a) + _____ (line 15b)

= | _____ | $\dfrac{mrem}{hr}$ at 10 miles

16a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

16b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 8c)+ _____ $\dfrac{m^l}{sec}$ = _____

16c. _____ (line 16a) + _____ (line 16b)

= | _____ | $\dfrac{mrem}{hr}$ at additional location No. 1

17a. _____ $\dfrac{Ci}{sec}$ (line 1) x _____ $\dfrac{sec^j}{m^3}$ x _____ (line 2) = _____

17b. _____ $\dfrac{Ci^k}{sec}$ x _____ $\dfrac{Du}{Q}$ (line 9c)+ _____ $\dfrac{m^l}{sec}$ = _____

17c. _____ (line 17a) + _____ (line 17b)

= | _____ | $\dfrac{mrem}{hr}$ at additional location No. 2

ATTACHMENT III, CALCULATION SHEET III (continued)

18a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec^j}{m^3}$ x _____ (line 2) = _____

18b. _____ $\frac{Ci^k}{sec}$ x _____ $\frac{Du}{Q}$ (line 10c) + _____ $\frac{m^l}{sec}$ = _____

18c. _____ (line 18a) + _____ (line 18b)

= $\boxed{\phantom{xxxxxxxxx}}$ $\frac{mrem}{hr}$ at additional location No. 3

NOTES:

[a] Reactor building stack release rate from Summary Table, Section II, line 2.

[b] Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c] Iodine activity to noble gas activity ratio - obtain from Data Summary Sheet, Section IID, lie 3b. If unknown use 0.3 unless Standby Gas Treatment is in operation (See Data Summary Sheet, Section II.D, line 1) then use 0.003.

[d] Obtain iodine dose factor (DFI) for time after shutdown (Summary Table, Section I, line 2) from Figure 6.

[e] Obtain noble gas dose factor (DFNG) for time after shutdown (Summary Table, Section I, line 2) from Figure 7.

[f] Obtain $\frac{Du}{Q}$ for iodine (DUOQI) from Figure 26 using the appropriate distance from Summary Table, Section III, line 1.

[g] Obtain time correction factor for iodine (TCFI) from Figure 9 using time after shutdown (Summary Table, Section I, line 2).

[h] Obtain $\frac{Du}{Q}$ for noble gas (DUOQNG) from Figure 27 using the appropriate distance from Summary Table, Section III, line 1.

[i] Obtain the noble gas time correction factor (TCFNG) from Figure 11 using time after shutdown (Summary Table, Section I, line 2).

[j] Obtain appropriate $\frac{X}{Q}$ for ground level release from Summary Table, Section III, line 2.

[k] Obtain offgas stack release rate from Summary Table, Section II, line 3.

[l] Obtain wind speed from Summary Table, Section I, line 5.

[m] Iodine activity to noble gas activity ratio-obtain from Data Summary Sheet Section IID, line 3a. If unknown use 0.3.

ATTACHMENT III, CALCULATION SHEET III (continued)

E. <u>Whole body dose</u> - Results for Summary Table Section III, line 5.

1. _____ $\frac{mrem}{hr}$ (from Section VD, line 11C) x _____ hr$^a$

   = |_____| mrem at site boundary

2. _____ $\frac{mrem}{hr}$ (from Section VD, line 12C) x _____ hr$^a$

   = |_____| mrem at point of max X/Q

3. _____ $\frac{mrem}{hr}$ (from Section VD, line 13C) x _____ hr$^a$

   = |_____| mrem at 2 miles

4. _____ $\frac{mrem}{hr}$ (from Section VD, line 14C) x _____ hr$^a$

   = |_____| mrem at 5 miles

5. _____ $\frac{mrem}{hr}$ (from Section VD, line 15C) x _____ hr$^a$

   = |_____| mrem at 10 miles

6. _____ $\frac{mrem}{hr}$ (from Section VD, line 16C) x _____ hr$^a$

   = |_____| mrem at additional location No. 1

7. _____ $\frac{mrem}{hr}$ (from Section VD, line 17C) x _____ hr$^a$

   = |_____| mrem at additional location No. 2

8. _____ $\frac{mrem}{hr}$ (from Section VD, line 18C) x _____ hr$^a$

   = |_____| mrem at additional location No. 3

ATTACHMENT III, CALCULATION SHEET III (continued)

NOTE:

[a]Obtain exposure time from Summary Table, Section II, line 1.

F. <u>Thyroid Dose Commitment</u> - Result for Summary Table, Section III, line 6.

1. (_____ $\frac{Ci^a}{sec}$ + _____ $\frac{Ci^b}{sec}$ ) x _____ FIG[d] = _____ $\frac{Ci}{sec}$

2. _____ $\frac{Ci^c}{sec}$ x _____ FIE[e] _____ $\frac{Ci}{sec}$

3a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 1) = _____ $\frac{Ci}{m^3}$

3b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 1) = _____ $\frac{Ci}{m^3}$

3c. _____ (line 3a) + _____ (line 3b) = _____ $\frac{Ci}{m^3}$

4a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 2) = _____ $\frac{Ci}{m^3}$

4b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 2) = _____ $\frac{Ci}{m^3}$

4c. _____ (line 4a) + _____ (line 4b) = _____ $\frac{Ci}{m^3}$

5a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 3) = _____ $\frac{Ci}{m^3}$

5b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 3) = _____ $\frac{Ci}{m^3}$

5c. _____ (line 5a) + _____ (line 5b) = _____ $\frac{Ci}{m^3}$

6a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 4) = _____ $\frac{Ci}{m^3}$

6b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 4) = _____ $\frac{Ci}{m^3}$

6c. _____ (line 6a) + _____ (line 6b) = _____ $\frac{Ci}{m^3}$

ATTACHMENT III, CALCULATION SHEET III (continued)

7a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 5) = _____ $\frac{Ci}{m^3}$

7b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 5) = _____ $\frac{Ci}{m^3}$

7c. _____ (line 7a) + _____ (line 7b) = _____ $\frac{Ci}{m^3}$

8a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 6) = _____ $\frac{Ci}{m^3}$

8b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 6) = _____ $\frac{Ci}{m^3}$

8c. _____ (line 8a) + _____ (line 8b) = _____ $\frac{Ci}{m^3}$

9a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 7) = _____ $\frac{Ci}{m^3}$

9b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 7) = _____ $\frac{Ci}{m^3}$

9c. _____ (line 9a) + _____ (line 9b) = _____ $\frac{Ci}{m^3}$

10a. _____ $\frac{Ci}{sec}$ (line 1) x _____ $\frac{sec}{m^3}$ (Sect. VB, line 8) = _____ $\frac{Ci}{m^3}$

10b. _____ $\frac{Ci}{sec}$ (line 2) x _____ $\frac{sec}{m^3}$ (Sect. VC, line 8) = _____ $\frac{Ci}{m^3}$

10c. _____ (line 10a)+ _____ (line 10b) = _____ $\frac{Ci}{m^3}$

11. _____ $\frac{Ci}{m^3}$ (line 3c)x _____ hr9 x 3.8 x 108

x _____ TCFI[f] = | _____ | mrem at site boundary

12. _____ $\frac{Ci}{m^3}$ (line 4c)x _____ hr9 x 3.8 x 108

x _____ TCFI[f] = | _____ | mrem at point of max X/Q

ATTACHMENT III, CALCULATION SHEET III (continued)

13. _____ $\frac{Ci}{m^3}$ (line 5c)x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at 2 miles

14. _____ $\frac{Ci}{m^3}$ (line 6c)x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at 5 miles

15. _____ $\frac{Ci}{m^3}$ (line 7c)x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at 10 miles

16. _____ $\frac{Ci}{m^3}$ (line 8c)x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at additional location No. 1

17. _____ $\frac{Ci}{m^3}$ (line 9c)x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at additional location No. 2

18. _____ $\frac{Ci}{m^3}$ (line 10c) x _____ hr$^g$ x 3.8 x 10$^8$

    x _____ TCFI$^f$ = $\boxed{\phantom{xxxxx}}$ mrem at additional location No. 3

NOTES:

[a]Reactor building stack release rate from Summary Table, Section II, line 2.

[b]Turbine building roof exhaust release rate from Summary Table, Section II, line 4.

[c]Offgas stack release rate from Summary Table, Section II, line 3.

[d]Iodine activity fraction for ground level release - obtain from Data Summary Sheet Section IID, line 3a. If unknown use 0.3.

ATTACHMENT III, CALCULATION SHEET III (continued)

[e]Iodine activity fraction for elevated release - obtain from Data Summary Sheet Section IID, line 3b. If unknown use 0.3 unless Standby Gas Treatment (see Data Summary Sheet, Section II.D, line 1) is in operation then use 0.003.

[f]Obtain TCFI from Figure 12 using time after shutdown (Summary Table, Section I, line 2).

[g]Obtain exposure time from Summary Table, Section II, line 1.

  G. <u>Plume width</u> - The following are the plume widths to be placed in the Summary Table, Section III, line 7.

| Point of maximum X/Q for Offgas Stack release | 2mi | 5mi | 10mi |
|---|---|---|---|
| 2000 | 530 | 970 | 2000 (meters) |
| (1.2) | (0.33) | (0.60) | (1.2)(miles) |

NOTE:

Obtain remaining plume widths from Figure 28 using the appropriate distances from Summary Table, Section III, line 1.

  H. <u>Plume arrival time</u> - Results for Summary Table Section III, line 8.

1. $2.78 \times 10^{-4} \times \underline{\hspace{2cm}} m^a \div \underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to Site Boundary

2. $4.47$ divided by $\underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to point of max X/Q for offgas stack release

3. $0.894$ divided by $\underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to 2 miles

4. $2.23$ divided by $\underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to 5 miles

5. $4.47$ divided by $\underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to 10 miles

6. $2.78 \times 10^{-4} \times \underline{\hspace{2cm}} m^a \div \underline{\hspace{2cm}} \dfrac{m^b}{sec} = \boxed{\phantom{xx}}$ hr to additional location No. 1

ATTACHMENT III, CALCULATION SHEET III (continued)

7.  $2.78 \times 10^{-4} \times$ _____ m^a ÷ _____ $\dfrac{m^b}{sec}$ = |____| hr to additional location No. 2

8.  $2.78 \times 10^{-4} \times$ _____ m^a ÷ _____ $\dfrac{m^b}{sec}$ = |____| hr to additional location No. 3

NOTES:

a Obtain appropriate distance from Summary Table, Section III, line 1.

b Obtain wind speed from Summary Table, Section I, line 5.

ATTACHMENT III, CALCULATION SHEET IV

RELEASE RATE FROM FIELD MEASUREMENT

1. _____ $FI^a$ x _____ $DUOQI^b$ x _____ $TCFI^c$

   + (1 - _____ $FI^a$) x _____ $DUOQNG^d$ x _____ $TCFNG^e$

   = _____ $\dfrac{Du}{Q}$

2. _____ $mR/hr^f$ x _____ $\dfrac{mg}{sec}$ ÷ _____ $\dfrac{Du}{Q}$ (line 1)

   = $\left|\underline{\hspace{2cm}}\right|$ $\dfrac{Ci}{sec}$ * Minimum Total Release Rate

\* Assumes measurement taken in plume centerline


NOTES:

[a] Iodine activity to noble gas activity ratio. If unknown use 0.3 unless Standby Gas Treatment is in operation (Data Summary Sheet, Section II.D, line 1) then use 0.003.

[b] Obtain $\dfrac{Du}{Q}$ for iodine (DUOQI) from Figure 8 for atmospheric stability class AB, Figure 16 for class C, Figure 21 for class DE, or Figure 26 for class FG (see Summary Table, Section I, line 6). Use the distance from the release point that the exposure rate measurement was made (Data Summary Sheet, Section III, line 1).

[c] Obtain time correction factor for iodine (TCFI) from Figure 9 using the time of field measurement after shutdown (Data Summary Sheet, Section III, line 1).

[d] Obtain $\dfrac{Du}{Q}$ for noble gas (DUOQNG) from Figure 10 for atmospheric stability class AB, Figure 17 for class C, Figure 22 for class DE, or Figure 27 for class FG (see Summary Table, Section I, line 6). Use the distance from the release point that the exposure rate measurement was made (Data Summary Sheet, Section III, line 1).

[e] Obtain time correction factor for noble gas (TCFNG) from Figure 11 using the time of the field measurement after shutdown (Data Summary Sheet, Section III, line 1).

[f] Obtain exposure rate from Data Summary Sheet, Section III, line 3.

[g] Obtain wind speed from Summary Table, Section I, line 5.

ATTACHMENT IV, FIGURES

This attachment contains all the figures referenced in this procedure.

FIGURE 1

(RM-15/HP-260) INTERMEDIATE RANGE NOBLE GAS MONITOR
ACTIVITY RESPONSE VERSUS TIME AFTER SHUTDOWN



TIME AFTER SHUTDOWN
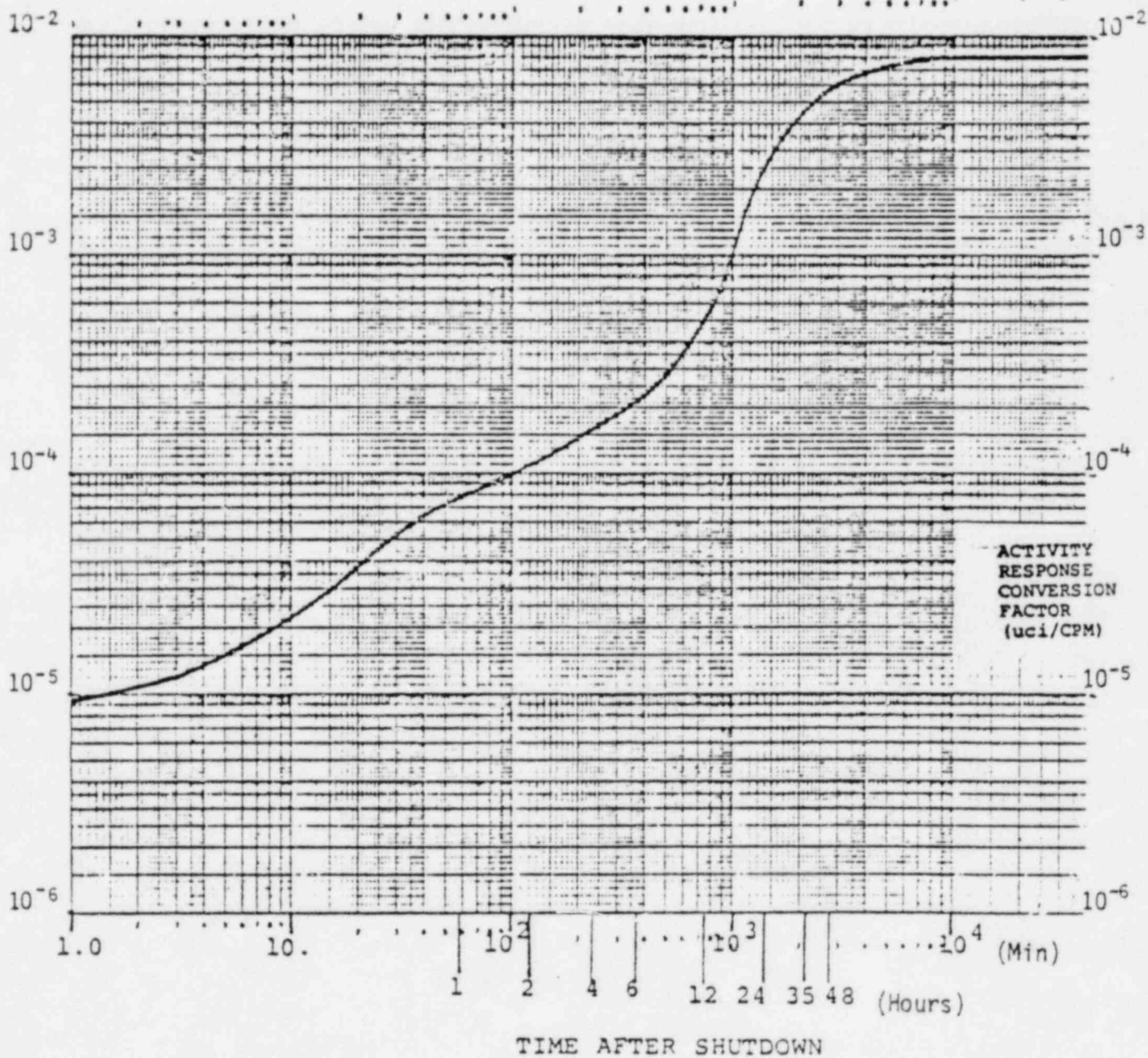
FIGURE 2

(RM-16/HP-200) HIGH RANGE NOBLE GAS MONITOR
ACTIVITY RESPONSE VERSUS TIME AFTER SHUTDOWN



TIME AFTER SHUTDOWN
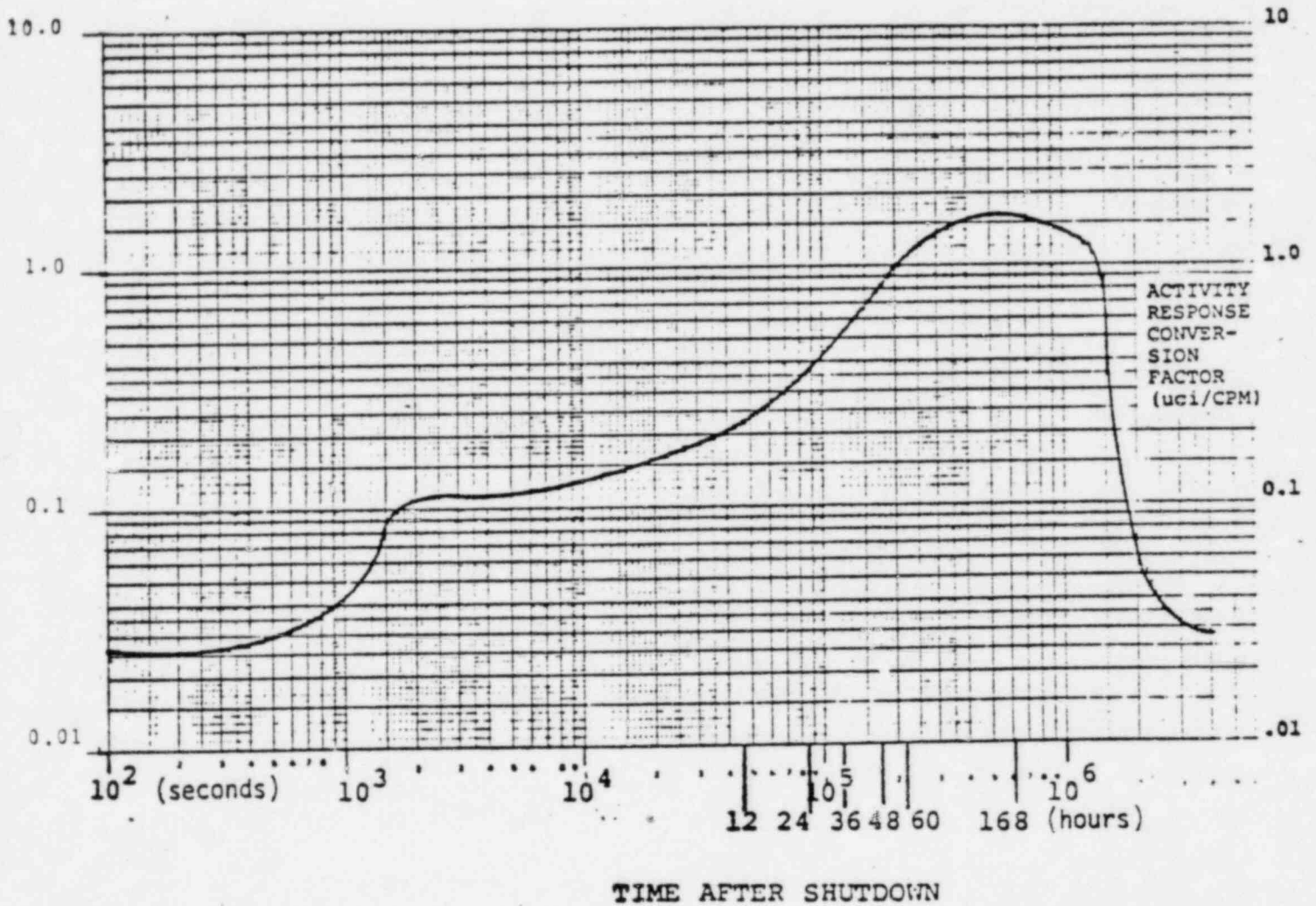
FIGURE 3

TELETECTOR ACTIVITY RESPONSE CONVERSION FACTOR
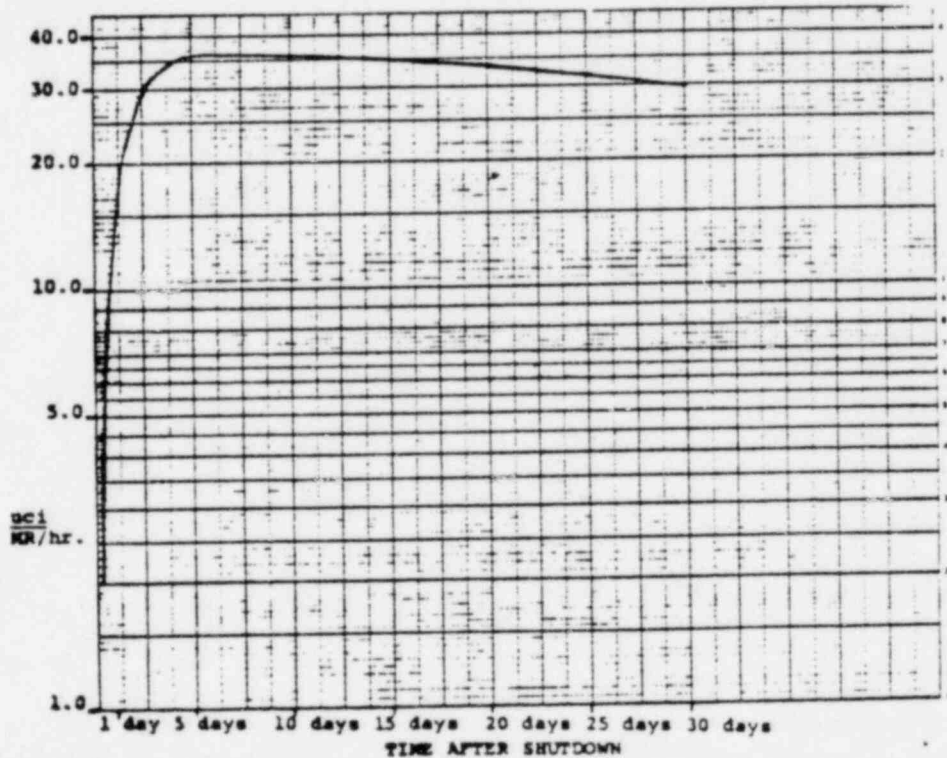VERSUS TIME AFTER SHUTDOWN



SHORT TERM
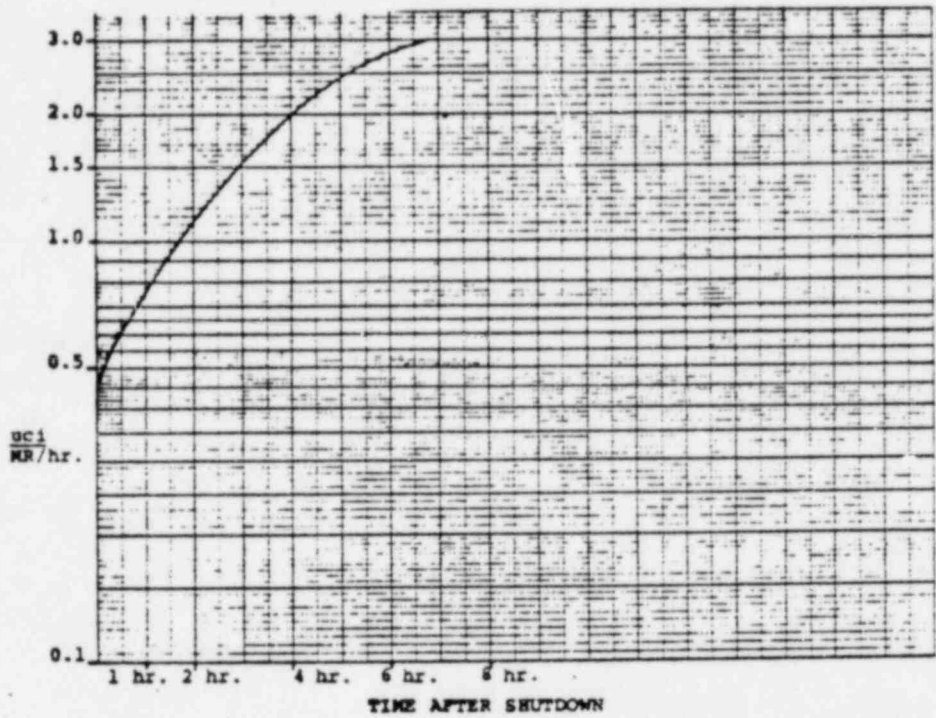
LONG TERM

FIGURE 4



$\underline{Xu}$ for Ground Level Release - Class AB
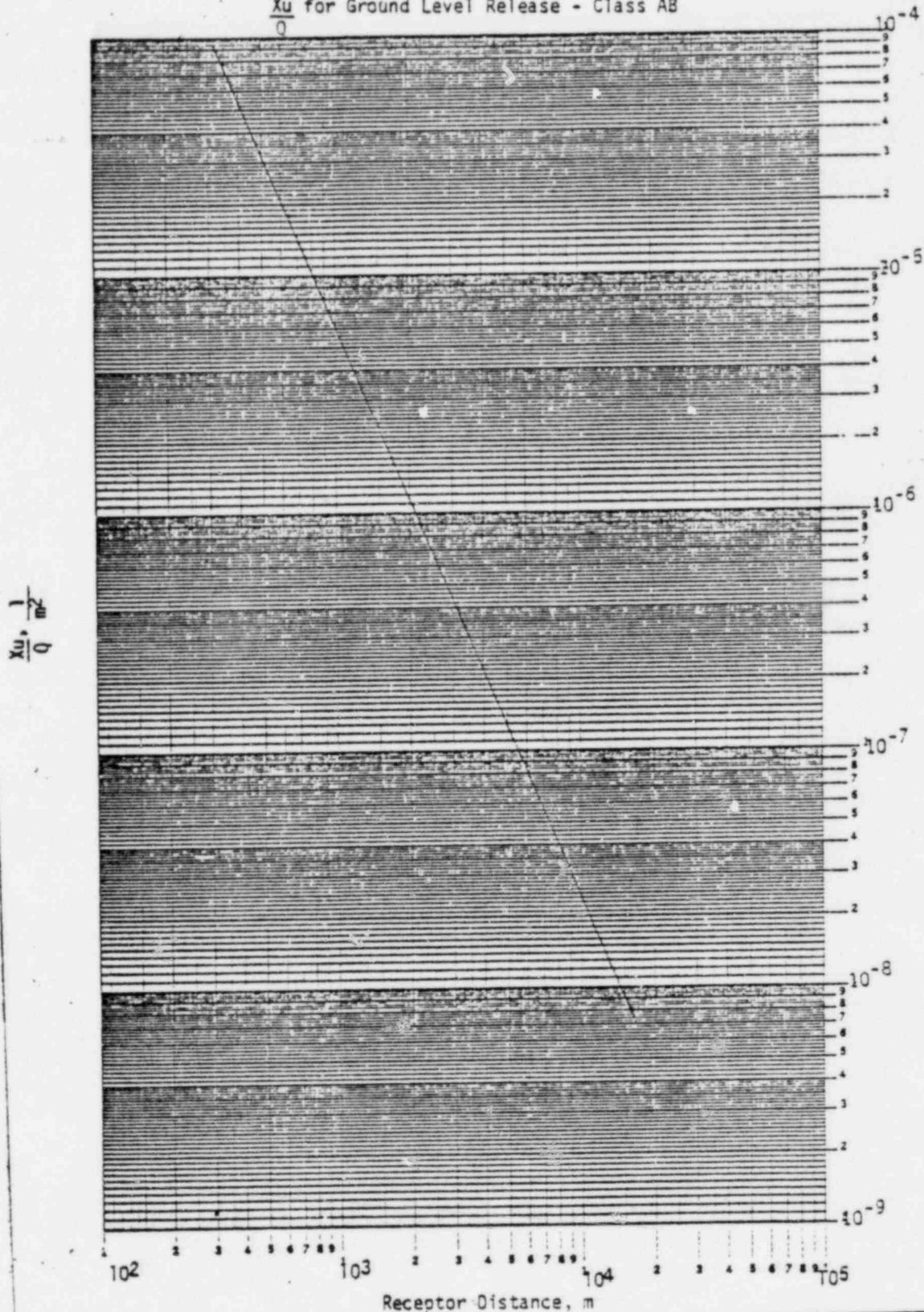
FIGURE 5



Xu for Elevated Release - Class AB
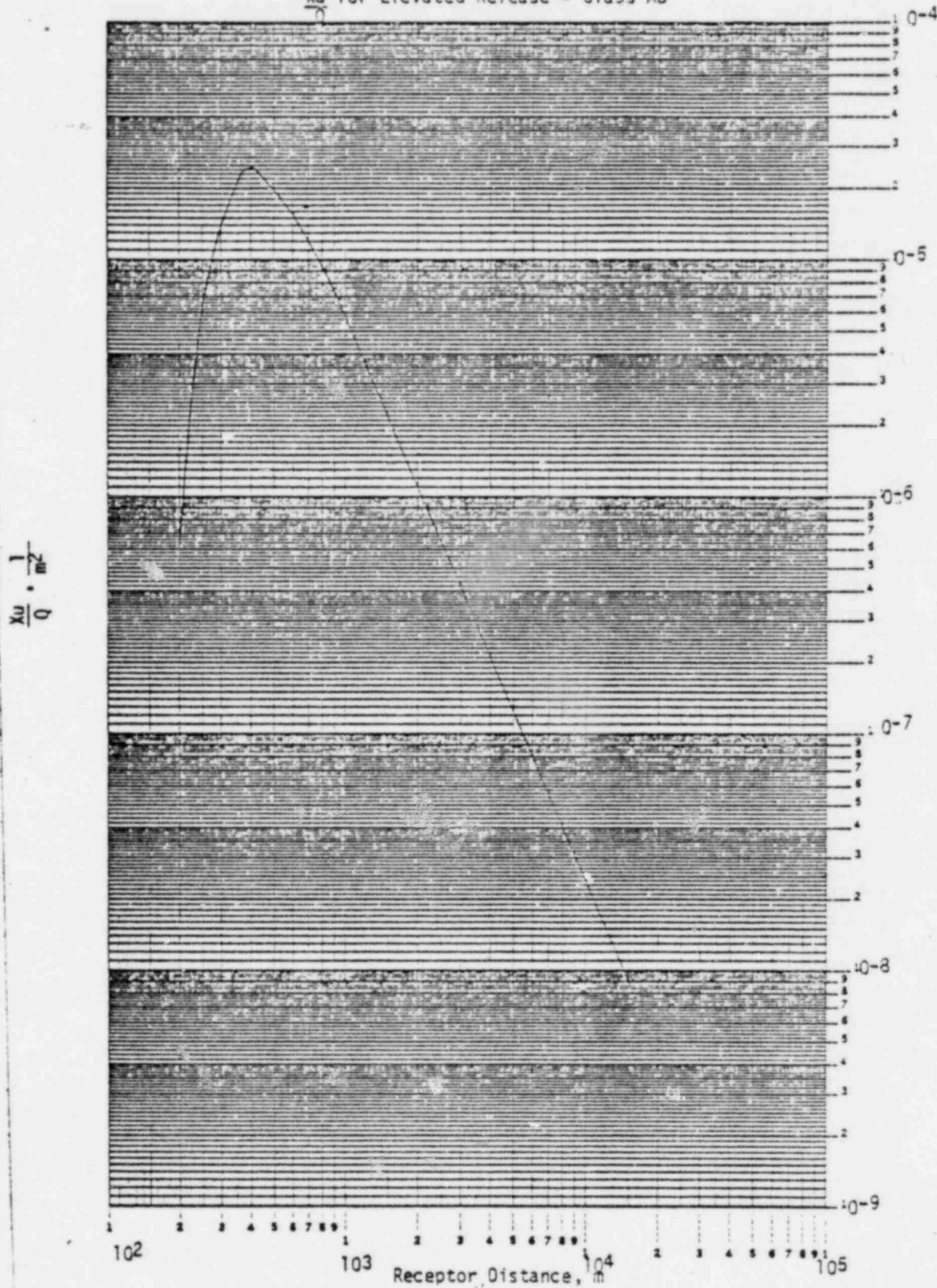
FIGURE 6

Whole Body Dose Conversion Factor - Iodine



Time, hr.
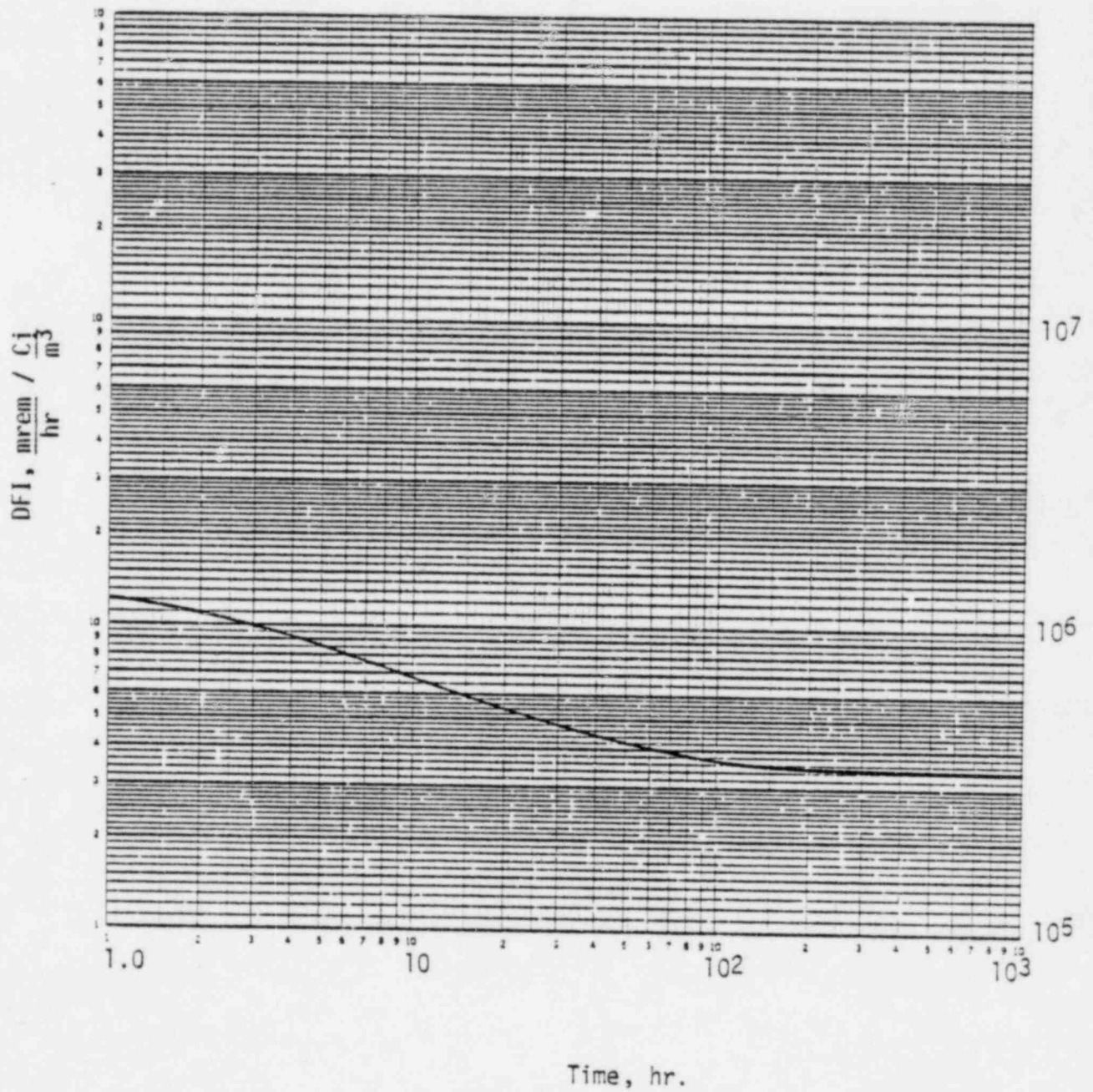
FIGURE 7

Whole Body Dose Conversion Factor - Noble Gas
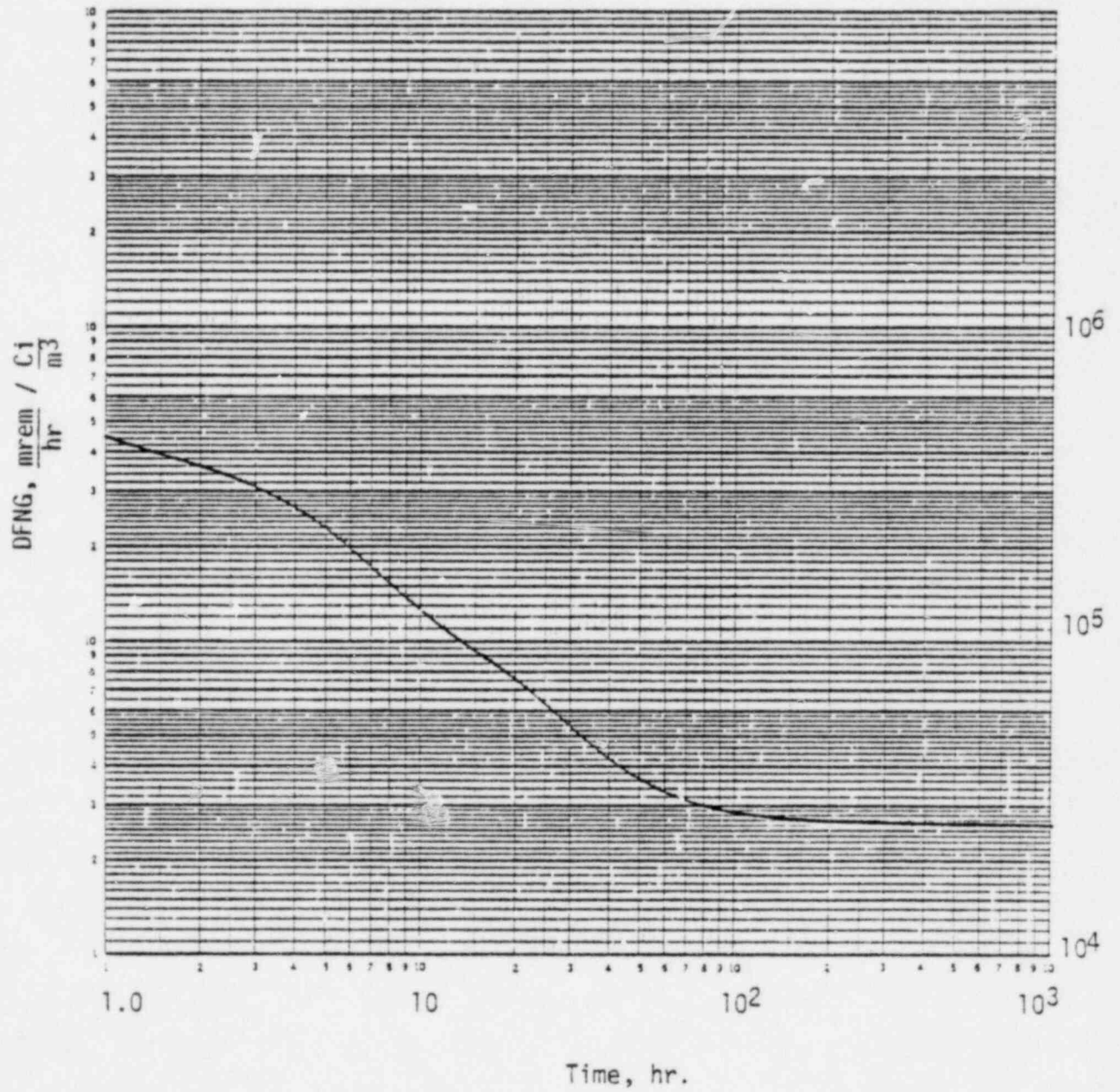
FIGURE 8



Du for Iodine - Class AB

$\frac{Du}{Q}$, $\frac{mrem}{hr}$ · $\frac{m}{sec}$ / $\frac{Ci}{sec}$

Receptor Distance, m
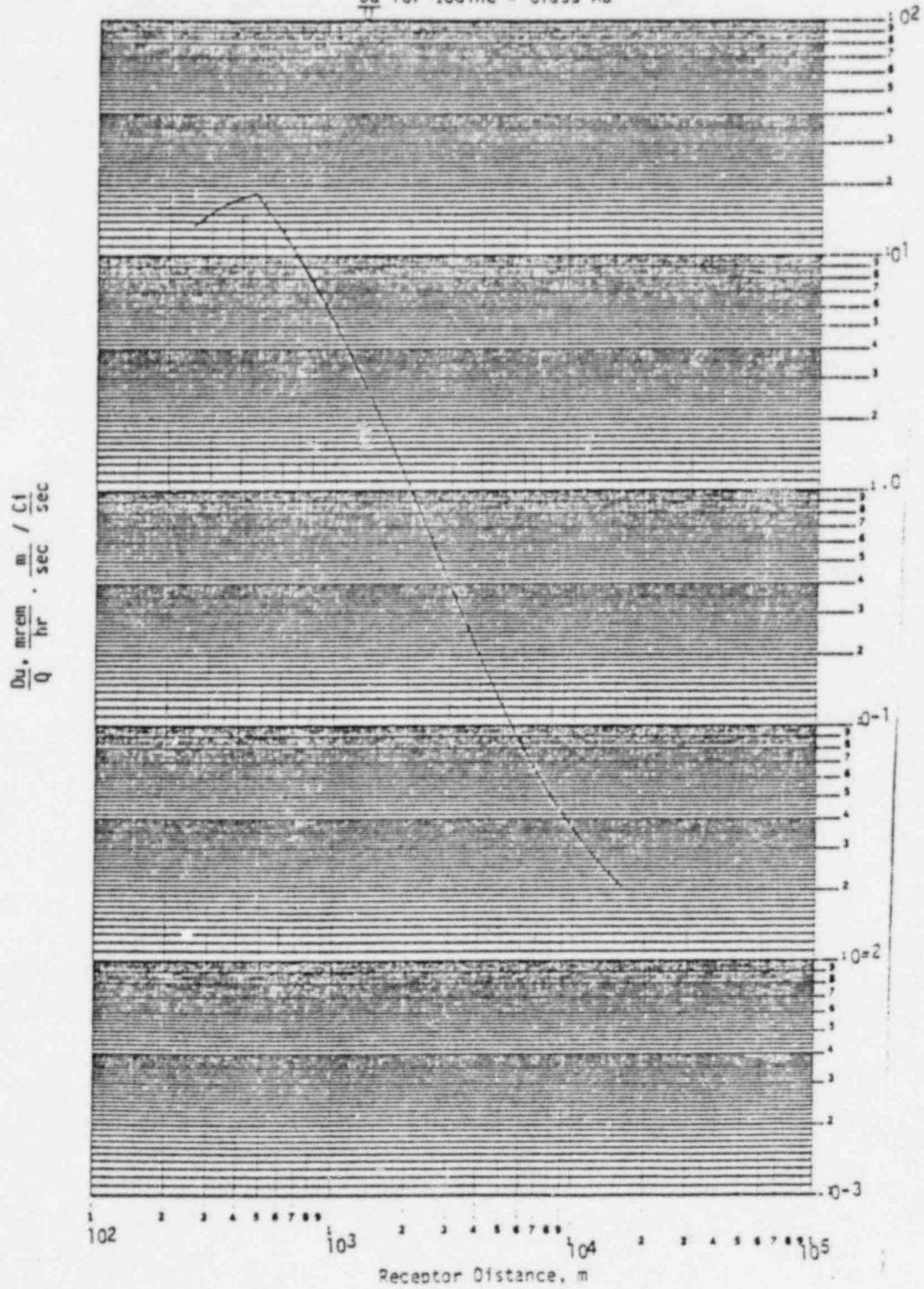
FIGURE 9

Time Correction Factor - Iodine



Time, hr.

FIGURE 10

Du for Noble Gas - Class AB



$\frac{Du}{Q}$, $\frac{mrem}{hr} \cdot \frac{m}{sec} / \frac{Ci}{sec}$

Receptor Distance, m
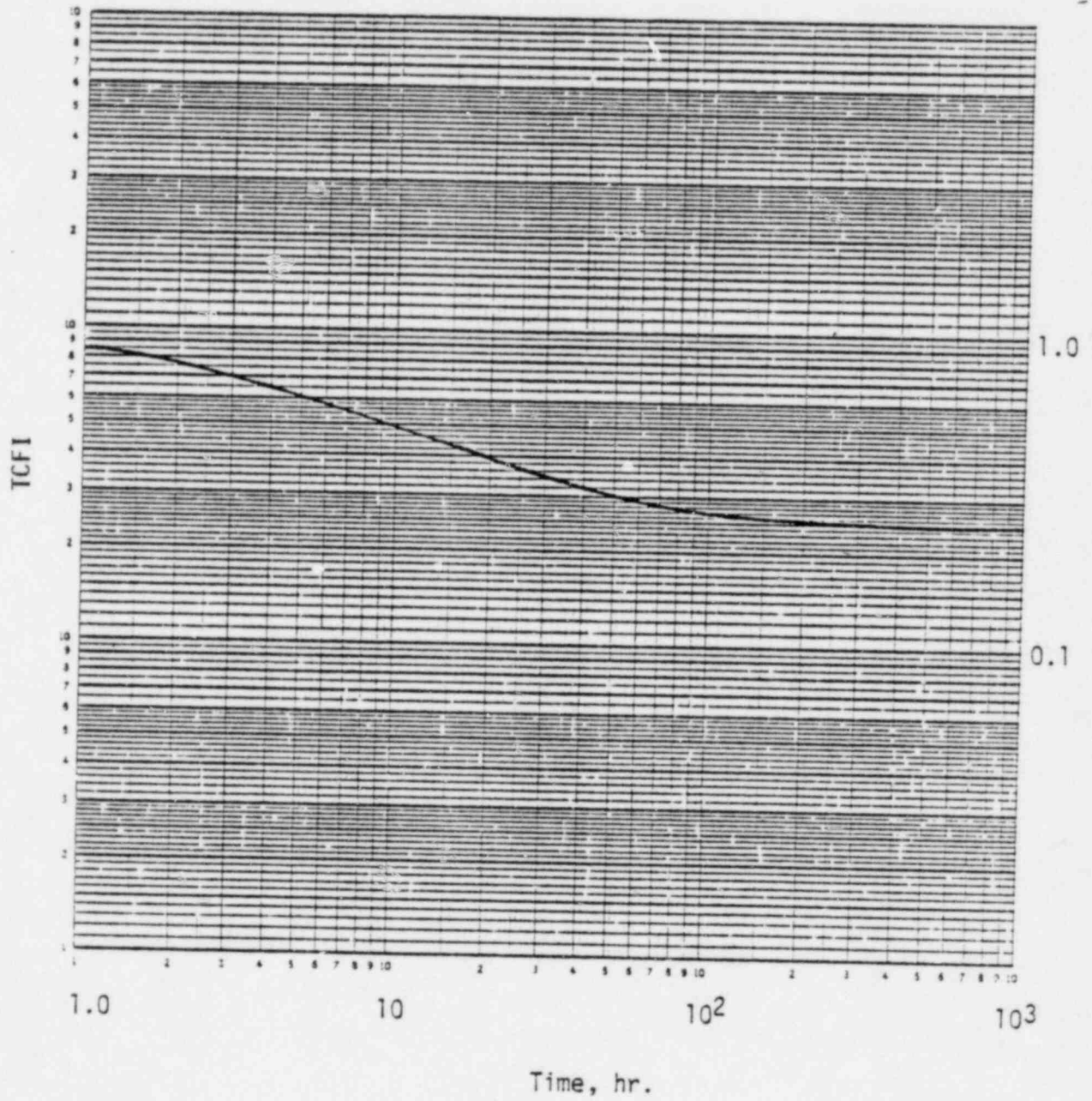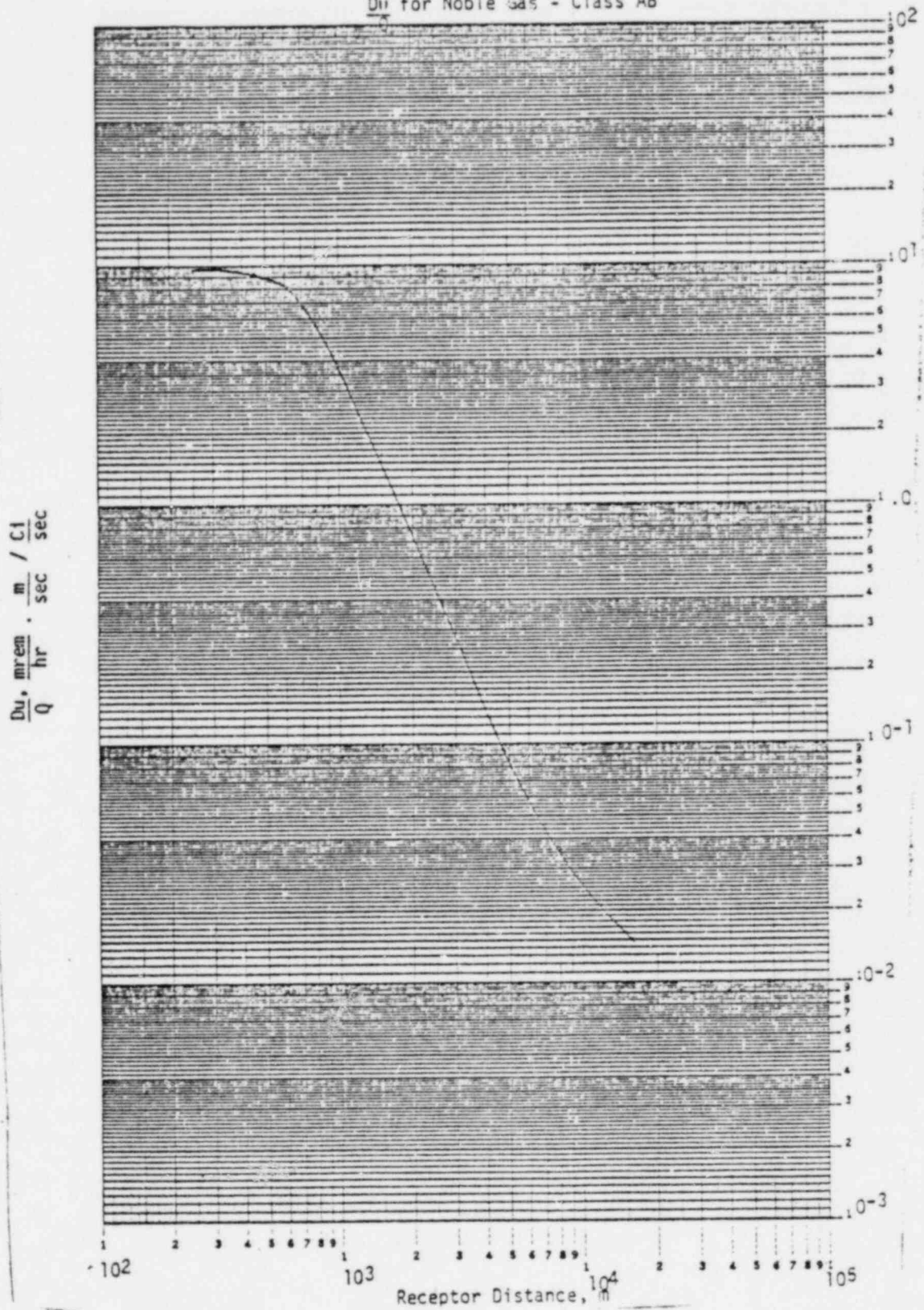
FIGURE 11

Time Correction Factor - Noble Gas



Time, hr.
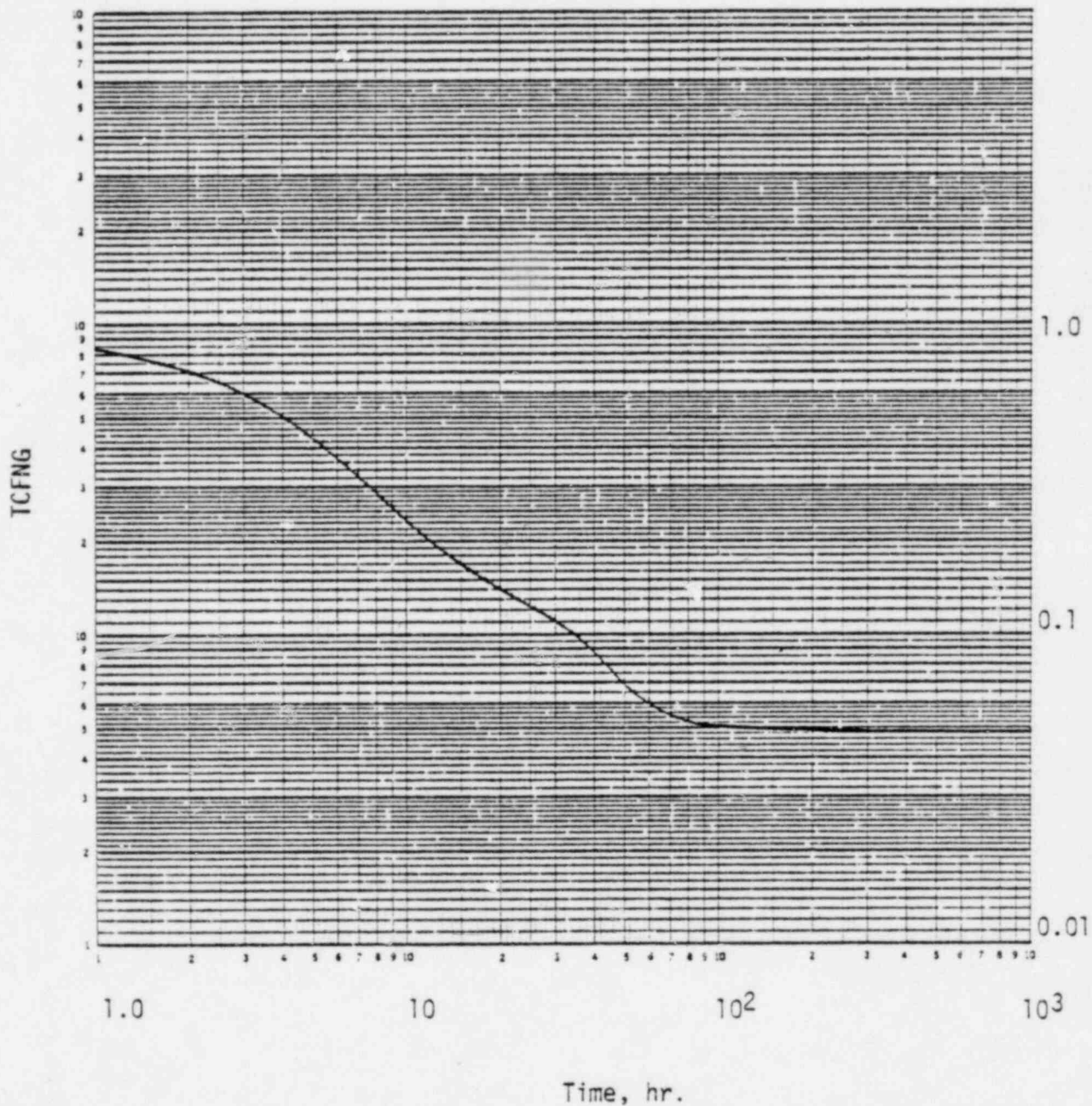
FIGURE 12

Time Correction Factor for Thyroid Dose - Iodine



Time, hr.
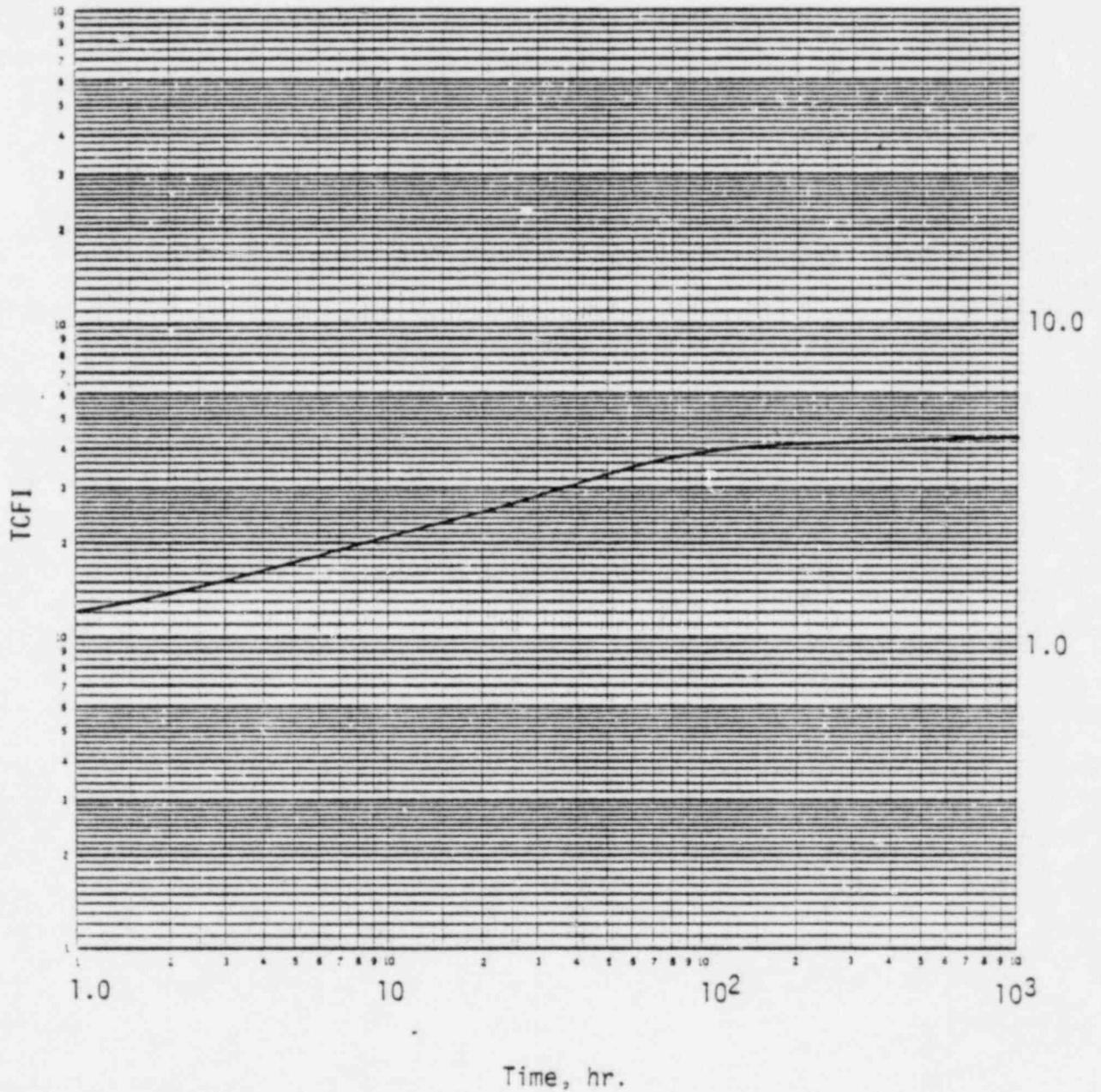
FIGURE 13

Plume Width - Class AB



Receptor Distance, m
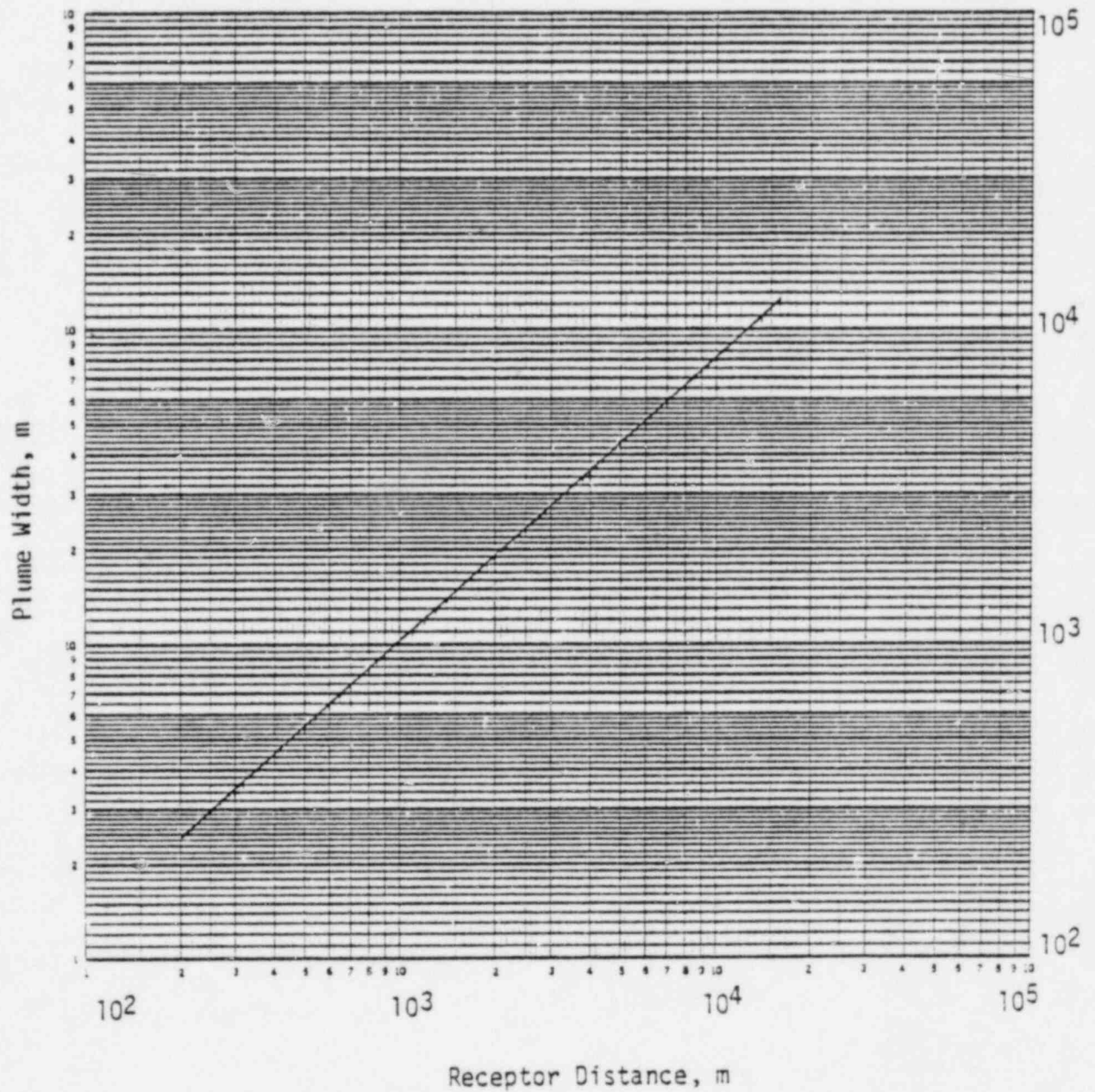
FIGURE 14

Xu for Ground Level Release - Class C



Receptor Distance, m
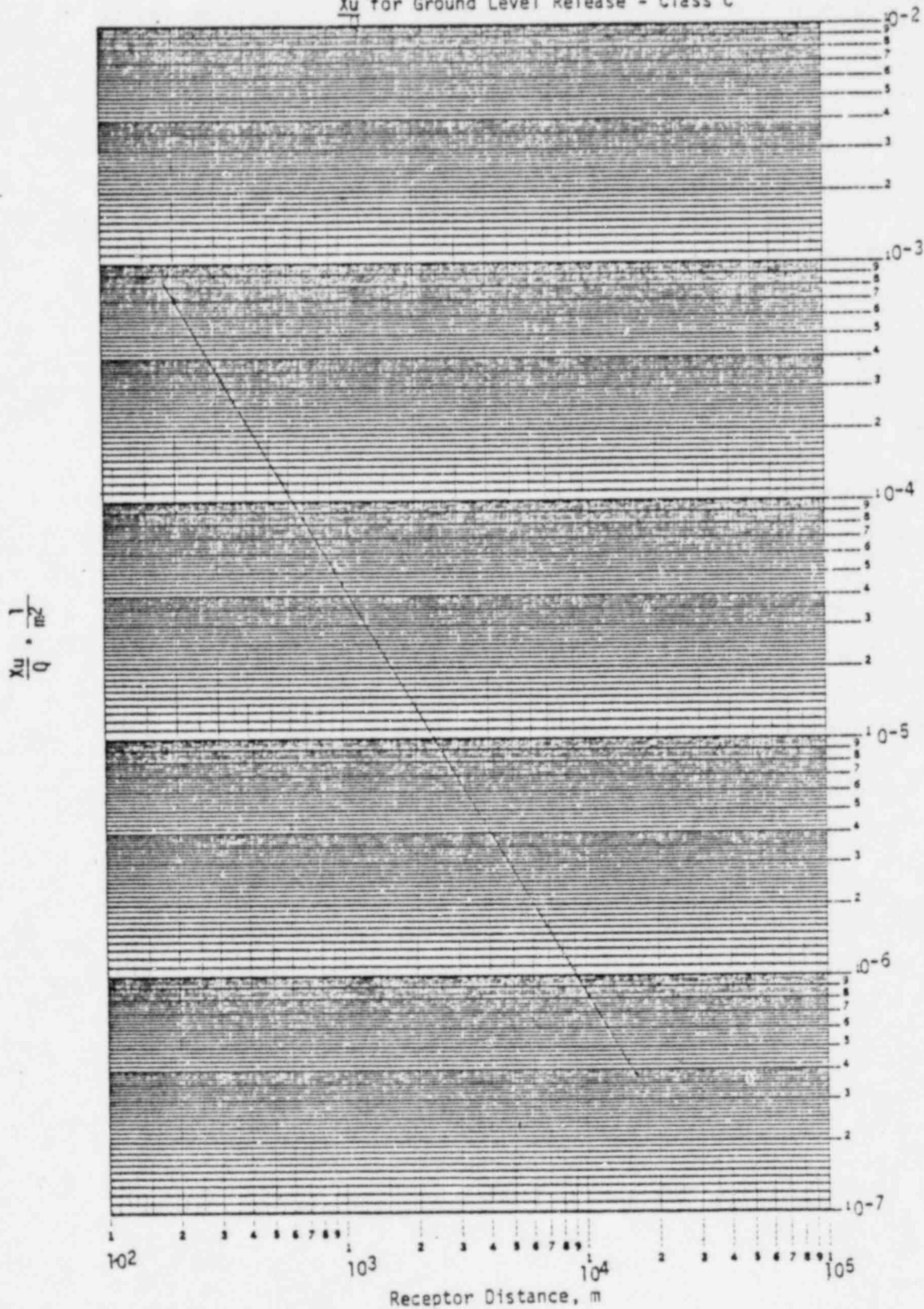
FIGURE 15

$\frac{Xu}{Q}$ for Elevated Release - Class C
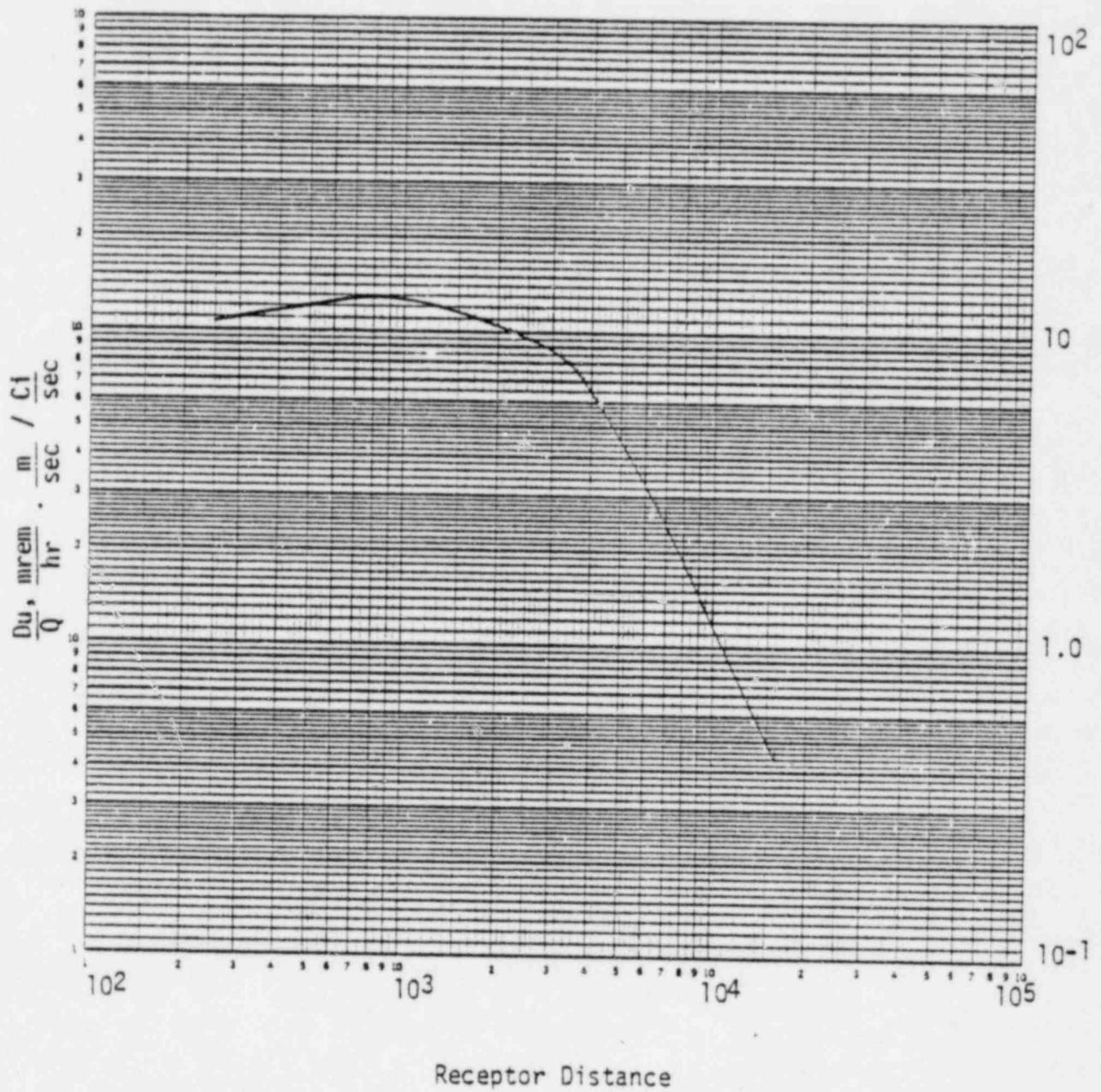


$\frac{Xu}{Q} \cdot \frac{1}{m^2}$

Receptor Distance, m
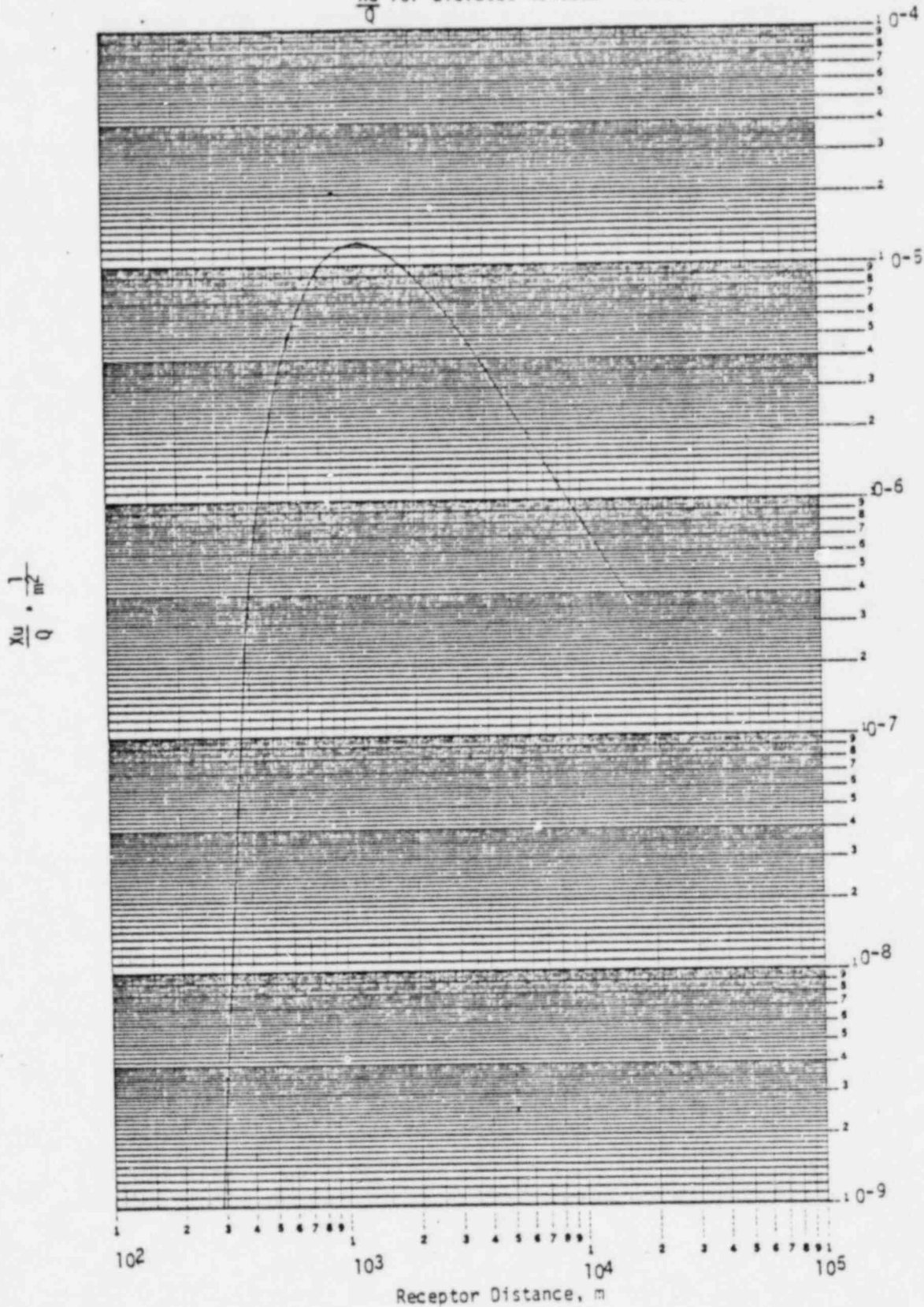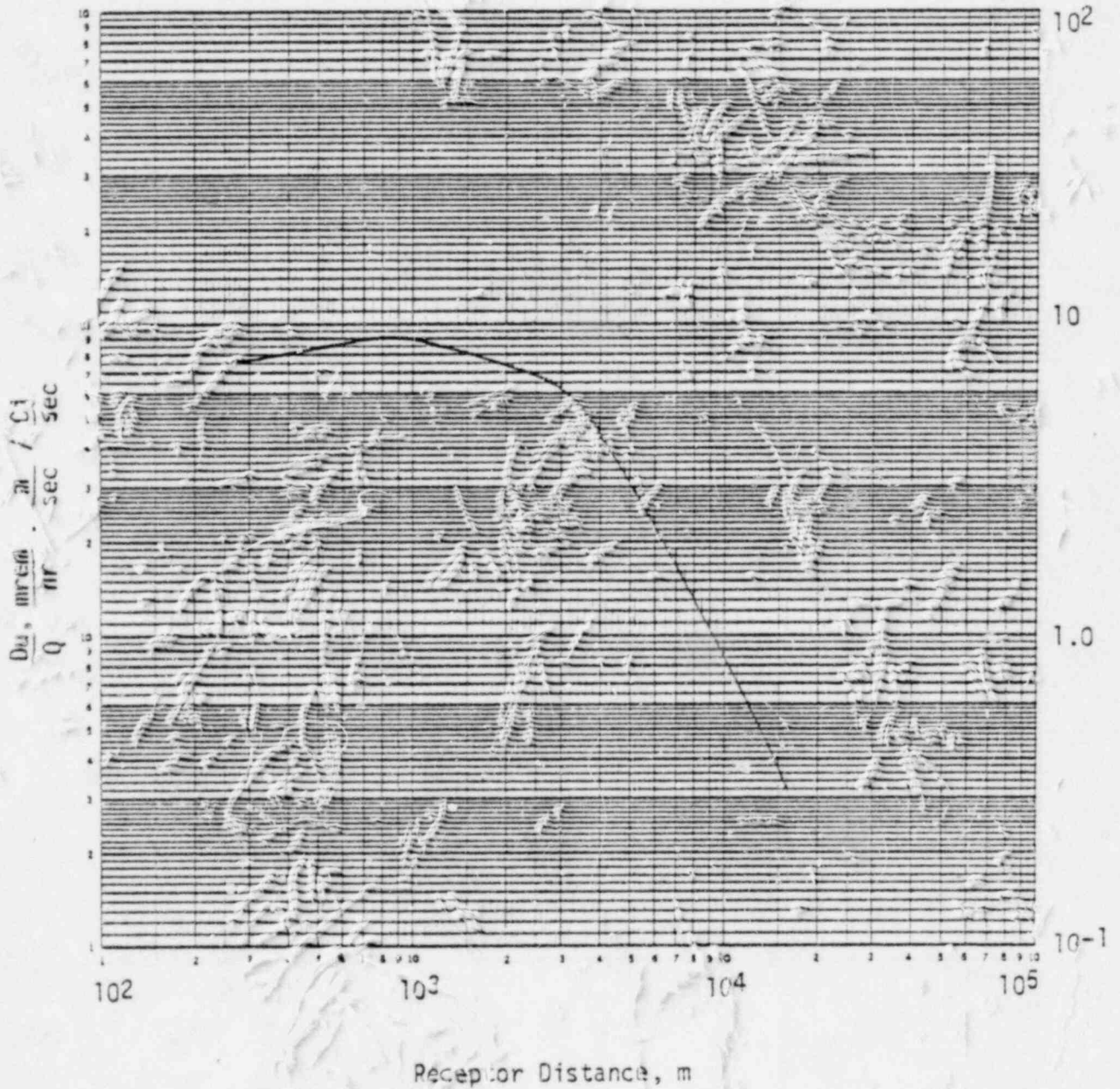
FIGURE 16

$\dfrac{Du}{Q}$ for Iodine - Class C



Receptor Distance

FIGURE 17

$\dfrac{Du}{Q}$ for Noble Gas - Class C



Receptor Distance, m

FIGURE 18

Plume Width - Class C



Receptor Distance, m
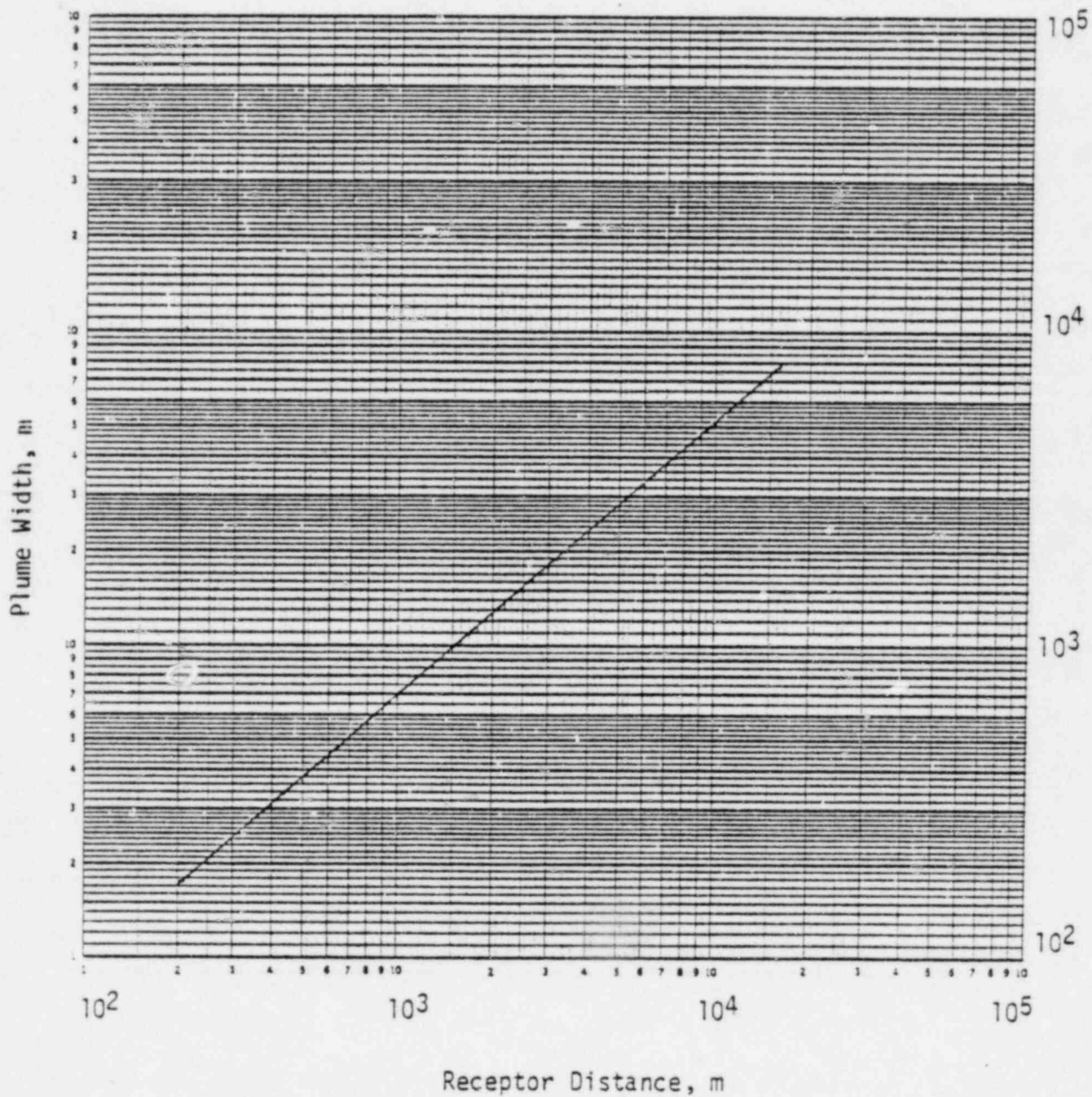
FIGURE 19

Xu/Q for Ground Level Release - Class DE
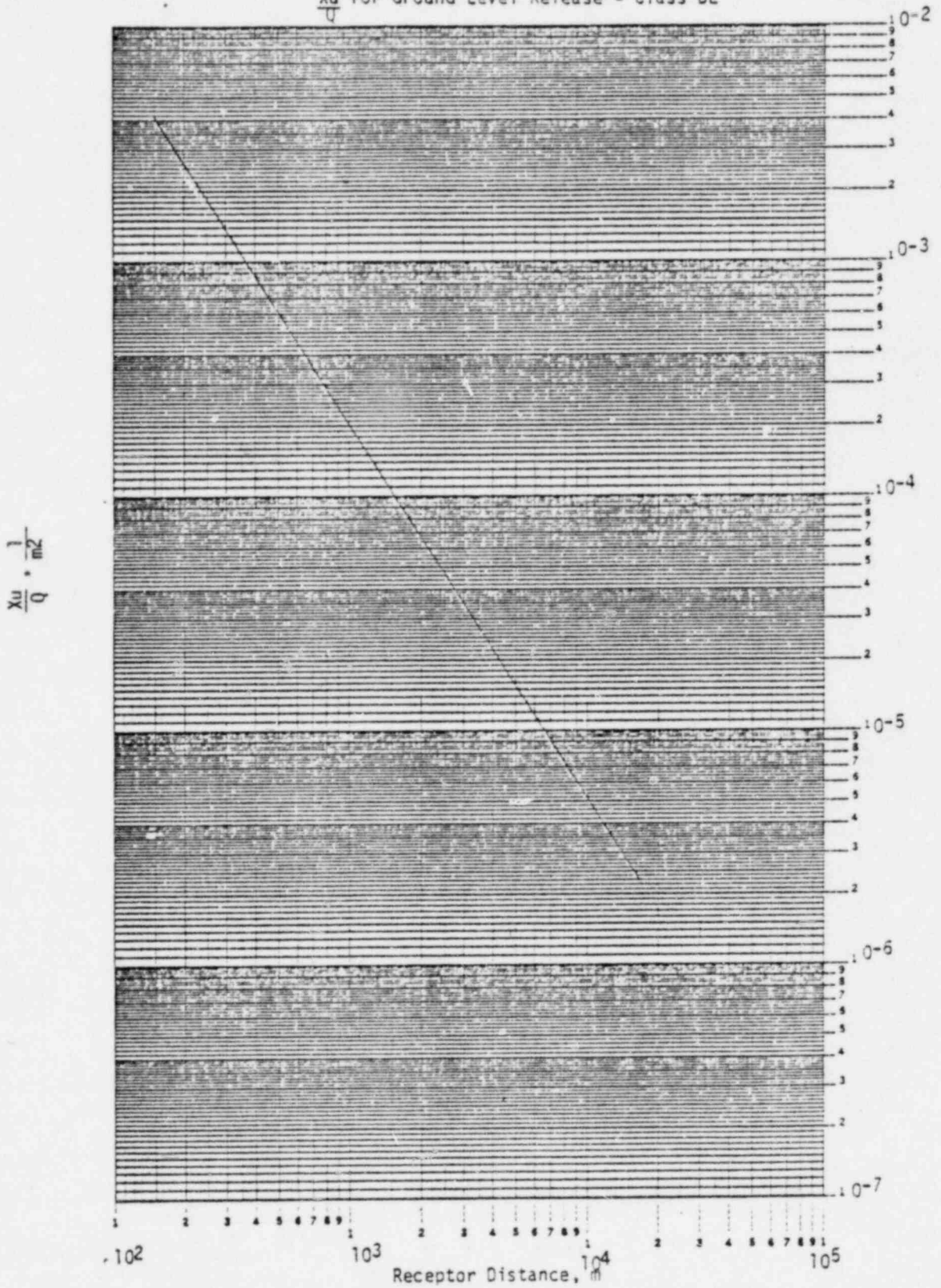
FIGURE 20

$\frac{Xu}{Q}$ for Elevated Release - Class DE



$\frac{Xu}{Q} \cdot \frac{1}{m^2}$

Receptor Distance, m

FIGURE 21

$\dfrac{Du}{Q}$ for Iodine - Class DE



Receptor Distance, m
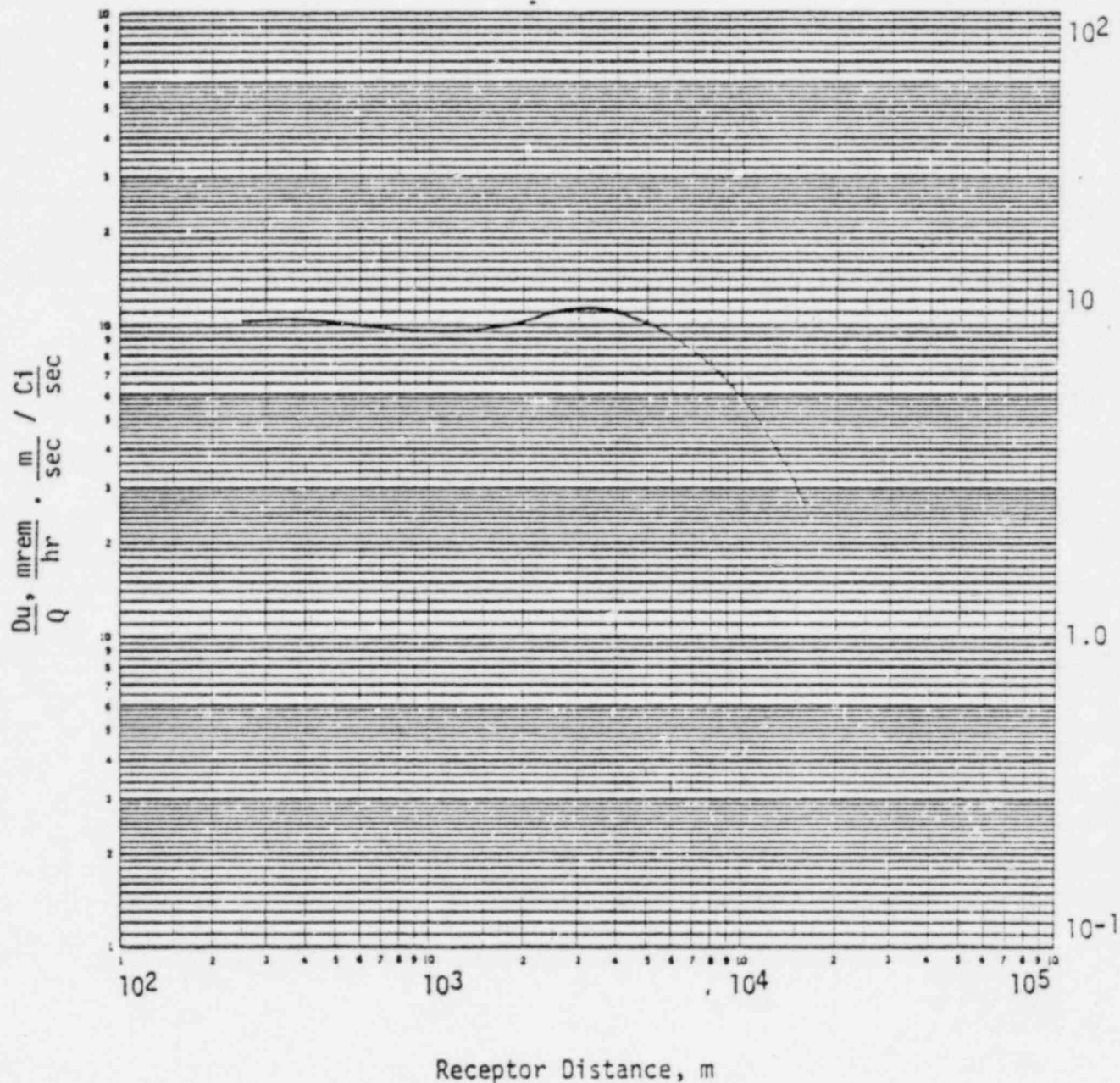
FIGURE 22

$\dfrac{Du}{Q}$ for Noble Gas - Class DE



Receptor Distance, m
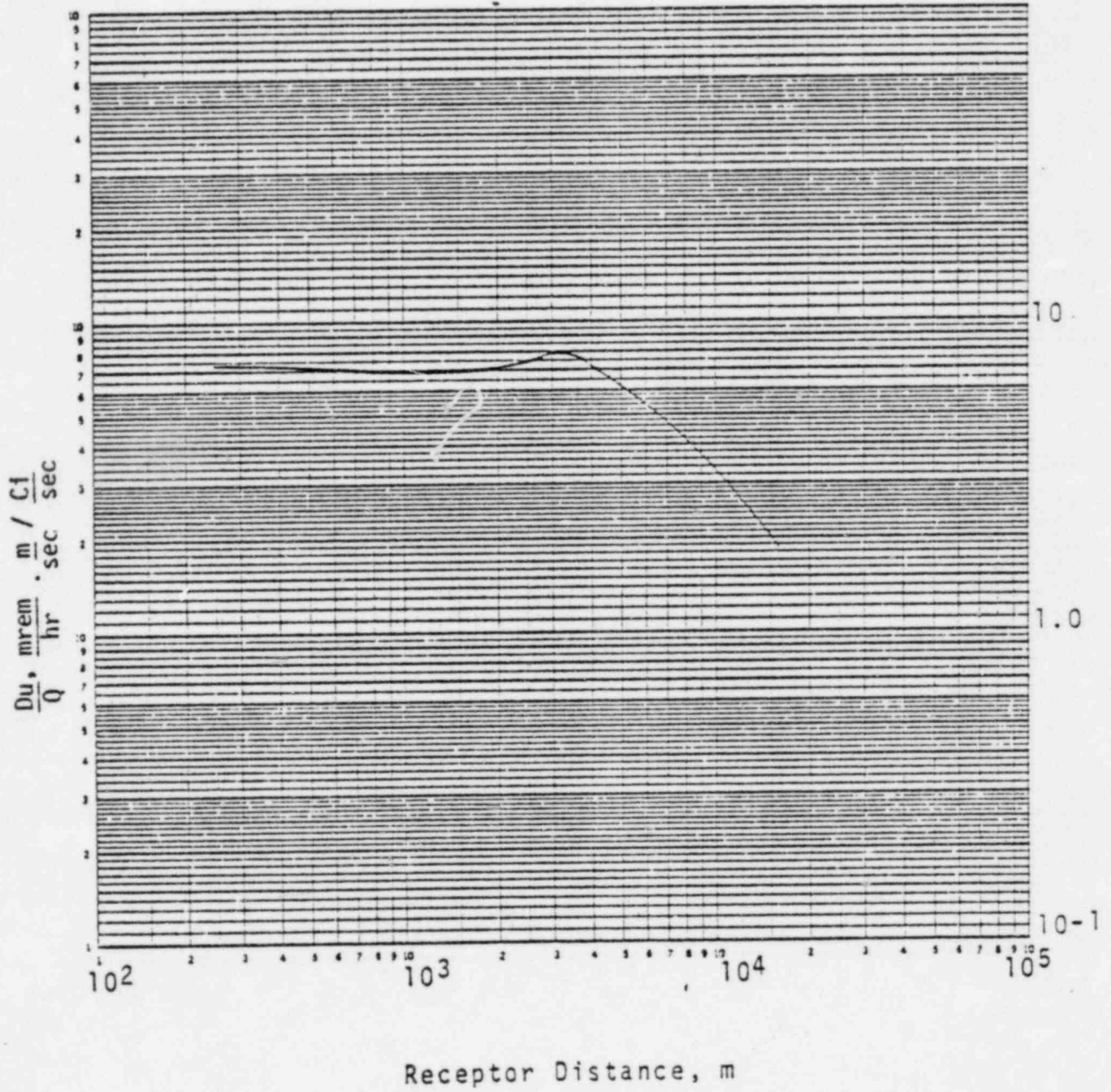
FIGURE 23

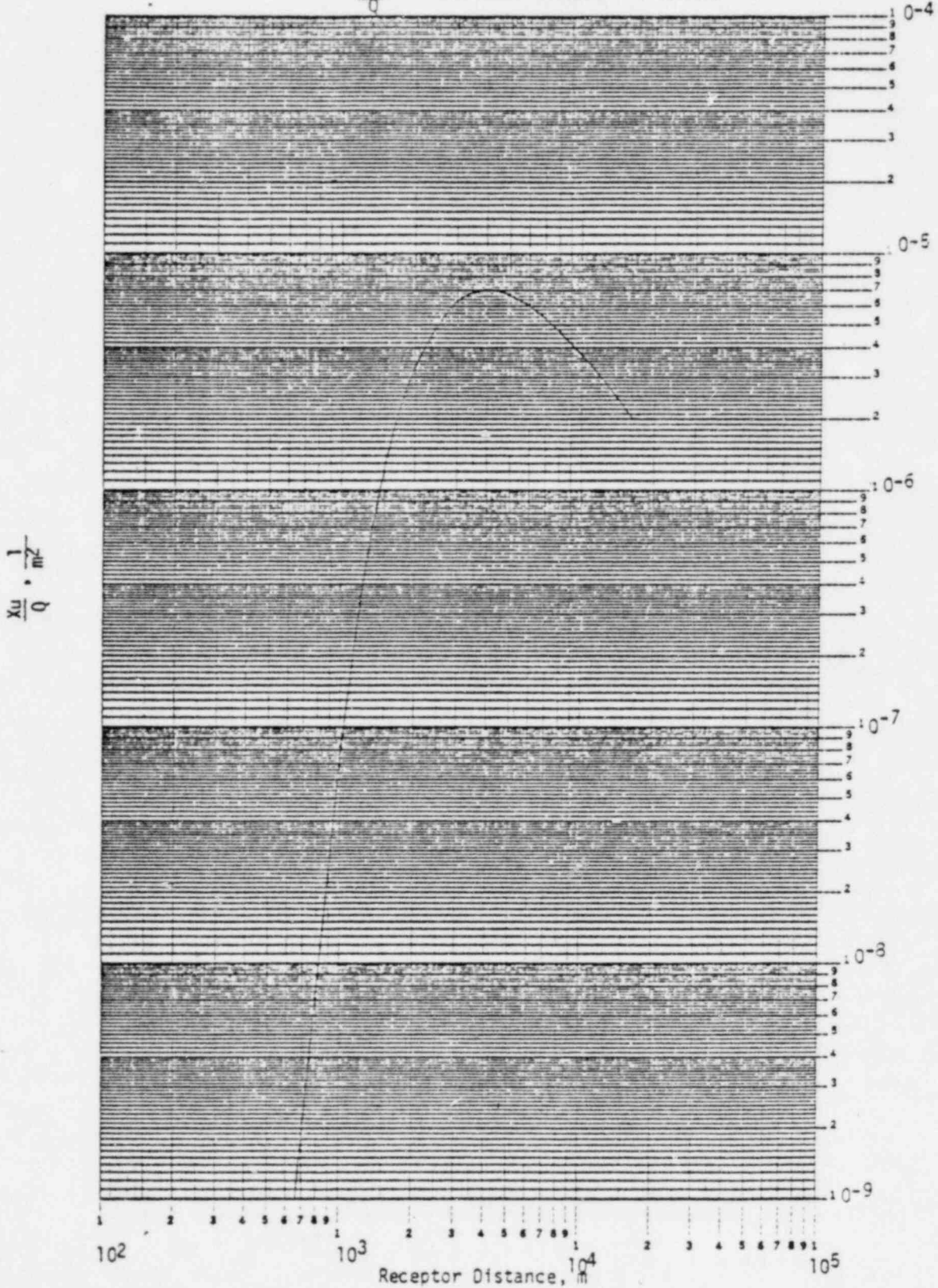Plume Width - Class DE

FIGURE 24

Xu for Ground Level Release - Class FG



$\frac{Xu}{Q} \cdot \frac{1}{m^2}$

Receptor Distance, m
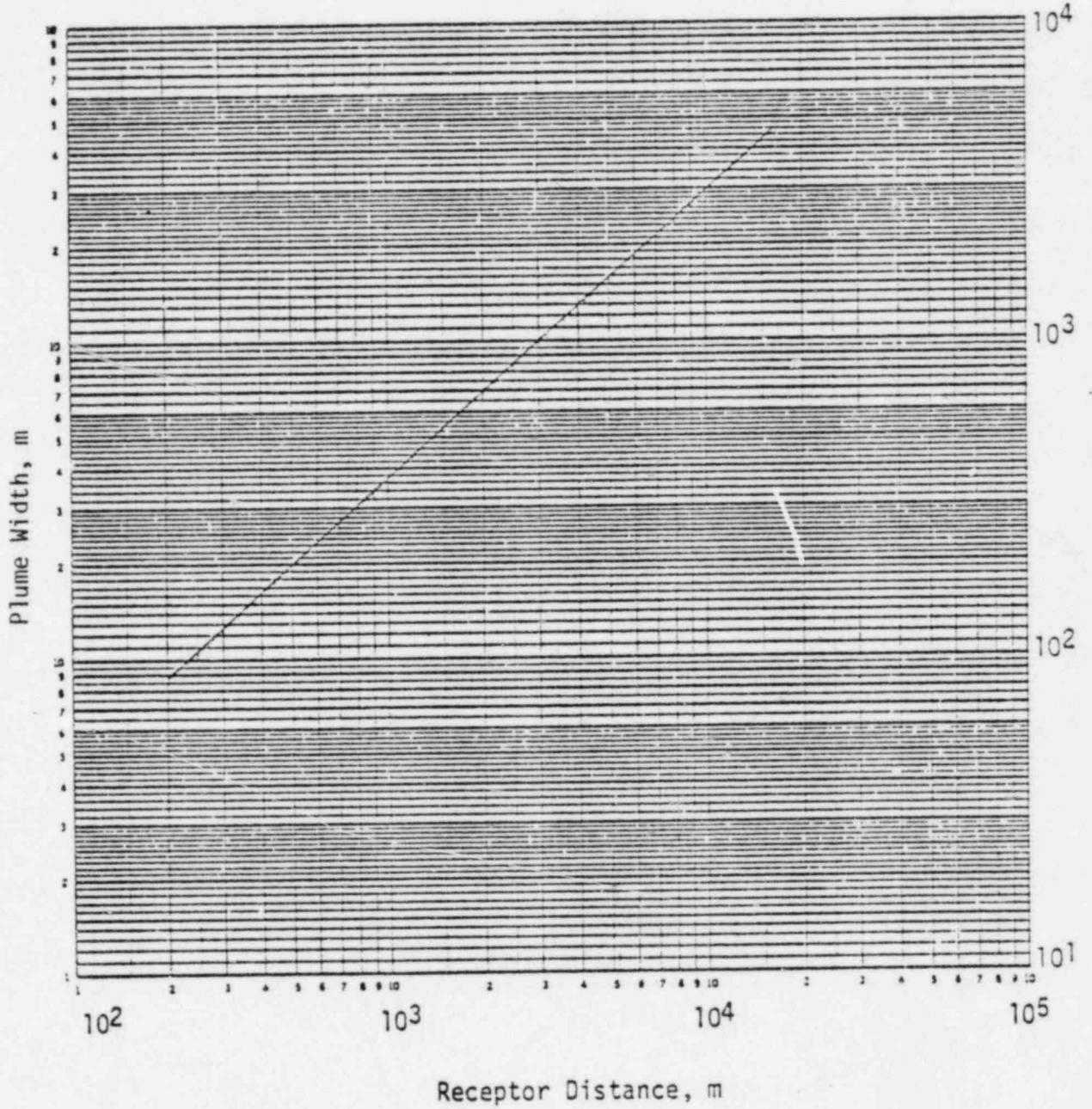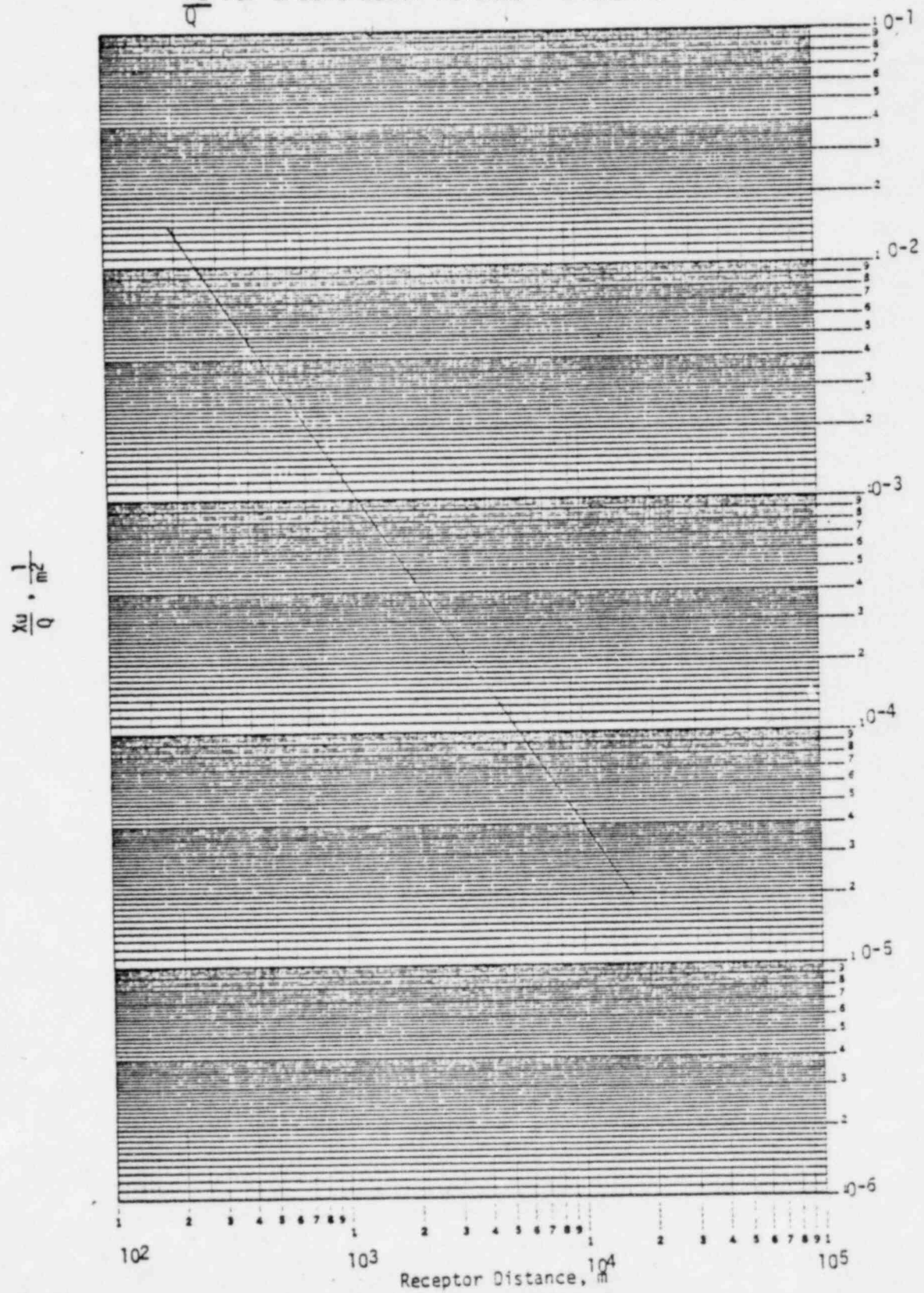
FIGURE 25

$\frac{Xu}{Q}$ for Elevated Release - Class FG



Receptor Distance, m
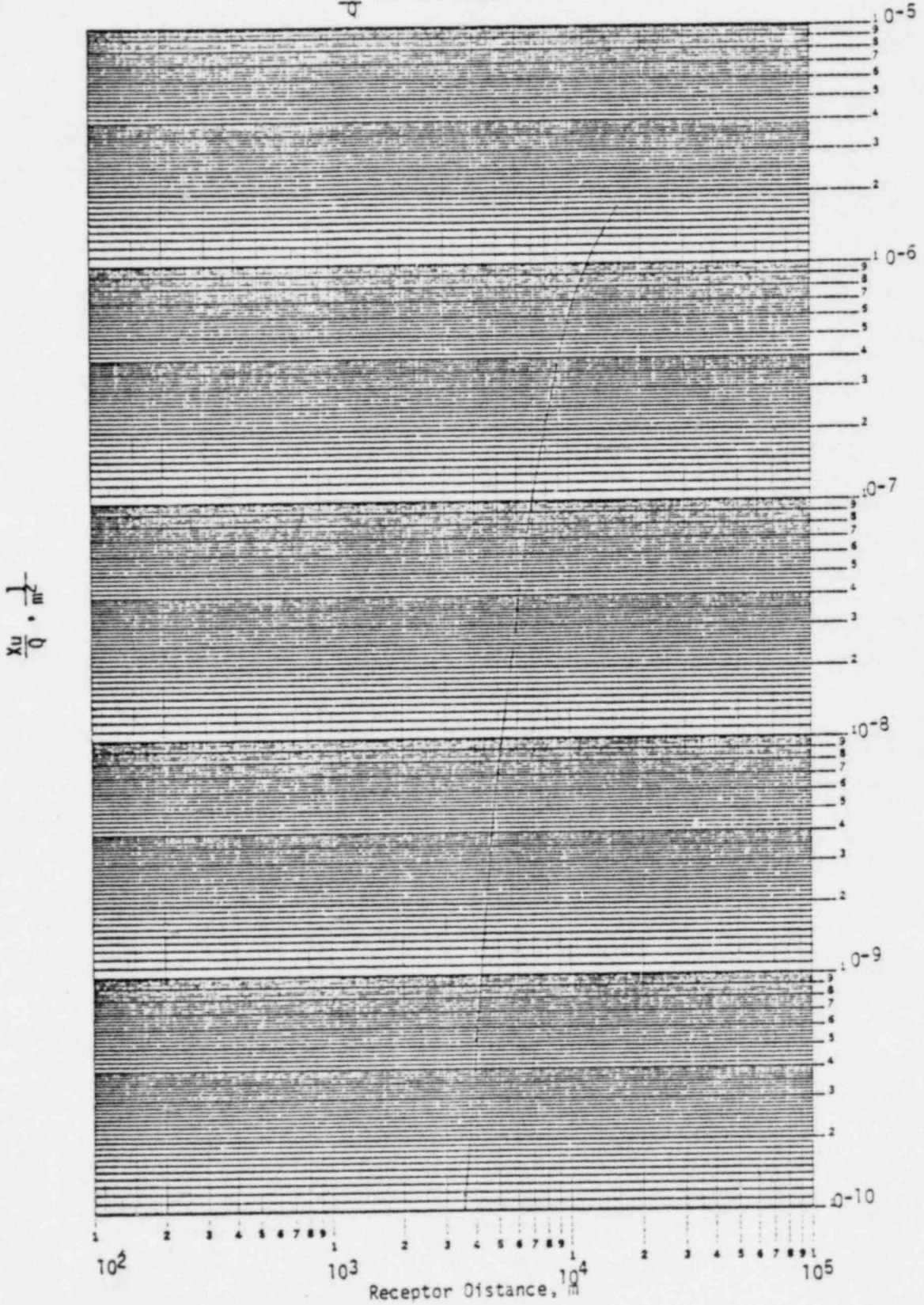
FIGURE 26

$\frac{Du}{Q}$ for Iodine - Class FG



Receptor Distance, m
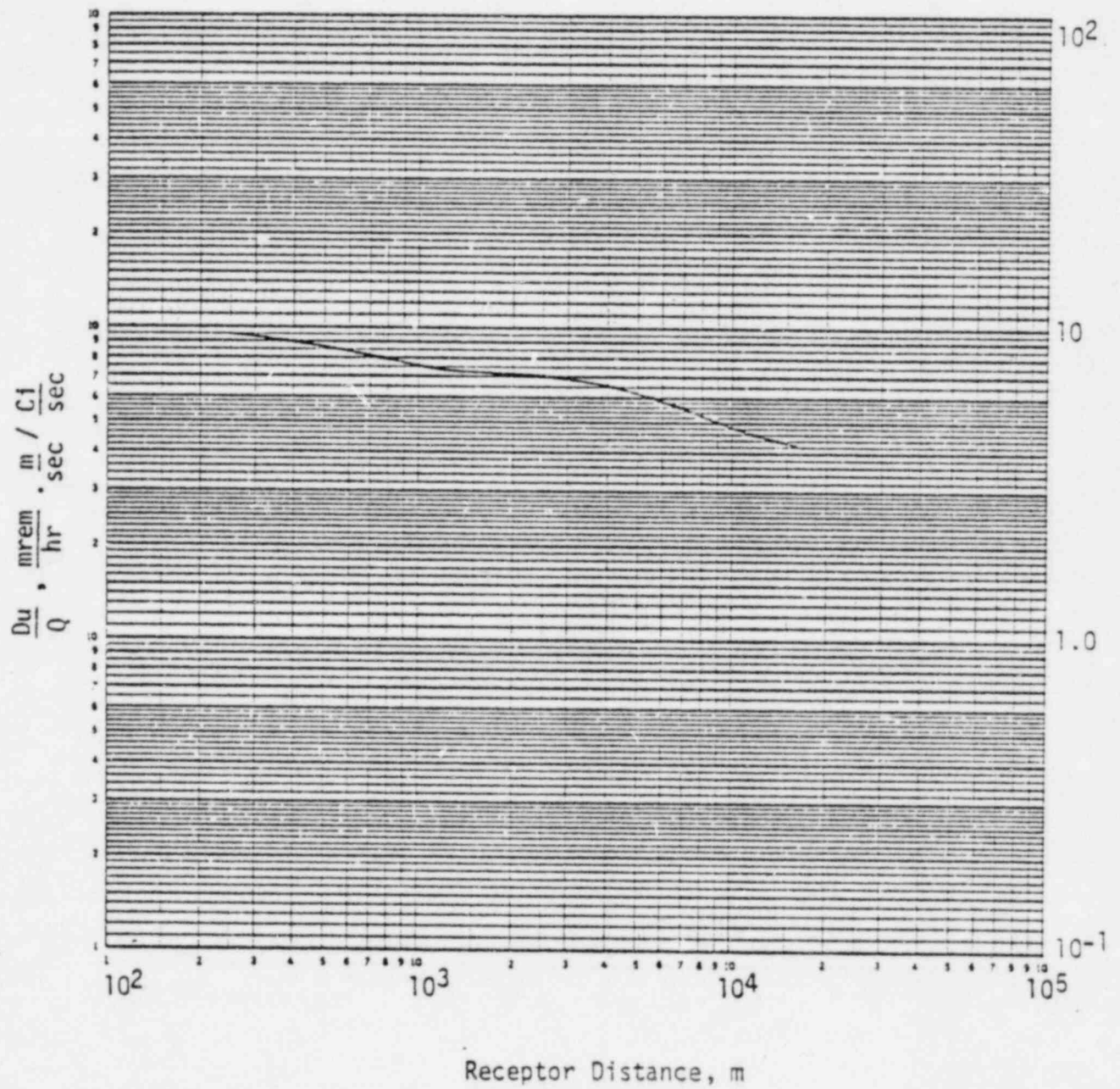
FIGURE 27

$\dfrac{Du}{Q}$ for Noble Gas - Class FG



Receptor Distance, m

FIGURE 28

Plume Width - Class FG



Receptor Distance, m
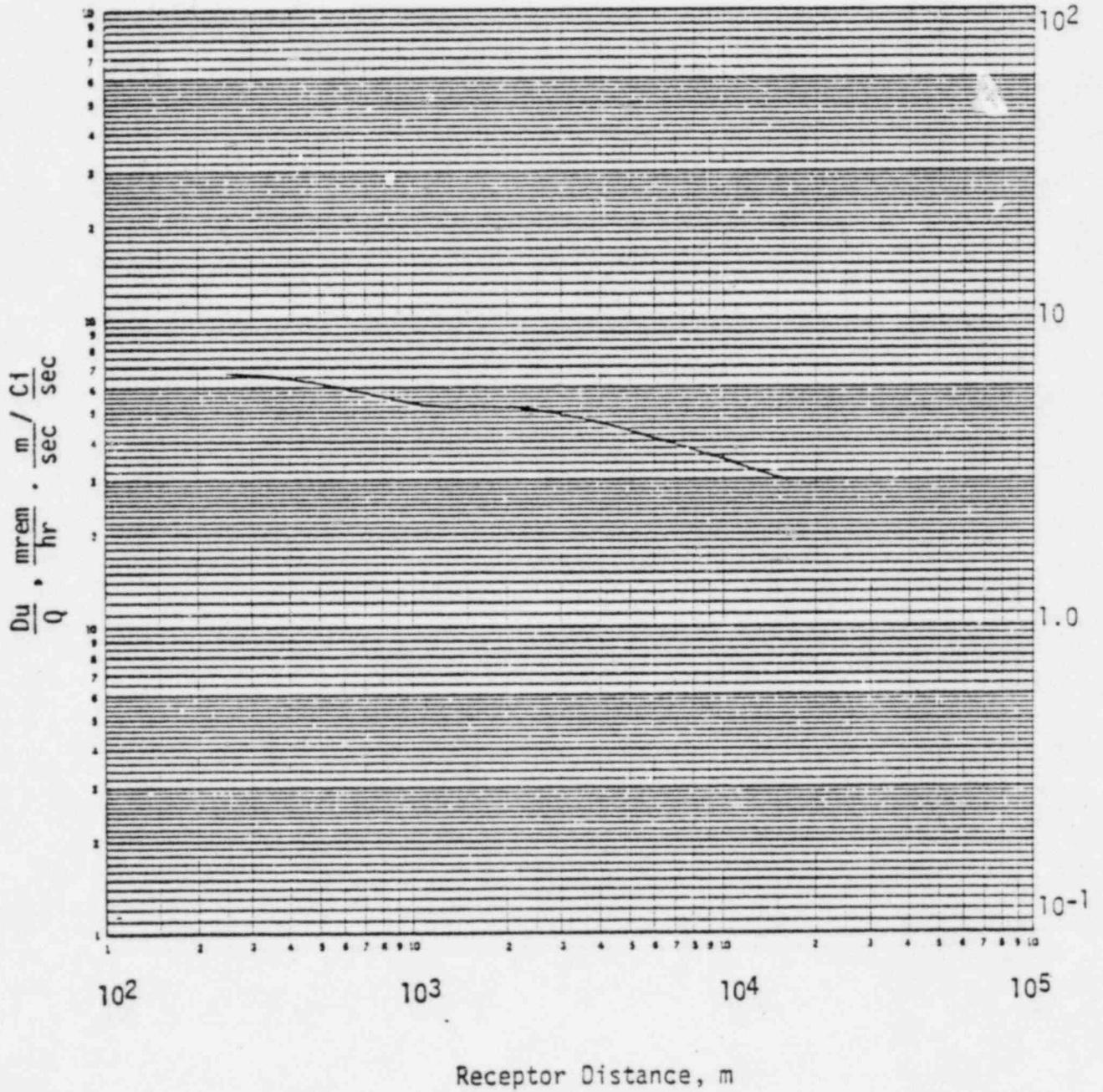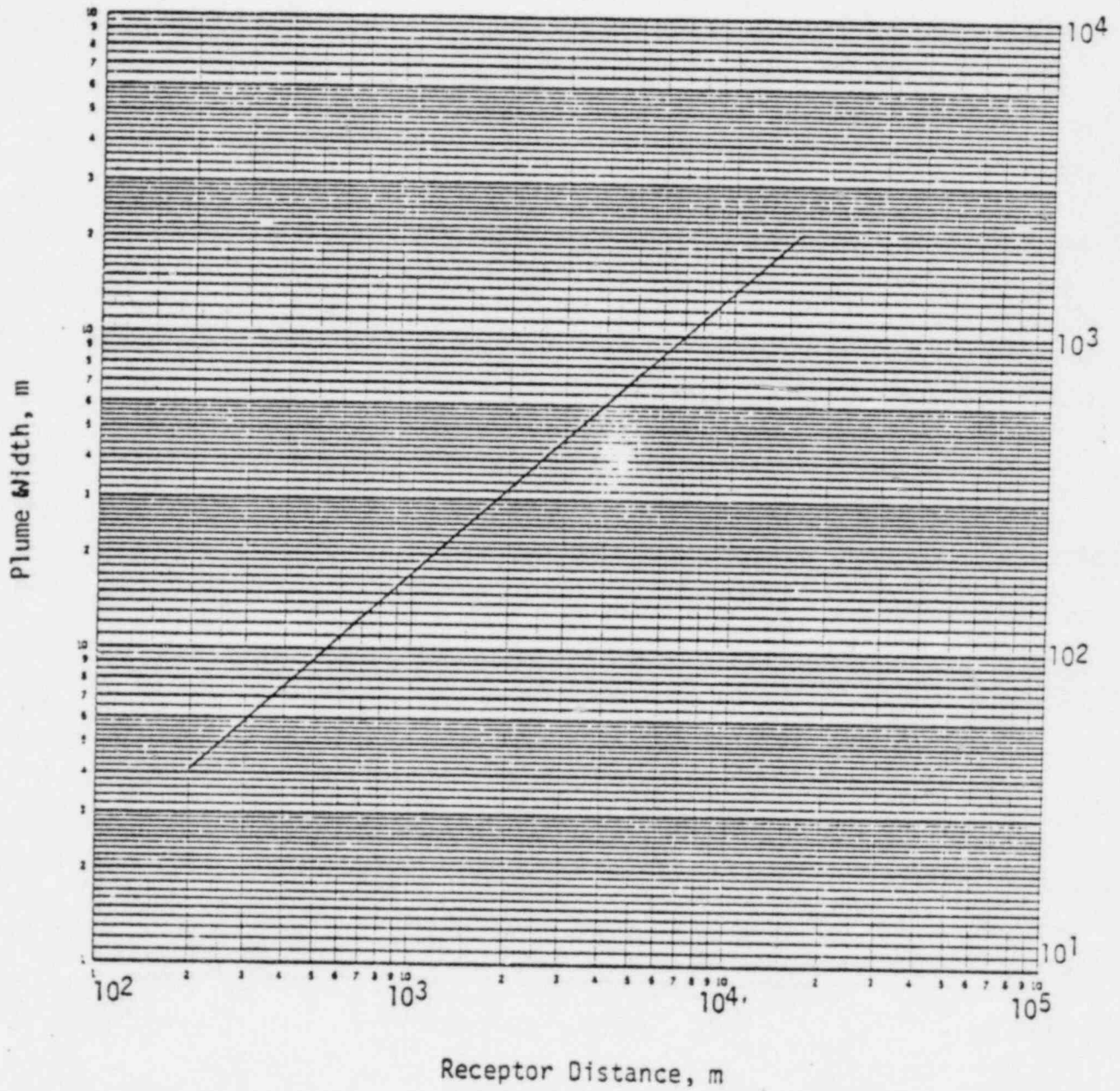
TO:  DISTRIBUTION                          MANUAL Emergency Plan Implementing Procedure

                                           Date_____July 7, 1982_____    .

Please remove:  (1) Index and/or Revision Control Page(s) and (2) Procedure or
Procedure Page(s) listed below and insert the revised material.

                                                 INSTRUCTIONS
|                              | REMOVE |         | INSERT |         |
|                              | Rev.   | Date    | Rev.   | Date    |
|------------------------------|--------|---------|--------|---------|
| Revision Control Sheet       | 6      | 6/1/82  | 7      | 7/7/82  |
| EPIP 1.2                     | 1      | 10/12/81| 2      | 6/9/82  |

Subsequent to making the above changes, sign and date the notice below, detach it
at the bottom line and return it to the addressee.

----------------------------------------------------------------------------------

*NRC - NRR* (TO)              NOTICE OF RECEIPT OF REVISION NOTIFICATION

*1 of 10*

TO:  DAEC SUPPORT SERVICES
     P.O. Box 351, Cedar Rapids, Iowa 52406

This acknowledges receipt of revision notification to the Procedure(s)_____

    EPIP 1.2
_____

dated_ July 7, 1982 _and updating of Procedure(s) in accordance with the notification

instructions.

Signature:_____    Date:_____

EMERGENCY PLAN IMPLEMENTING PROCEDURES

REVISION CONTROL SHEET

Revision No. 7

Revision Date 7/7/82

| Page/Proc | Date | Rev. | Page/Proc | Date | Rev. | Page/Proc | Date | Rev. |
|-----------|------|------|-----------|------|------|-----------|------|------|
| INDEX | 6-1-82 | 4 | | | | | | |
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| 1.2 | 6-9-82 | 2 | | | | | | |
| 2.1 | 1/15/82 | 2 | | | | | | |
| 2.2 | 2/1/82 | 3 | | | | | | |
| 2.3 | 12/2/81 | 0 | | | | | | |
| 3.1 | 3/1/82 | 2 | | | | | | |
| 3.2 | 3/1/82 | 3 | | | | | | |
| 3.3a | 10/21/81 | 1 | | | | | | |
| 3.3b | 5/13/81 | 0 | | | | | | |
| 4.1 | 5/13/82 | 2 | | | | | | |
| 4.2 | 5/11/81 | 0 | | | | | | |
| 4.3 | 10/19/81 | 1 | | | | | | |
| 4.4 | 5/11/81 | 0 | | | | | | |
| 4.5 | 5/13/82 | 0 | | | | | | |
| 5.1 | 11/24/81 | 1 | | | | | | |
| 5.2 | 11/24/81 | 1 | | | | | | |
| 6.1 | 5/11/81 | 0 | | | | | | |
| 6.2 | 5/11/81 | 0 | | | | | | |
| 6.3 | 3/1/82 | 1 | | | | | | |
| 6.4 | 3/3/82 | 2 | | | | | | |

1.0 PURPOSE

This procedure provides instructions for notifying the Emergency Response Organization and offsite agency personnel of the declaration of an Emergency Action Level (EAL).

2.0 APPLICABILITY

This procedure applies to members of the on duty Operations and Security Shifts and to the Emergency Response Organization upon declaration of an EAL.

3.0 RESPONSIBILITIES

3.1 Shift Supervising Engineer (SSE)

3.1.1 Initiate the notification process appropriate for the event classification.

3.1.2 Insure that notifications made to off-site agencies are correct and timely.

3.1.3 Verify that the NRC is contacted within one hour of declaration of an event.

3.2 Security Shift Supervisor

3.2.1 Assign communicators as required to conduct notifications.

3.2.2 Advise the Emergency Coordinator upon completion of all required notifications and appraise him of problems encountered.

3.3 Assistant Chief Engineer - Radiation Protection and Security

3.3.1 Ensure that the Duty Emergency Response Assignments Special Order is updated and published as required.

3.4 Emergency Planning Coordinator

3.4.1 Ensure that the Emergency Response Organization Notification Lists (Attachment 3) are updated and published quarterly.

4.0 INSTRUCTIONS

4.1 NOTIFICATION OF UNUSUAL EVENT

4.1.1 During normal working hours, the Shift Supervising Engineer shall initiate the notification process by contacting the Operations Supervisor.

a) The Operations Supervisor shall assume all responsibility for contact of DAEC and Corporate Management personnel.

b) The Director of Nuclear Generation shall normally be contacted by the Chief Engineer.

c) Off-Site Agency contact shall normally be made by the Operations Supervisor.

NOTE:

Regardless of the circumstances, the Operations Supervisor shall insure that the NRC is contacted as per 10 CFR 50.72 within 1 hour of declaration of the event.

4.1.2    During backshifts, weekends, and holidays, when the normal staff complement is not at the site, the Shift Supervising Engineer shall initiate the notification process by contacting the Operations Supervisor.

a) The Operations Supervisor shall provide direction to the SSE regarding further contacts to be made.

b) Unless directed otherwise, the Shift Supervising Engineer shall then contact the Duty Emergency Coordinator.

c) Off-site agency contact shall be made as directed by the Shift Supervising Engineer. At the option of the SSE the Security Shift Supervisor may be requested to make such calls as described in paragraph 4.3 of this procedure.

d) NRC notification shall normally be made by the SSE.

NOTE:

Contact with the NRC shall be made within 1 hour of declaration of the event.

4.2  ALERT, SITE EMERGENCY OR GENERAL EMERGENCY

NOTE:

Full activation of the DAEC Emergency Response Organization is required for all events classified as an ALERT or greater.

4.2.1    The SSE shall direct implementation of EPIP 4.1, "Plant and Site Evacuation".

4.2.2   During normal working hours, the Emergency Coordinator shall assume all responsibility for contact of Corporate Management and off-site agency personnel.

a)   Such notification shall normally be made from the Technical Support Center.

NOTE:

Use of the common pager number to notify the Emergency Response Organization need not be done under these circumstances.

b)   NRC contact and establishment of a continuous open communication path with NRC headquarters shall normally by made from the TSC.

4.2.3   During backshifts, weekends, and holidays, when Emergency Response Facilities are not manned and the normal staff complement is not at the site, notification of Corporate Management, DAEC Emergency Response Organization personnel and off-site agency personnel shall be initiated as follows:

NOTE:

If emergency response facility activation is required due to a security related emergency, all notification functions performed by Security Force personnel shall be assumed by Operations personnel under the direction of SSE.

a)   Upon hearing the evacuation alarm and paging announcement the Security Shift Supervisor shall dispatch a member of the Security Force to the Control Room.

b)   The SSE shall insure that items 2 through 7 of the Initial Notification Message, Attachment 1, is completed and provided to the Security Force member dispatched to the Control Room.  In addition, he shall insure that the Emergency Response Organization Notification Message, Attachment 2, is completed and provided to the Security Force member.

c)   The SSE shall direct notification of key members of the Emergency Response Organization using the group pager telephone number and pre-planned message as prescribed in the current Duty Emergency Response Assignments Special Order.

NOTE:

The group pager message should be repeated twice more at 5 minute intervals each.

d) The SSE shall also notify or insure that the Duty Emergency Coordinator is notified of the event by making direct telephone contact.

e) The Duty Emergency Coordinator shall notify the Emergency Response and Recovery Director by making direct telephone contact and appraise him of the situation, the sequence of events, as appropriate, and corrective actions being taken.

NOTE:

This initial contact should be brief and, if at all practicable, made before traveling to the site.

f) Off-site agency contact shall be accomplished as described in paragraph 4.3 following.

g) NRC contact and establishment of an open continuous communication path will normally be accomplished by the assigned communicator in the TSC as described in paragraph 4.6.

NOTE:

Regardless of the situation the Emergency Coordinator - the SSE until relieved- shall insure the NRC is contacted within 1 hour of declaration of the event.

4.3 Notification of Off-Site Agencies

NOTE:

This notification process will be accomplished for initial notification only unless otherwise instructed by the Emergency Coordinator. All follow-up notifications will be conducted from the TSC or EOF, once manned.

4.3.1 The Security Force member dispatched to the Control Room shall provide the Initial Notification Message to the Security Shift Supervisor.

NOTE:

If the emergency is a fire and the Security Shift Supervisor is functioning as the Fire Brigade Leader, the Security Shift Supervisor's responsibilities shall be assumed by the SSE. The SSE may elect to delegate this responsibility to the STA or others, as appropriate.

4.3.2   The Security Shift Supervisor shall assign a communicator to contact the following agencies identified on Notification List #1 of Attachment 3, "Emergency Response Organization Notification Lists" and provide the communicator with the Initial Notification Message.

a)  Linn County Sheriff

b)  Benton County Sheriff

c)  State Office of Disaster Services

4.3.3   The communicator shall contact each of the agencies listed, read the message to the individual who receives the call and insure that the information is correctly received.

NOTE:

Call back verification of these initial notifications can be expected from the agencies contacted.

4.3.4   The assigned communicator shall log on the Initial Notification Message the time each agency is contacted and the name of the individual who received the call.

4.3.5   Upon completion of all calls, the communicator shall so advise the Security Shift Supervisor who, in turn, shall advise the Duty Emergency Coordinator upon his arrival on site.

4.4  Notification of the DAEC Emergency Response Organization

4.4.1   The Security Force member dispatched to the Control Room shall provide the Emergency Response Organization Notification Message to the Security Shift Supervisor.

NOTE:

If the emergency is a fire and the Security Shift Supervisor is functioning as the Fire Brigade Leader, the Security Shift Supervisor's responsibilities shall be assumed by the SSE. The SSE may elect to delegate this responsibility to the STA or others, as appropriate.

4.4.2   The Security Shift Supervisor shall assign two communicators to contact members of the DAEC Emergency Response Organization and provide each with a copy of the Emergency Response Organization Notification Message.

a)  Notification Lists Nos. 2 and 3 of Attachment 3 shall be provided to the communicators.

b) Notification of the Emergency Response Organization by the assigned communicators shall proceed in parallel to enable rapid response by personnel who may be needed at the site.

4.4.3 The Security Force Communicators shall perform the following:

a) Telephone, in sequence, the individuals for each emergency position and repeat the Emergency Response Organization Notification Message (Attachment 2).

b) Use the priority established in the respective Notification Lists until all positions have been filled.

NOTE:

Reference shall be made to the current Duty Emergency Response Assignments Special Order. Those individuals assigned should be called first.

c) Allow approximately 10 rings (about 1 minute) for a call to be answered.

d) Log all calls and attempts on the notification lists.

e) Proceed through the entire sequence identified on the respective Notification.

f) If the total number of people required for each emergency position has not been reached, attempt notification of these individuals unavailable during the first calling cycle.

g) Advise the Security Shift Supervisor of problems encountered and positions which can not be successfully filled.

4.4.4 Upon being advised of the completion of all calls by the Security Force Communicators and of all problems encountered, the Security Shift Supervisor shall report the status to the Security and Support Supervisor or, if not present, the Emergency Coordinator.

4.5 Upon completion of all required notifications the Security and Support Supervisor shall advise the Emergency Coordinator of their completion and of significant problems encountered.

4.5.1 If the required Emergency Response Organization positions have not been filled, the Emergency Coordinator shall designate temporary personnel reassignments which may be necessary to fill the positions.

4.5.2 If additional support personnel are required and available from the Corporate Emergency Response Organization, the Security and Support Supervisor shall coordinate such needs with the Emergency Support Manager.

4.6 Notification of the Nuclear Regulatory Commission (NRC) shall proceed as follows:

4.6.1 Notification of the NRC should occur following activation of the TSC by the communicator assigned.

4.6.2 As directed by the Emergency Coordinator or Technical Support Center Supervisor, the communicator shall notify the NRC of the declared EAL.

4.6.3 The time of the initial call and the recipients name shall be recorded in the TSC log.

4.6.4 Notification of the NRC shall be accomplished within one hour of declaration of the event, as prescribed in 10CFR50.72.

4.6.5 Once communications with the NRC have been established, continuous communications must be maintained unless terminated by the NRC.

4.7 The DAEC Security Force and local law enforcement agencies may have established road blocks at predetermined points around the DAEC to prevent access by unauthorized personnel during an emergency. To gain acess to the site during an emergency, personnel notified to report to the DAEC should be prepared to present appropriate identification.

## 5.0 REFERENCES

5.1 Iowa Electric Light and Power Company Emergency Response Plan.

5.2 Duane Arnold Energy Center Emergency Plan

5.3 NUREG 0654, Rev. 1.

## 6.0 ATTACHMENTS

1. Offsite Agency Notification Message Content

2. Emergency Response Organization Notification Message Content

3. Emergency Response Personnel Notification Lists

APPROVED BY: _James Sparace_ DATE: _6-10-82_
Security Supervisor

REVIEWED BY: _J H P Smith_ DATE: _6/10/82_
ALARA Coordinator

APPROVED BY: _Donald F. Teply_ DATE: _6-10-82_
Operations Supervisor

APPROVED BY: _Dreiben_ DATE: _6-10-82_
Assistant Plant Superintendent
Radiation Protection and Security

REVIEWED BY: _R E Arl_ DATE: _6/17/82_
Chairman, Operations Committee

APPROVED BY: _S. F. Minick Jr._ DATE: _7/6/82_
Plant Superintendent - Nuclear

## ATTACHMENT 1

### INITIAL NOTIFICATION MESSAGE

Time _____

Date _____

SSE _____

1) This is _____ calling from the Duane Arnold Energey Center.
   Caller's name & title

2) An event has occured which is catagorized as a:

   a) Notification of an Unusual Event, a Type A-_____ event.

   b) Alert, a Type B- _____ event.

   c) Site Emergency, a Type C- _____ event.

   d) General Emergency, a Type D- _____ event.

3) Use of the prompt notification system IS/IS NOT recommended.

4) Abnormal radiological releases ARE/ARE NOT occuring.

   -- If occuring:

   a) The wind is out of the _____. The population of concern is located in sector(s)_____.

5) Protective measures for the public ARE/ARE NOT recommended.

   -- If recommended:

   a) Sheltering
   b) Evacuation of pre-school children and pregnant women
   c) General evacuation

ATTACHMENT 1 (Continued)

6) Off-site radiological monitoring IS/IS NOT planned.

> -- If planned:
>
> a) Emergency Monitoring Teams are being/have been dispatched

7) Direct assistance at DAEC by your agency IS/IS NOT requested.

> -- If assistance is desired, explain:

Received by:  Linn County _____ Time _____

Benton County _____ Time _____

Office of Disaster
Services _____ Time _____

## ATTACHMENT 2

### EMERGENCY RESPONSE ORGANIZATION NOTIFICATION MESSAGE

This is (caller's name and job position) calling from the DAEC.

An event classified as an ALERT/SITE EMERGENCY/GENERAL EMERGENCY (strike out

classifications not applicable) has occured at DAEC.

A release IS/IS NOT in progress and heading towards _____

(applicable town, as appropriate).

Use NORMAL/ALTERNATE access to the site.

Be prepared to provide identification to the Highway Patrol.

Report to the site and assume your assigned emergency response duties.

Please drive cautiously and do not take any unnecessary risks.

## ATTACHMENT 3

### EMERGENCY RESPONSE ORGANIZATION NOTIFICATION LISTS

See enclosed Special Order "Emergency Response Organization Notification List"