INDIANA & MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT

PLANT MANAGER PROCEDURE

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EPP.016	Collection and Analysis of Liquid and Gaseous Samples	Revision 0 4-1-81	
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EPP.018	Transportation Accidents Involving Radioactive Material	Revision 1 6-24-82	
EPP.019	AEP Emergency Response Organization Activation and Management	Revision 0 4-1-81	
EPP.020	Activation and Operation of the Technical Support Center (TSC)	Revision 1 8-24-82	TP-1,9-9-82 Exp NA
EPP.021	Activation and Operation of the Operations Staging Area (OSA) and Personnel Accountability	Revision 1 5-25-82	
EPP.022	Activation and Operation of the Emergency Operations Facility	Revision 1 6-4-82	
EPP.023	Activation and Operation of the Emergency Control Center (ECC) (An Emergency Operations Facility)	CANCELLED 6-4-82	
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PLANT MANAGER PROCEDURE

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EPP.004	Site Emergency	CANCELLED 10-29-81	
EPP.005	General Emergency	CANCELLED 10-29-81	
EPP.006	Initial Dose Assessment (Gaseous)	Revision 3 8-27-82	
EPP.007	Initial Release Assessments (Liquid)	Revision 0 4-1-81	TP-1,2-23-82 Exp NA
EPP.008	Initiating Manning of Emergency Response Facilities & Calling Off-Duty Personnel	Revision 3 10-12-82	
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INDIANA & MICHIGAN
ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

PROCEDURE COVER SHEET

Procedure No. PMP 2080.EPP.008
Revision No. 3

TITLE INITIATING MANNING OF EMERGENCY RESPONSE FACILITIES AND CALLING OFF-DUTY PLANT PERSONNEL

SCOPE OF REVISION

Revision 1 - Added Graphical Phone Tree. Clarified assembly and call in, activate call list on TSC manning not Nuclear Emergency Alarm.

Revision 2 - Changed procedure title, revised and updated procedure body and Exhibit A. Incorporated Temporary Change Sheet 1.

Revision 3 - Revised call list.

SIGNATURES

	ORIGINAL	Rev. 1	REV. 2	Rev. 3
PREPARED BY	T. Duffy R. Keith	K. Baker	P. Craig	
QUALITY ASSURANCE REVIEW	J. Stietzel	J. Stietzel	T. Beilman	
INTERFACING DEPARTMENT HEAD CONCURRENCE	NA	NA	R. Begor	
DEPARTMENT HEAD APPROVAL	NA	NA	NA	N/A
PLANT NUCLEAR SAFETY COMMITTEE	R. Keith	A. Blind	A. Blind	
PLANT MANAGER APPROVAL	B. Svensson	E. Townley	W. Smith	
DATE OF ISSUE	03-31-81	04-29-82	08-27-82	10-12-82

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INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

INITIATING MANNING OF EMERGENCY RESPONSE FACILITIES AND CALLING OFF-DUTY PLANT PERSONNEL

1.0 OBJECTIVES

The objective of this procedure is to provide the information that is necessary to summon plant personnel during emergency conditions to staff the Emergency Response Facilities.

2.0 RESPONSIBILITIES

2.1 The Shift Supervisor (SS)/On-Site Emergency Coordinator (OSEC) is responsible for initiating the actions required to staff the Emergency Response Facilities and to provide the required information to the parties called. Individual Department Heads are responsible for maintaining the call lists current.

2.2 Exhibit A* will be verified correct at least quarterly by the Operations Department. Where Exhibit A* requires initiation of Section or Departmental call lists the applicable Department Head is responsible for maintaining these lists current.

NOTE: TO PROVIDE RAPID NOTIFICATION OF DEPARTMENTAL PERSONNEL, DEPARTMENT SUPERVISORS MAY ESTABLISH DEPARTMENTAL CALL TREES OR DELEGATE NOTIFICATION TO OTHER DEPARTMENTAL PERSONNEL.

3.0 APPLICABILITY

3.1 This procedure applies to any plant emergency event which requires plant personnel notification for purposes of staffing Emergency Response Facilities.

3.2 The procedure may be implemented anytime the SS/OSEC determines that it is necessary that on-site emergency personnel resources be augmented by off-duty plant personnel.

3.3 The TSC and OSA will be activiated for any event classified as an alert or higher.

3.4 The EOF will be activated for any event classified as a Site Emergency or higher.

3

*Exhibit A included in in-plant copies of procedures only.

4.0 INSTRUCTIONS

4.1 Normal Working Hours

4.1.1 During normal working hours if the S.S./OSEC desires to activate the TSC and Operations Staging Area (OSA), a public address (P.A.) announcement will be made stating "Activate the TSC". Any special reporting routes will be identified in conjunction with the P.A. announcement. Assigned personnel will report to the TSC and OSA upon hearing the P.A. announcement. If sufficient personnel do not report directly to the TSC or OSA, they will be contacted via telephone by personnel in the TSC and OSA.

4.1.2 For site or general emergencies, personnel are to report directly to their assigned Emergency Plan duties upon hearing the Nuclear Emergency Alarm (NEA) unless the P.A. announcement following the NEA restricts their route to their assigned station. Then they should report to the OSA and request guidance as to a safe route.

4.2 Off-Duty Hours

4.2.1 During off-duty hours, the S.S./OSEC will initiate calling of off-duty plant personnel to staff the Emergency Response Facilities by activating the Emergency Call List (Exhibit A*) and provide any specific reporting restrictions by completing the Off-Duty Notification Information Sheet (Exhibit B).

4.2.2 When notified, others will accomplish their assigned portion of Exhibit C. Personnel contacted should report directly to their assigned locations unless directed otherwise.

4.2.3 Security should set up for immediate processing of arriving off-duty personnel and establish an Assembly Area for reporting at the I-94 Guard House, if directed.

4.2.4 If additional staffing is required they will be contacted by phone by the responsible department.

*Exhibit A included in in-plant copies of procedures only.

SHIFT SUPERVISOR CALL-OUT LIST

Perform the following:

1. Contact the Security Shift Supervisor on ext. or via the page.

   State - We have initiated the Emergency Plan at a level of _____, please initiate the appropriate Emergency Plan Call-Out List (Exhibit A Page 2 of 6). Provide any restriction which may require alternate reporting routes

   3

2. Contact the NRC via the NRC Red Phone. (Continuous contact will be required for an alert or higher.) Provide Information on Exhibit B.

3. Contact the Operations Superintendent . . . . K. R. Baker -

   or

   Assistant Operations Superintendent . . H. M. Chadwell -

   or

   Production Supervisor Unit 1 . . . . . D. R. Campbell

   or

   Production Supervisor Unit 2 . . . . . C. E. Murphy -

   State - We have initiated the Emergency Plan at a level of _____, please initiate the Operations Department Call-Out List. Provide information on Exhibit B.

   3

4. Contact the Plant Manager . . . . . W. G. Smith, Jr. -

   or

   Assistant Plant Manager Operations . . . B. A. Svensson -

   or

   Assistant Plant Manager Maintenance . . . E. L. Townley -

   State - We have initiated the Emergency Plan at a level of _____, please initiate the Managers Call List and report to the TSC. Provide information on Exhibit B.

   3

SECURITY SHIFT SUPERVISOR CALL LIST

A. Contact the Central Alarm Station (CAS), Second Alarm Station (SAS), and Guard Island and instruct them to initiate the appropriate Emergency Plan Call List Event is classsified at a _____(Exhibit A, page 3, 4, and 5 respectively). | 3

B. Contact the following in the order listed:

1. Maintenance Superintendent - R. L. Dudding . . . . . .
   or
   Maintenance Production Supervisor - F. W. Wenman . . . .
   or
   Maintenance QCIC - D. G. Wizner . . . . . .

   State - We have initiated the Emergency Plan at a level of _____, please initiate the Maintenance Department Call-Out for staffing the OSA and report to the OSA. | 3

2. Performance Engineer - A. A. Blind . . . . . .
   or
   Performance Engineer - R. L. Simms . . . . . .

   State - We have initiated the Emergency Plan at a level of _____, please report to the TSC. | 3

3. Training Supervisor - D. D. Nelson . . . . . .
   or
   Training Instructor - J. D. Dickson . . . . . .
   or
   Training Instructor - W. A. Nichols . . . . . .

   State - We have initiated the Emergency Plan at a level of _____, please initiate the Training Department Call-Out List. Personnel are to report to the (TSC and Berrien County Sheriff for an alert) or (EOF, Berrien County Sheriff, and JPIC for site or general emergency). | 3

4. Assistant Plant Manager Oper. - B. A. Svensson . . . . . .
   or
   Assistant Plant Manager Maint. - E. L. Townley . . . . .

   State - We have initiated the Emergency Plan at a level of _____, please notify the other Assistant Plant Manager and report to the Plant. | 3

C. If directed or if the event is classified as site emergency or higher dispatch guards to activate the EOF. | 3

CENTRAL ALARM STATION CALL-OUT LIST

Call the following in the order listed, the event is classified as _____. 3

1. R. L. Simms . . . . . .
   or
   R. Hennen . . . . . .
   or
   A. Verteramo . . . . . .

   State - We have initiated the Emergency Plan, please report to the TSC. 3

2. C&I Supervisor - D. Duncan . . . . . .
   or
   C&I Foreman - C. Miles . . . . . .
   or
   C&I Foreman - D. Sammons . . . . . .

   State - We have initiated the Emergency Plan, please contact two C&I Technicians to report to the OSA and you report to the TSC. 3

3. V. D. Vanderburg . . . . . .
   or
   E. A. Abshagen . . . . . .
   or
   T. A. Kriesel . . . . . .

   State - We have initiated the Emergency Plan, please report to the TSC. (TSC for an Alert) (EOF for Site or General Emergency) 3

4. PET (Electrical)

   W. Pauls 3
   or
   D. Sudkamp . . . . . .
   or
   R. Hannigan . . . . . .

   State - We have initiated the Emergency Plan, please report to the TSC.

SECONDARY ALARM STATION CALL-OUT LIST

Call the following in the order listed, the event has been classified as an _____. | 3

1. Duty Maintenance Foreman -- Obtain name and number from Maintenance Depts. Weekly Callout list.

   or

   Maintenance Production Supervisor - F. Wenman . . . . . .

   State - We have initiated the Emergency Plan, please contact 2 electricians and 1 mechanic to report to the OSA and you are to report to the OSA also. | 3

2. A. Tetzlaf . . . . . .
   or
   W. Stoner . . . . . .
   or
   A. Might . . . . . .
   or
   J. Piotrowski . . . . . .
   or
   C. Wilson . . . . . .

   State - We have initiated the Emergency Plan, please report to the (TSC for an Alert) (EOF Site or General Emergency) | 3

3. Chemical Superintendent - J. Wojcik . . . . . .
   or
   Chemical Foreman - R. Looker . . . . . .
   or
   Chemical Foreman - W. Lentz . . . . . .
   or
   Chemical Foreman - J. Ersland . . . . . .

   State - We have initiated the Emergency Plan, please initiate the Chemical Section Call-Out and report to the TSC.

4. Contact 6 of the following:

   R. Krieger . . . . . .
   or
   R. Hennen . . . . . .
   or
   W. Gillette . . . . . .
   or
   G. Haganiers . . . . . .
   or

| 3

SECONDARY ALARM STATION CALL-OUT LIST

4. Continued

W. Pauls . . . . . .

or

D. Sudkamp . . . . . .

or

C. Ross . . . . . .

or

J. Piotrowsky . . . . . .

or

C. Wilson . . . . . .

or

V. Vukorpa . . . . . .

3

State - We have initiated the Emergency Plan, please report to the (TSC Alert) (EOF Site or General Emergency)

5. Contact 2 of the following:

R. Palmer . . . . . .

or

J. Rischling . . . . . .

or

S. Delong . . . . . .

or

A. Might . . . . . .

3

State - We have initiated the Emergency Plan, please report to the (TSC Alert) (EOF Site or General Emergency)

GUARD ISLAND

EMERGENCY PLAN CALL-OUT LIST

Call the following in the order listed:

1. R. P. Foreman:

   J. Hoss . . . . . .
   or
   D. Schroeder . . . . . .
   or
   J. Fryer . . . . . .

   State - We have initiated the Emergency Plan, please initiate the R.P. Emergency Plan Call-Out List.

2. Dose Assessment:

   D. Palmer . . . . . .
   or
   W. Ketchum . . . . . .
   or
   J. Nelson . . . . . .
   or
   M. Glissman . . . . . .

   State - We have initiated the Emergency Plan, please report for dose assessment duties at the (TSC for Alert) (EOF for Site or General Emergency). Contact dose assessment support personnel.

3. J. Fryer . . . . . .
   or
   D. Schroeder . . . . . .

   State - We have initiated the Emergency Plan, please report to the Plant.

4. PET (Mech.)

   K. Chapman . . . . . .
   or
   M. Lester . . . . . .
   or
   W. Golden . . . . . .
   or
   C. Flis . . . . . .
   or
   C. Wilson . . . . . .
   or
   J. Piotrowski . . . . . .

   State - We have initiated the Emergency Plan, please report to the TSC.

OFF-DUTY NOTIFICATION INFORMATION SHEET

Plant Manager or Operations Superintendent notified of the following information:

_____.

Information given to responding personnel:

1. _____ Emergency was declared at _____.
   (Classification) (Time)

2. _____
   (Nature of incident and status of plant)

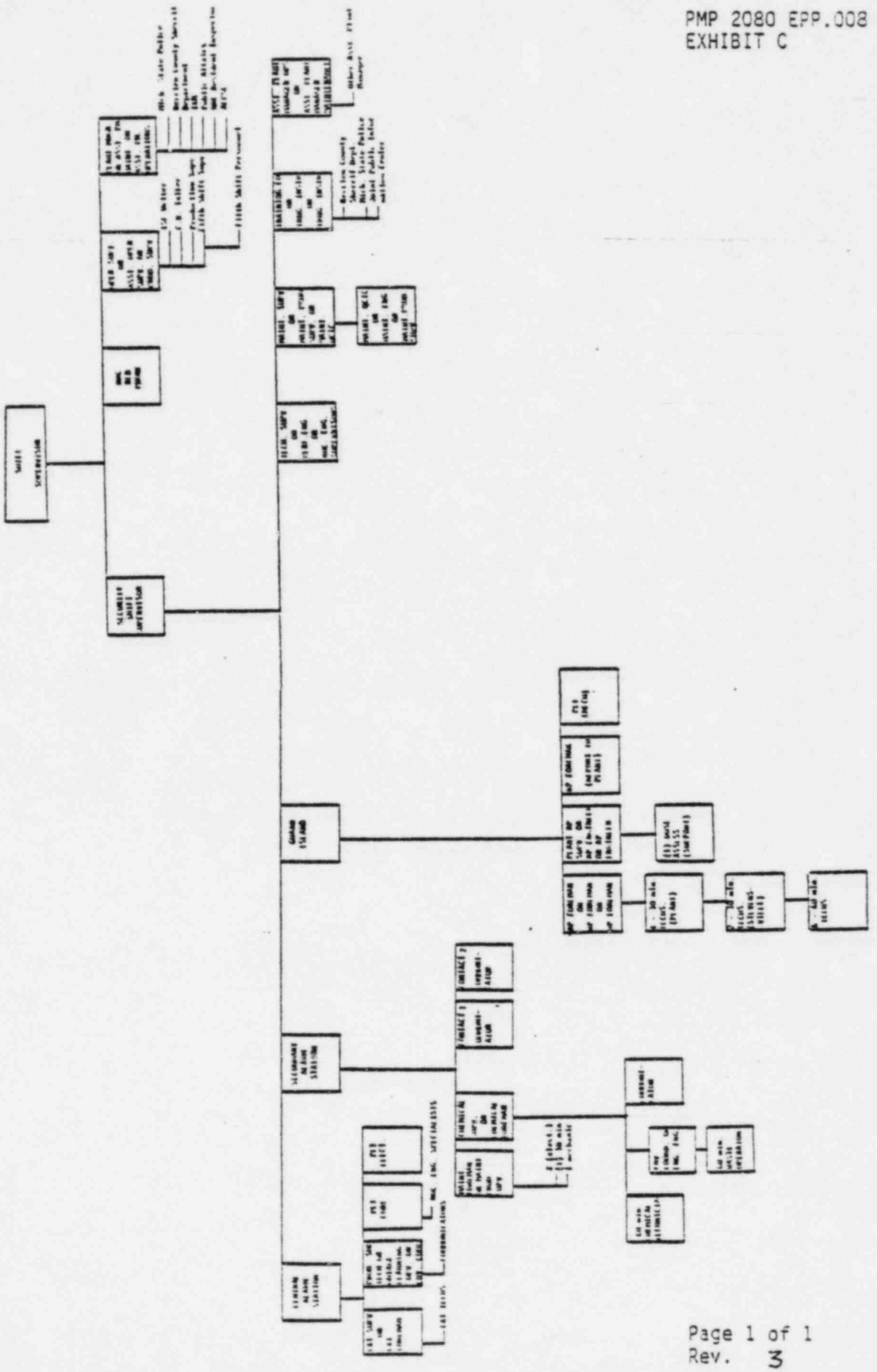
   _____.

3. A release to the environment has not occurred ____; has occurred_____; is occurring ____; may occur ____.

4. Projected Dose Rates at or near the site boundary are_____

   _____.

PMP 2080 EPP.008
EXHIBIT C



INDIANA & MICHIGAN
ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

PROCEDURE COVER SHEET

Procedure No. PMP 2081 EPP.014
Revision No. 1

TITLE

OFF-SITE DOSE ASSESSMENTS

SCOPE OF REVISION

Revision 1 - Complete revision to include use of hand-held calculators as back-up assessment tools.

SIGNATURES

	ORIGINAL	Rev. 1	REV. 2	Rev. 3
PREPARED BY	Dave Wilson	Mary A. Bassman		
QUALITY ASSURANCE REVIEW				
INTERFACING DEPARTMENT HEAD CONCURRENCE	N.A.			
DEPARTMENT HEAD APPROVAL	N.A.	N/A		
PLANT NUCLEAR SAFETY COMMITTEE				
PLANT MANAGER APPROVAL				
DATE OF ISSUE	3-31-81	10-12-82		

Form No. PMI 2010-1 - REV. 2

PER TELECOPY 3/27/81

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INDIANA AND MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

OFF-SITE DOSE ASSESSMENTS

1.0 OBJECTIVES

This procedure is to be used for manual dose calculations (with hand calculator program) of off-site doses from plant releases. It is intended to provide conservative dose rates and projected doses at specified points in the emergency planning zone. This procedure shall be performed under direction of the RAD (Radiological Assessment Director).

Provisions are included for:

1) Determining the Atmosphere Dispersion Factor (χ/Q) based on the Atmosphere Stability Class (i.e., Pasquill Category) and distance from the point of release to the point of projected dose.

2) Correcting the dose to account for the time after shutdown that the source data is taken.

3) Accounting for the results of measurements made by survey teams in the field.

2.0 RESPONSIBILITIES

The Radiological Assessment Director in the TSC or EOF is responsible for calculating whole body and thyroid dose projections. The Radiological Assessment Director and the On-Site Emergency Coordinator are to use these calculated values in determining possible off-site consequences from a release of radioactivity and for evaluating protective actions.

3.0 APPLICABILITY

This procedure shall be used to calculate dose rates to the whole body and thyroid at the site boundary and at specified points within the emergency planning zone. It shall also be used to determine projected doses within the emergency planning zone integrated over the duration of the release and to correlate calculated and projected doses with actual field measurements.

If MIDAS and/or CPM002 computer programs are available, use them to calculate the dose rate and projected doses, or to provide an entry point into the hand calculator program.

4.0 INSTRUCTIONS

NOTE: Initial dose estimates may be made by PMP 2080.EPP.006 or by the use of the AEPSC computer programs CPM002 or MIDAS.

4.1 The RAD shall perform the following functions and record all data on the appropriate exhibits:

4.1.1 Determine the Pasquill Category and record meteorological data on Exhibit C.[1]

4.1.1-1 If meteorological data is available from the computer, obtain and record Pasquill Category, wind speed and direction, ΔT and precipiptation on Exhibit C.

4.1.1-2 If meteorological data is not available from the computer, obtain it from Exhibit B, the Technical Information Sheet.

4.1.1-3 To determine Pasquill Category using ΔT information, use the following guide:

ΔT=(T,180ft-T,30ft),°C	°C/100m	Pasquill Category
-0.87	-1.9	A
-0.87 to -0.78	-1.9 to -1.7	B
-0.78 to -0.68	-1.7 to -1.5	C
-0.68 to -0.23	-1.5 to -0.5	D
-0.23 to 0.68	-0.5 to 1.5	E
0.68 to 1.83	1.5 to 4.0	F
1.83 and above	4.0 and above	G

4.1.1-4 If information about ΔT is unavailable from meteorological tower or Exhibit B, Pasquill Category may be estimated using this chart:

	Sunny Day	Cloudy Day	Cloudy Night	Clear Night
light wind or calm ($\leq$9.8 mph)	B	C	E	F
moderate, strong wind (>9.8 mph)	C	D	D	D

4.1.2 Complete the lower two-thirds of information on Exhibit C (from Basis for Projected Dose onward). This includes calculation of dose rates and projected doses to whole body and thyroid as well as making recommendations for support or emergency actions based on this data.

[1] References to Exhibit B and Exhibit C refer to those exhibits as found in PMP 2081.EPP.020.

4.1.3 Coordinate information being used to complete Exhibit C in the TSC and EOF as the transition from TSC to EOF is made using Exhibit A, Off-Site Dose Assessment: EOF/TSC Coordination Checklist.

4.2 Calculation of dose rates and projected doses to the whole body and thyroid is performed using the method outlined below:

NOTE: Reference for details of using the hand calculator program is Exhibit E, Off-Site Dose Program. Flow sheet for this program is Exhibit F, Off-Site Dose Program Flow Sheet.

4.2.1 Load both sides of both program cards.

4.2.2 Enter the program by specifying the Pasquill Category.

4.2.3 When 610 appears, specify boundary distance in meters. R/S

4.2.4 When 0.01 appears, specify wind speed in mph. R/S

4.2.5 When 0. appears, enter release rate in Ci/sec. R/S (For details on calculating release rates, see Exhibit E).

4.2.6 When 2. appears, enter release classification (as defined in Exhibit G). If classification is 7, Isotopic Mixture program, Exhibit H, should be used. R/S

4.2.7 Read whole body (thyroid) dose rate at site boundary. R/S

4.2.8 After site boundary distance flashes, read whole body (thyroid) dose rate at site boundary. Record this value for Dose Rate, R/hr, on Exhibit C, Accident Information Reporting Data Sheet. Record values to three significant figures; if values are <0.001, record as "<0.001". R/S

4.2.9 After 2 (representing 2 miles) flashes, read and record values as described in 4.2.8. R/S

4.2.10 Repeat step 4.2.9 for distances of 5 and 10 miles. R/S

4.2.11 When 15. appears, specify exposure time in minutes. R/S

4.2.12 Read whole body (thyroid) boundary dose for this case. R/S

4.2.13 Read whole body (thyroid) dose at boundary integrated from beginning of event. Record values on Exhibit D, Integrated Dose and Projected Dose Worksheet. R/S

4.2.14 When 60. appears, enter projected time of release, in minutes. R/S

4.2.15 After site boundary distance flashes, read total (integrated plus projected) whole body (thyroid) dose at site boundary. Record this dose under Integrated Dose, R, on Exhibit C, Accident Information Reporting Data Sheet. R/S

4.2.16 After 2 (representing 2 miles) flashes, read and record values as described in 4.2.15. R/S

4.2.17 Repeat setp 4.2.16 for distances of 5 and 10 miles.

4.2.18 R/S. This will return the program to step 4.2.5. Use step 4.2.5 as the entry point for subsequent calculations unless:

4.2.18-1 Pasquill Category changes. If this occurs, return to step 4.2.2.

4.2.18-2 A measured dose rate obtained by a sampling team at the site boundary is the new basis for calculations. If this is the case, go to step 4.2.19.

4.2.18-3 A measured dose obtained by a sampling team at the site boundary is the new basis for calculations. In this case, go to step 4.2.20.

4.2.18-4 Concentrations of noble gases and radioiodines from isotopic analysis are the new basis for calculations. If this is the case, go to step 4.2.22 and use Exhibit H, Isotopic Mixture program.

4.2.19 If give a dose-rate obtained by a sampling team at the site boundary, enter values in X and t registers (whole body in X, thyroid in t). Press B.

4.2.19-1 This takes the program to step 4.2.8. Follow procedure through to step 4.2.18.

4.2.20 If given a dose obtained by a sampling team at the site boundary, enter values in appropriate X and t registers (whole body in X, thyroid in t). Press D.

4.2.20-1 This takes the program to step 4.2.13. Follow procedure through to step 4.2.18.

4.2.21 A reset of integrated doses to zero may be performed in case of mistake or significant change in wind direction.

To reset integrated doses to zero in both registers, press GTO, then CLR. When numbers appear in the display, press D and go to step 4.2.13.

4.2.22 If classification in 4.2.6 is entered as 7, the number 0.04249 will appear. The program, Isotopic Mixture (Exhibit H and I), is to be used according to instructions contained therein. For more details, refer to Exhibit E.

NOTE: If meteorological conditions change, the program can be restarted at step 4.2.2 without losing any integrated dose data. Any time the calculator is not computing, the program may be redirected or restarted by pressing any of the user-defined keys (A-E or A'-E') without losing integrated dose totals.

4.3 Definition of Exhibits

NOTE: Other pertinent information that may be required for analysis or decision making may be found in the Radiation Assessment Director (RAD) Data Book.

4.3.1 Exhibit A: Off-Site Dose Assessment: EOF/TSC Coordination Checklist

This is for use during the transition of operations from the TSC to the EOF. It is used to ensure that the same information is being used as the basis for calculations of dose rate and dose in both the TSC and the EOF.

4.3.2 Exhibit B: Technical Information Sheet

The Dose Parameters section of this sheet is used to obtain meteorological and release data essential for use with the hand calculator and/or CPM002 programs for dose rate calculation.

4.3.3 Exhibit C: Accident Information Reporting Data Sheet

The information in the top section of this sheet is to be filled out and supplied by sources supporting the RAD. The remaining portion is used for recording the basis for projected dose; the meteorological conditions; the dose rates and projected doses to whole body and thyroid at the site boundary 2, 5 and 10 miles; and recommendations for support and emergency actions. This form is in triplicate.

4.3.4 Exhibit D: Integrated Dose and Projected Dose Worksheet

This is to function as a worksheet for recording the values for whole body and thyroid dose at the site boundary integrated from the beginning of event.

4.3.5 Exhibit E: Off-Site Dose Program

This document is meant to provide detailed instructions for use of the hand calculator program for off-site dose assessment, including manipulating raw data for use in the program and implementing the program in varying situations.

4.3.6 Exhibit F: Off-Site Dose Program Flow Sheet

This is the flow sheet for use with Exhibit E when specific details of the program need not be reviewed.

4.3.7 Exhibit G: Off-Site Dose Program Attachment 1

This lists the various release pathways with their associated possible release mixtures, conversion factors and release classifications. It is designed for use with Exhibit E.

4.3.8 Exhibit H: Isotopic Mixture Program

For use with the hand calculator when concentrations of noble gases and radioiodines are available from isotopic analysis.

4.3.9 Exhibit I: Isotopic Mixture Program Flow Sheet

This is the flow sheet for use with Exhibit H when specific details of the program need not be reviewed.

4.3.10 Exhibit J: x/Q Dispersion Factors Program

This program is for use with the hand calculator when dose calculations are based on non-standard distances.

4.3.11 Exhibit K: x/Q Dispersion Factors Program Flowsheet

This flowsheet is for use with Exhibit J when specific details of the program need not be reviewed.

4.3.12 Exhibit L: Graph of monitor cpm vs. release rate, Ci/sec @ 1 cfm for R-15 (Steam Jet Air Ejector).

4.3.13 Exhibit M: Graph of monitor cpm vs. release rate, Ci/sec @ 1 cfm for R-26 (Unit Vent Radiogas).

4.3.14 Exhibit N: Graph of monitor cpm vs. release rate, Ci/sec @ 1 cfm for R-33 (Gland Seal Exhaust).

4.3.15 Exhibit O: Graph of radiation levels at 6 inches from Unit Vent sample line, R/hr, vs. release rate, Ci/sec @ 1 cfm.

4.3.16 Exhibit P: Graph of radiation levels at 6 inches from Unit 1 SJAE line, R/hr, vs. release rate, Ci/sec at 1 cfm.

4.3.17 Exhibit Q: Graph of radiation levels at 6 inches from Unit 1 Gland Seal Exhaust line, R/hr, vs. release rate, Ci/sec @ 1 cfm.

4.3.18 Exhibit R: Graph of radiation levels at 6 inches from Unit 2 SJAE line, R/hr, vs. release rate, Ci/sec @ 1 cfm.

4.3.19 Exhibit S: Graphs of radiation levels at 6 inches from Unit 2 Gland Seal Exhaust line, R/hr, vs. release rate, Ci/sec @ 1 cfm.

4.3.20 Exhibit T: Recommended Protective Actions for Population and Workers

For use with Exhibit C for determining recommended protective actions.

4.3.21 Exhibit U: Map of Donald C. Cook Nuclear Plant Site

For use with Exhibits J and K for determining sampling site locations.

4.3.22 Exhibit V: Description of Sampling Site Locations

For use with Exhibit U for obtaining geographical data of sampling sites.

4.3.23 Exhibit W: Main Steam System Emergency Release Determination

For use in determining release rate when given a reading in R/hr at a sampling location. Use in conjunction with Exhibit E.

DATE: _____ OFF-SITE DOSE ASSESSMENT: EOF/TSC COORDINATION CHECKLIST

UNIT: _____ TIME: _____ _____ _____ _____

Estimated Duration of Release				
Basis for Projected Dose Information				
Wind Speed				
Wind Direction (From)				
ΔT, °C				
Pasquill Category				
Site Boundary Distance				
Release Type (path & incident)				
Graph Data: Curve Used				
Value Obtained				
Nomograph Used:				
Iodine Factor				
Release Rate, Ci/sec				
Release Classification (#)				
Dose Rates, WB and Thyroid				
Integrated Doses from Beginning of Event (WB and Thyroid)				
Projected Doses for Duration of Event				
Sectors Involved				
Support & Emergency Actions				

Fill in appropriate time across top; check off items down list or record values to correlate information used in TSC and EOF.

Data Verified By _____

INTEGRATED DOSE AND PROJECTED DOSE WORKSHEET

DATE: _____

	Integrated Dose: Site Boundary
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____
Time _____:	
WB, R	_____
Thyr, R	_____
Sectors Involved	_____

Notes or Scratch Margin

Data Verified By _____

OFF-SITE DOSE PROGRAM

INTRODUCTION:

This program is designed to calculate dose rates, integrated doses and projected doses for both whole body (from immersion) and adult thyroid (from inhalation) at the site boundary and at 2, 5 and 10 miles using hand calculator programs. It takes into consideration meteorological conditions, Pasquill categories A through G and wind speeds in mph (except 0). The following options are available:

1) Calculation of dose rates to whole body and thyroid for either the 610 meter or 1200 meter site boundary and for 2, 5 and 10 miles given a release rate in Ci/sec.

2) Given the exposure time and information about dose rates as in Option 1), calculate the dose to the whole body and thyroid at the site boundary.

3) Given the boundary dose to whole body and thyroid, and an estimated duration of release, calculate total (i.e., integrated dose and projected dose) dose to whole body and thyroid at the site boundary, and at 2, 5 and 10 miles.

4) Given a specific measurement of dose rate at either side boundary, calculate dose rates, doses and total (i.e., integrated plus projected) doses to the whole body and thyroid at site boundary, 2, 5 and 10 miles.

5) Given concentrations of noble gases and radioiodines from isotopic analysis, calculate the effective energy and thyroid dose functions of a mixture of noble gases and radioiodines using the Isotope Mixture Program Option (Exhibit H).

6) Given a specific measurement of dose rate at any point in the Emergency Planning Zone, calculate dose rates to the whole body and thyroid at any specified distance from this point.

INSTRUCTIONS FOR USE (HAND CALCULATOR PROGRAM):

1) Load both sides of both program cards (select off-site dose data program card with the range of Pasquill categories most likely to be encountered under current weather conditions).

2) Enter the program by specifying the appropriate Pasquill category, as follows:

Pasquill Category	Card with Pasquill Range A - F User Defined Key	Card with Pasquill Range B - G User Defined Key
A	A'	-
B	B'	A'
C	C'	B'
D	D'	C'
E	E'	D'
F	E	E'
G	-	E

3) Read 610. Enter site boundary distance in meters, if different from 610 (if ≠610m, program will assume 1200m, no matter what other value is put in). R/S

4) Read 0.01. Enter wind speed in mph (0.01 mph is the default value). R/S

5) Read 0. Enter gross release rate in Ci/sec. R/S (The release rate may be determined from attached graphs (Exhibits J-Q) by first selecting the release pathway of greatest importance (usually highest cpm) from the Technical Information Sheet, Exhibit B, and then selecting the appropriate graph from Exhibits J-Q. Use the cpm value to obtain the release rate in Ci/sec at 1 cfm. From Exhibit B, find the cfm for the release in question. Multiply the value obtained from the graph by the flowrate in cfm. This will yield the release rate in Ci/sec which is to be entered into the hand calculator program.)

6) Read 2. Enter the appropriate release classification, if other than 2. See Exhibit G for description of release pathways and mixtures and how they relate to release classification (case #). R/S (NOTE: If classification is 7, go to step 22.)

7) Read whole body and thyroid dose rate at site boundary. (Whole body dose rate is in the X register (i.e., display). To see thyroid dose rate, press X≶t. After reading it, press X≶t again to restore whole body dose to the X register. Always operate the program with whole body figures in the X register.) If an additional release pathway is to be included in the calculation, press user defined key A and return to step 5. Otherwise, R/S.

8) Site boundary distance will flash (610 or 1200). Read total whole body and thyroid dose rates at site boundary and record them in the appropriate space for Dose Rate, R/hr, on Exhibit C, Accident Information Reporting Data Sheet. Record values to three significant figures; if values of less than .001 are obtained, record them as "<.001". R/S

9) 2 (representing 2 miles) will flash; read and record total whole body and thyroid dose rates as described in step 8. R/S

10) Repeat step 9 for dose rates to whole body and thyroid at 5 and 10 miles. R/S

11) Read 15. Enter time of exposure, in minutes, if other than 15. R/S

12) Read whole body and thyroid dose at site boundary for this case. R/S

13) Read whole body and thyroid dose at site boundary integrated from the beginning of the event. Record these values on Exhibit D, Integrated Dose and Projected Dose Worksheet. R/S

14) Read 60. Enter the projected time of release, in minutes. R/S

15) Site boundary distance will flash. Read the total (i.e., integrated plus projected) whole body and thyroid dose at the site boundary and record under *Integrated Dose, R, on Exhibit C, Accident Information Reporting Data Sheet. R/S

16) 2 (representing 2 miles) will flash; read and record the total (i.e., integrated plus projected) whole body and thyroid dose as described in step 15. R/S

17) Repeat step 16 for total dose to whole body and thyroid at 5 and 10 miles.

18) R/S. Display will now read 0., indicating a return to step 5 in the program and readiness to begin another series of calculations. Use step 5 as the entry point for subsequent calculations unless:

a) Pasquill category changes. If this occurs, return to step 2 in the program.

b) A measured dose rate obtained by a sampling team at the site boundary is the new basis for calculations. If this is the case, go to step 19 in the program.

c) A measured dose obtained by a sampling team at the site boundary is the new basis for calculations. In this case, go to step 20 in the program.

d) Concentrations of noble gases and radioiodines from isotopic analysis are the new basis for calculations. If this is the case, go to step 22.

19) What to do if given a dose-rate obtained by the sampling team at the site boundary:

Enter values in appropriate X and t registers (whole body in X, thyroid in t) and press B. R/S (NOTE: If the measurements were taken at a boundary other than the one used in calculations, go back and reset Pasquill category and go through steps 3 through 5. When you read 0. at step 5, follow instructions listed here in step 19.) R/S

a) You are now at step 8. Follow procedure through from step 8 through step 18.

20) What to do if given a dose obtained by the sampling team at the site boundary.

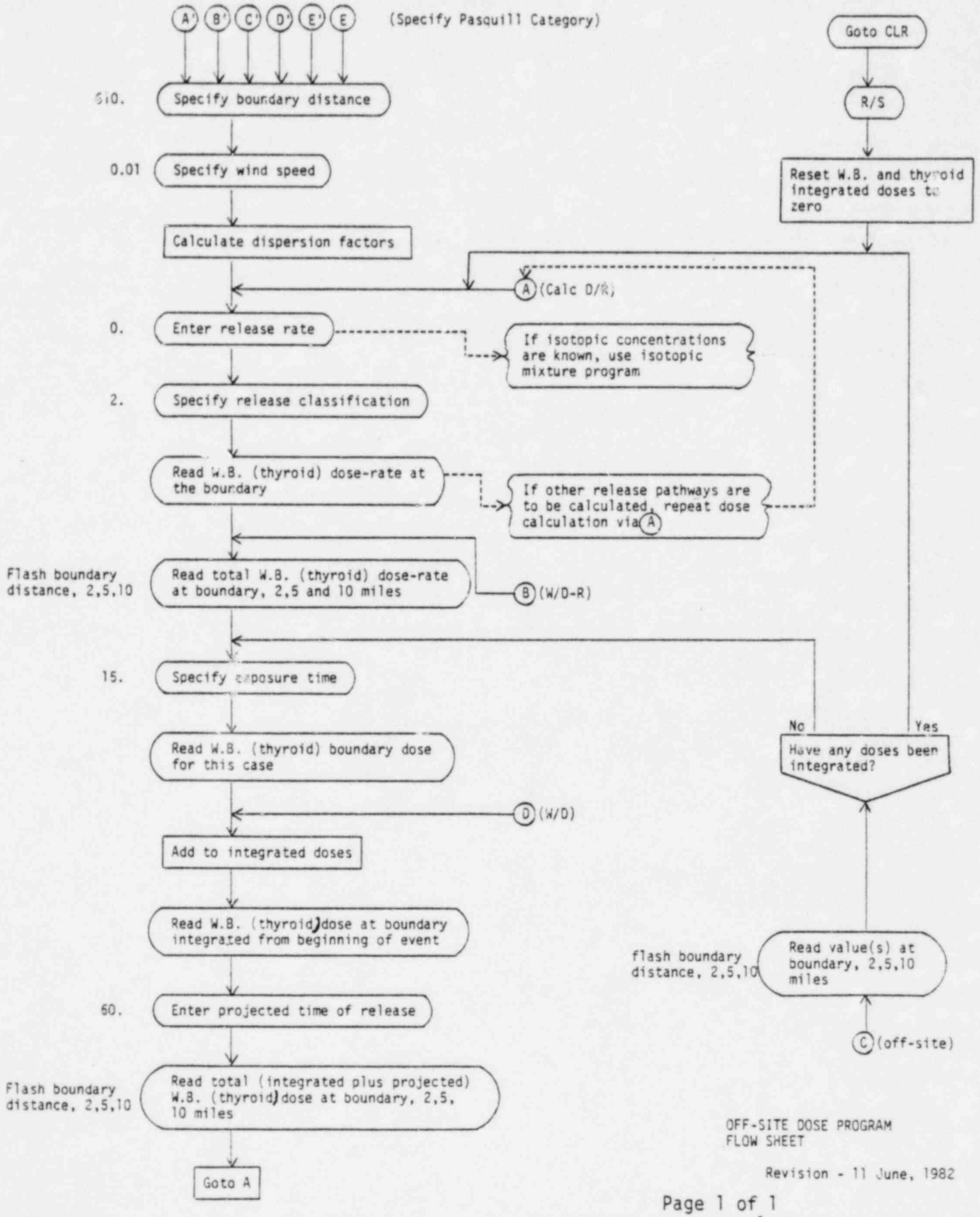
Enter values in appropriate X and t registers (whole body in X, thyroid in t) and press D. R/S (NOTE: If measurements were taken at a boundary other than the one used in calculations, go back and reset Pasquill category and go through steps 3 to 5. When you read 0. at step 5, follow instructions listed here in step 20.) R/S

a) You are now at step 13. Follow procedure through from step 13 through step 18.

21) To reset integrated doses to zero in both registers, press GTO, then CLR. When numbers reappear on the screen, press D and go to 13. A reset of integrated doses to zero might be done if a mistake were made or if the wind made a significant change in direction.

22) If isotopic sample analysis results are given, when 0. appears in the register after going back through A, go to step 1 of Exhibit H, the Isotopic Mixture program. Usually, the program Isotopic Mixture, Exhibits H and I, will be run to determine the effective energy and thyroid dose factor from the isotopic mixture. (If this is not done, enter the thyroid dose factor in the t register and the effective energy in the display (i.e., X register). R/S.) If Isotopic Mixture program is selected, go to Exhibit H and follow the instructions therein.

NOTE: If meteorological conditions change, the program can be restarted at step 2 without losing any integrated dose data. Any time the calculator is not computing, the program may be redirected or restarted by pressing any of the user defined keys (A-E or A'-E') without losing integrated dose totals.



OFF-SITE DOSE PROGRAM
FLOW SHEET

Revision - 11 June, 1982

PATHWAY	MIXTURE	CONVERSTION FACTORS WB	THY	CASE#
R12	Fresh Fission Gas	.14685	45.398	1
	Primary Coolant	.05888	3.9388	2
	NUREG-0578	.2444	.2723	3
R15	Primary Coolant Leakage	.051964	.08077	4
	NUREG-0578 Leakage	.2453	.54256	5
R26	Old Fission Gas	.04249	0	6
	Fresh Fission Gas	.14685	45.398	1
	Primary Coolant Leakage	.05888	3.9388	2
	NUREG-0578	.2444	.2723	3
R33	Primary Coolant Leakage	.051964	.08077	4
	NUREG-0578 Leakage	.2453	.54256	5
SGPORV	Primary Coolant Leakage	.051964	.08077	4
	NUREG-0578 Leakage	.2453	.54256	5
SGSV	Primary Coolant Leakage	.051964	.08077	4
	NUREG-0578 Leakage	.2453	.54256	5
Any	Sample Analysis Results	as determined from analysis		7

NUREG-0578 Assumes Fuel Damage Effects.

ISOTOPIC MIXTURE PROGRAM

The program is designed to operate in conjunction with the Off-Site Dose Program to calculate the effective energy and thyroid dose functions of a mixture of nobel gases and radioiodines for which concentrations are available from isotopic analysis. It will calculate the functions as well as the flow rate and transfer the information to the Off-Site Dose Program without any loss of data from that program. The following options are available:

1) Any mixture of identified nobel gases and radioiodines may be analyzed.

2) If the release rate of nobel gases is known, but not the composition, pre-established isotopic mixtures of nobel gas are available, assuming normally contaminated primary coolant or NUREG-0578 (fuel damage) contaminated coolant off-gasing through either the primary or secondary system.

3) Predetermined isotopic mixtures are available for radioiodines, if only gross radioiodine concentration is known. The mixtures may be specified for 1, 4, 24 hour or 4 day decay.

4) Predetermined isotopic mixtures are available for radioiodines with 1, 4, 24 hour or 4 day decay based on a known concentration of I-131 (such as the results of a single channel analyzer set up to measure I-131).

INSTRUCTIONS FOR USE

NOTE: The program is intended to be used after the Off-Site Dose Program has been loaded and run. To load this program without losing important data, process for loading this program and subsequent reloading of the Off-Site Dose Program must be carefully followed.

1) With zero showing on the calculator display, load side one of the first card. Read "1".

2) Initialize the program by pressing A. When "2" flashes, load side two of the first card. When "3" flashes, read in the third side, found on the second card. Read "0" (the fourth side is not loaded or used).

3) Enter the isotope (or mixture) number from Attachment 1. $x \leftrightarrow t$ to store in "t".

4) Enter the concentration of that isotope (or mixture) in μCi/cc. R/S

5) Read the concentrations of the last isotope entered. Repeat steps 3 and 4 until all isotopes (or mixtures) that you wish analyzed have been added.

6) When all isotopes (or mixtures) you wish to analyze have been entered, press C.

7) Read 2.16 (the maximum release flow from Containment when it is isolated successfully). Enter the flow rate in CFM. R/S

8) Read total (Nobel Gas plus Iodine) release rate. Iodine release rate is stored in "t". R/S

9) Read the effective energy of that combination. The thyroid dose rate factor is in "t". Use x↔t to observe the value of the thyroid dose factor. These numbers have already been stored for use by the Off-Site Dose Program.

10) If you wish to enter isotopes or mixtures, press B and go to step 3.

11) If you wish to start over entering isotopes and concentrations, press E' and start over at step 3.

12) To re-enter the Off-Site Dose Program without losing the data stored, press D. When "3" flashes, read in the third side of the Off-Site Dose Program cards (found on the second card). When "2" flashes, read in the side two of the Off-Site Dose Program. Read "1". Enter the side one of the Off-Site Dose Program cards. Read "1".

13) When the Off-Site Dose Program has been reloaded, press A. This brings the user back to step 7 in the Off-Site Dose Program. The dose rates to whole body and thyroid at the site boundary will be present in the x↔t registers.

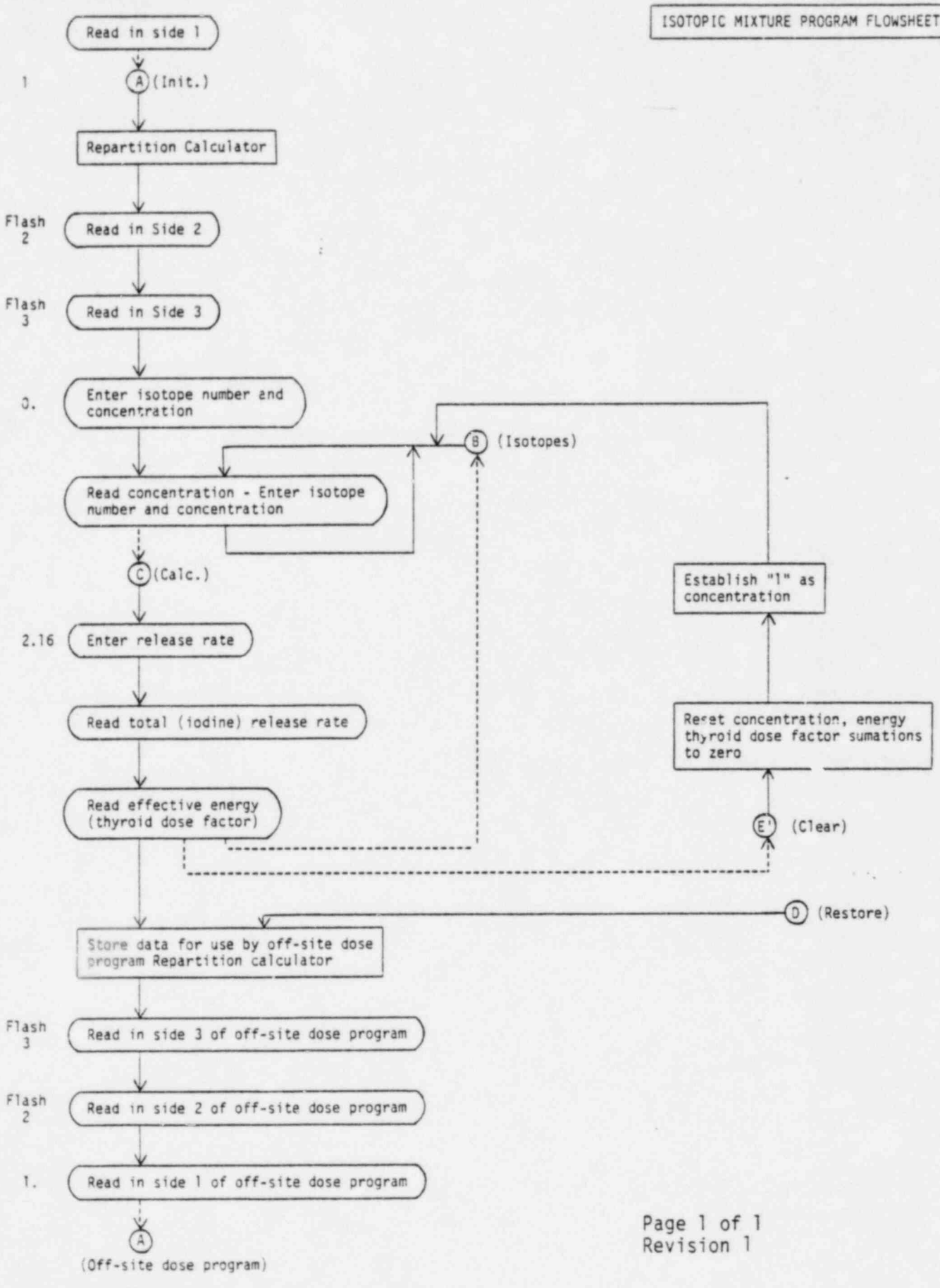
14) If other release rates of the same mixture are desired, entering "7" in step 6 of the Off-Site Dose Program will proceed directly to step 7, using the effective energy and thyroid dose factors calculated by this program without asking for them again. If any other number than "7" is entered in step 6, the factors will be lost.

ISOTOPIC MIXTURE PROGRAM

ATTACHMENT I

NUMBER	ISOTOPE (Mixture)
1	Ar-39
2	Ar-41
3	Kr-83M
4	Kr-85M
5	Kr-85
6	Kr-87
7	Kr-88
8	Xe-131M
9	Xe-133M
10	Xe-133
11	Xe-135M
12	Xe-135
13	Xe-137
14	Xe-138
15	Mixed gases from Primary Coolant (Case 2)
16	Mixed gases from fresh fission (Case 1)
17	Mixed gases from failed fuel (NUREG-0578) (Case 3)
18	Mixed gases from Primary Coolant thru Secondary (Case 4)
19	Mixed gases from failed fuel thru Secondary (Case 5)
20	I-129
21	I-130
22	I-131
23	I-132
24	I-133
25	I-134
26	I-135
27	Mixed Iodine at 1 hr. decay
28	Mixed Iodine at 4 hr. decay
29	Mixed Iodine at 24 hr. decay
30	Mixed Iodine at 4 day decay
31	Mixed Iodine at 1 hr. decay, based on I-131 measured
32	Mixed Iodine at 4 hr. decay, based on I-131 measured
33	Mixed Iodine at 24 hr. decay, based on I-131 measured
34	Mixed Iodine at 4 day decay, based on I-131 measured

ISOTOPIC MIXTURE PROGRAM FLOWSHEET



χ/Q DISPERSION FACTORS PROGRAM

INTRODUCTION:

This program will take any base distance and any five other distances and give values for dose or dose rate to the whole body and adult thyroid at those distances. It is especially useful for estimating dose or dose rates based on field measurements taken by survey teams at various off-site locations.

The program determines a χ/Q dispersion factor based on the Pasquill category as determined by current meteorological conditions.

The model assumes an infinite cloud. Measurements taken on the center line of the plume will, therefore, yield considerably more accurate results than those taken from lateral points on the plume traverse. However, a feature for extrapolating doses or dose rates at lateral points in the plume is part of the program, and can be called upon for any specified lateral distance.

The doses or dose rates obtained using this program are good for whole body, and quite accurate for iodine.

INSTRUCTIONS FOR USE (Hand Calculator Program):

1) Load sides 1 through 3 of the χ/Q dispersion factor program cards.

2) Enter the program by specifying the appropriate Pasquill category, as follows:

PASQUILL CATEGORY	USER-DEFINED KEY
A	A'
B	B'
C	C'
D	D'
E	E'
F	E
G	D

3) Read 610. Enter base distance (to point where measurements were obtained). Units may be in either miles or meters; the program is able to discern between the two. R/S

4) Read χ/Q dispersion factor value for that distance. R/S

5) Read 1. Specify a distance at which a value for dose or dose rates is desired. This distance may be less than or greater than the base distance; units may be miles or meters. R/S

6) Repeat step 5 for distance cue numbers 2, 3, 4 and 5. If less than 5 other distance values are needed (besides base), entering 0 will abort the remaining distance cells and the program will work only on this truncated data through the rest of its current cycle. R/S

7) Read base distance. Enter measured dose rates in X$\leq$t register (whole body in X register; thyroid in t register). Be sure whole body values are in X register before proceeding. R/S

8) First specified distance will flash. Read whole body dose (or dose rate) in X register, thyroid dose (or dose rate) in t register. Be sure whole body value is returned to X register before proceeding. R/S

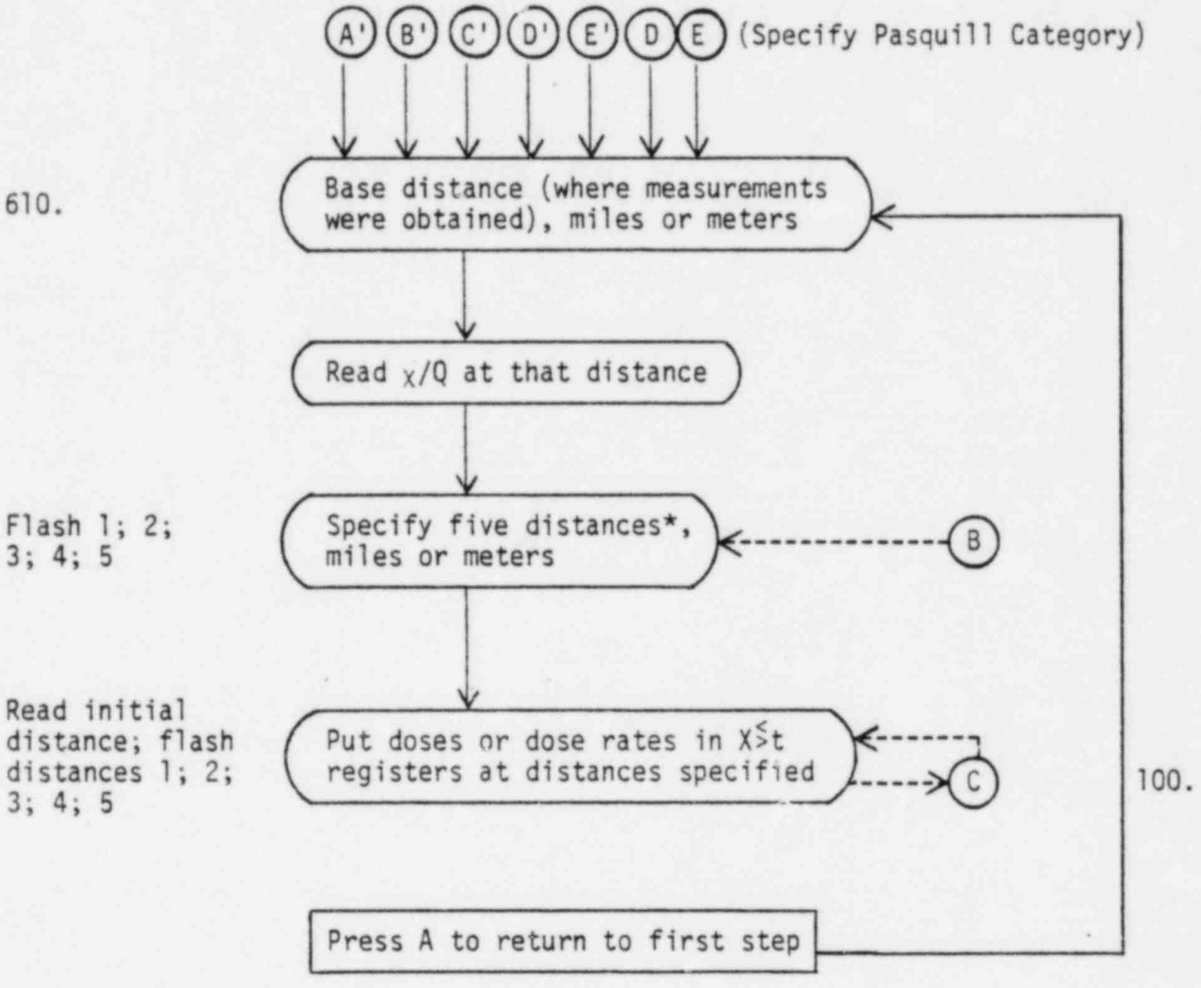
9) Repeat step 8 for the remaining distances specified in steps 5 and 6. After the doses (or dose rates) for the final specified distance have been obtained, several options are possible:

   a) To go back to step 3 for re-initiation of the program, press A.

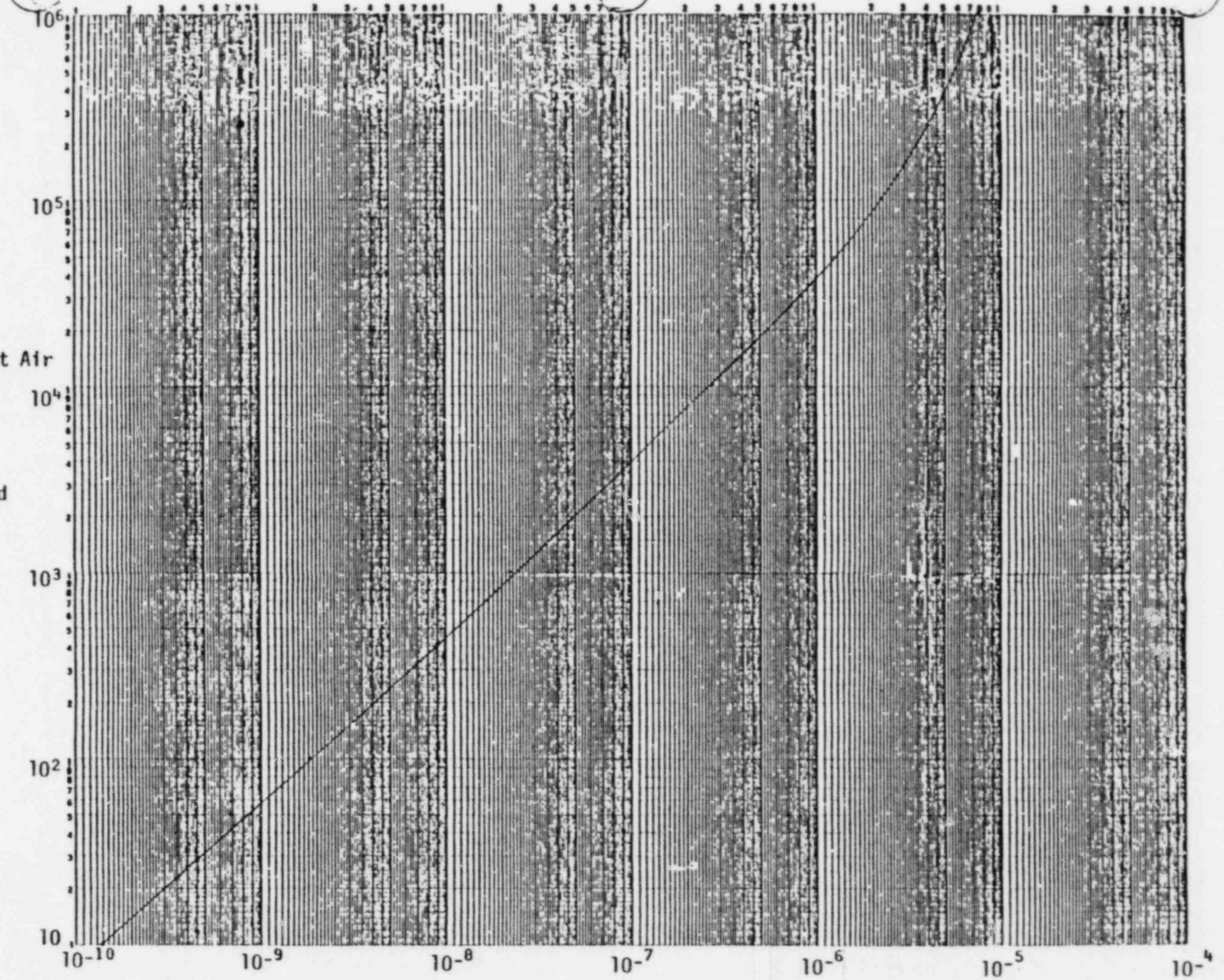
   b) To get doses, or dose rates, different points of interest, using the same base distance as reference point, press B and return to step 5.

   c) To obtain doses at lateral points in the plume, press C during a dose reading display. 100 will flash, and the dose at 100 meters lateral to plume center will be calculated. If a distance other than 100m is desired, it must be given in meters. If R/S is pressed, program will continue from same place it was left.

χ/Q DISPERSION FACTORS PROGRAM FLOWSHEET

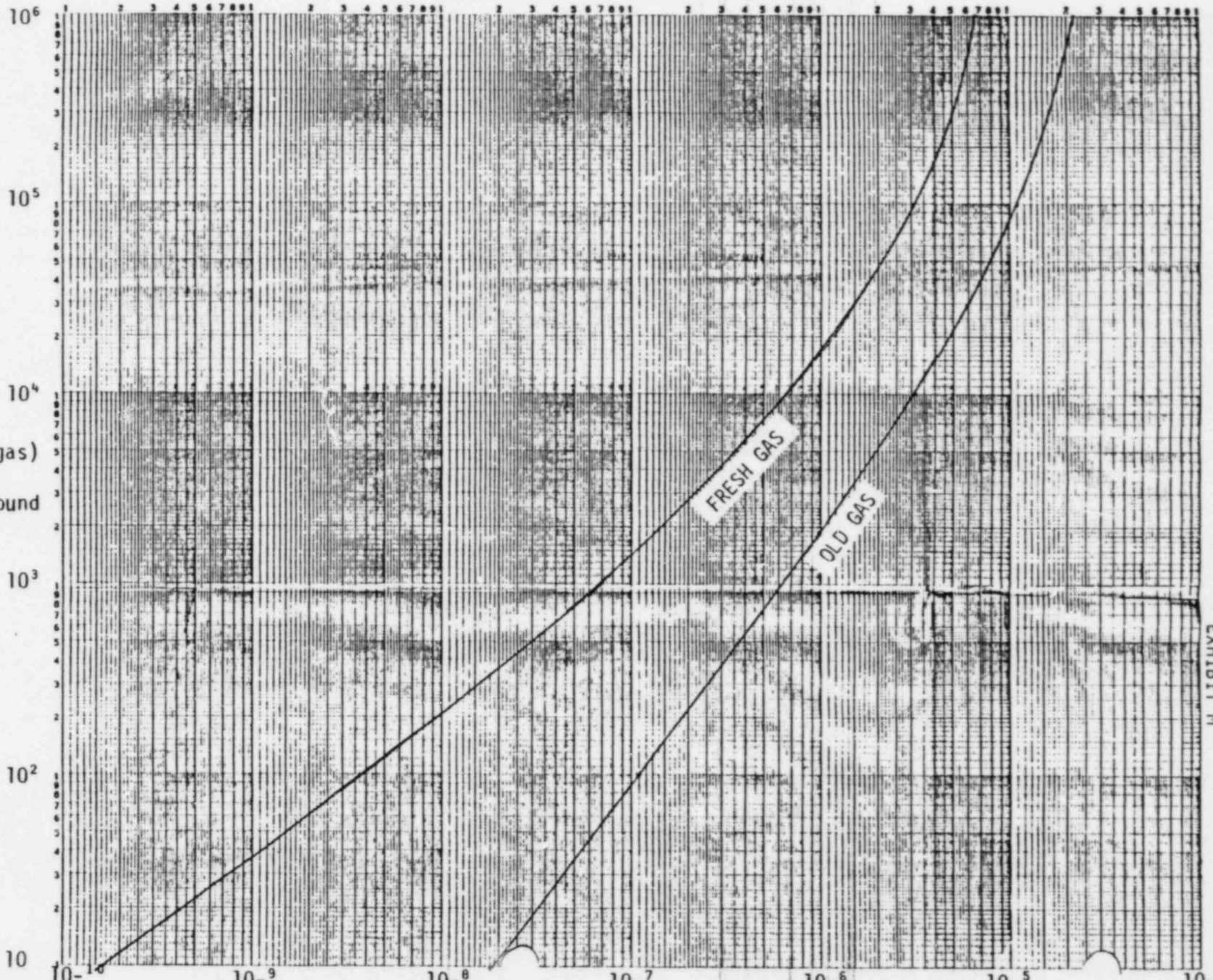


*If a distance will not be used, put a zero in the register; this will cause further distance requests to be aborted.



MONITOR CPM VS. CI/SEC RELEASE RATE

MONITOR CPM VS. CI/SEC RELEASE RATE



R-26
(Unit Vent Radiogas)

cpm above background

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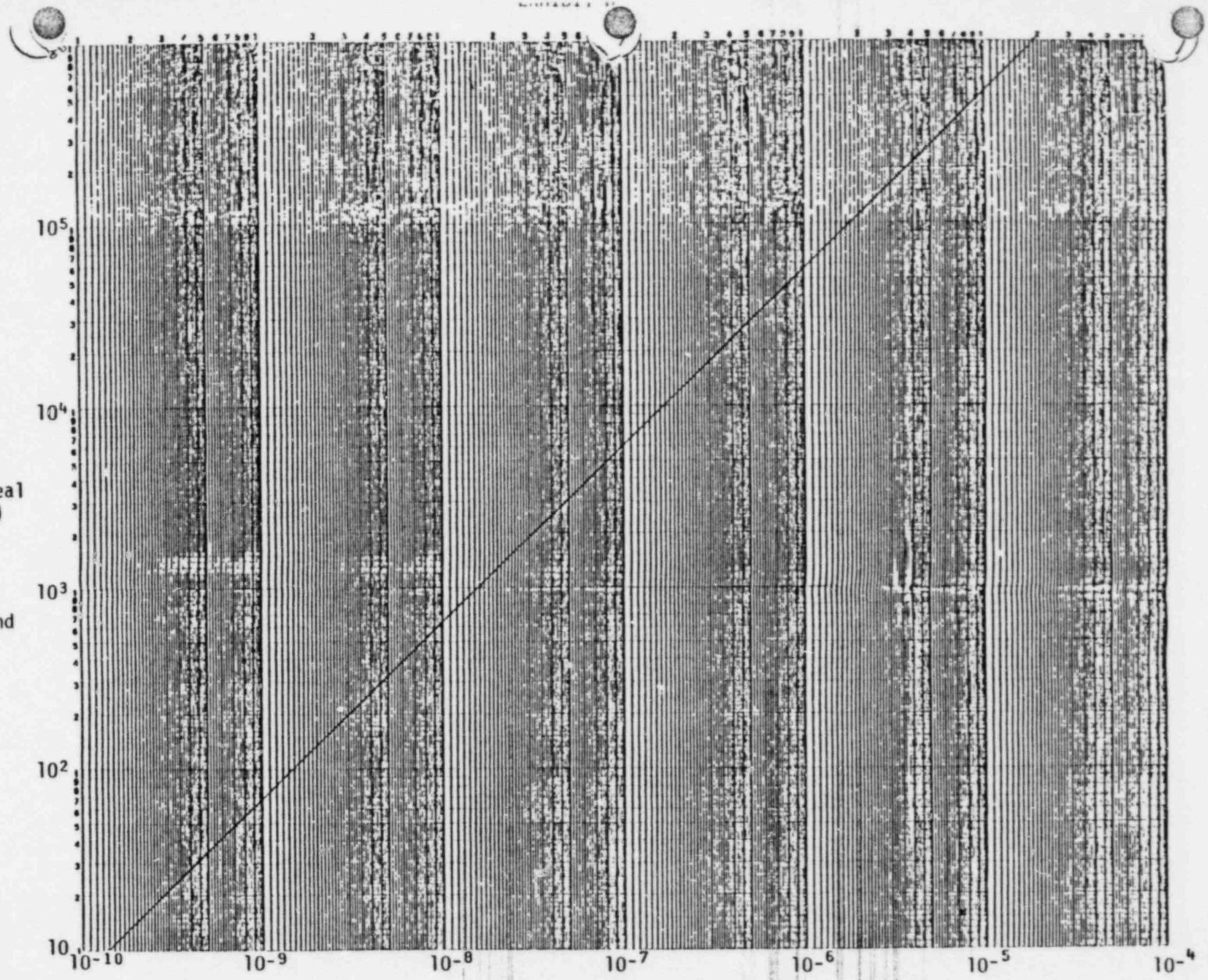
EXHIBIT M



MONITOR CPM VS. CI/SEC RELEASE RATE

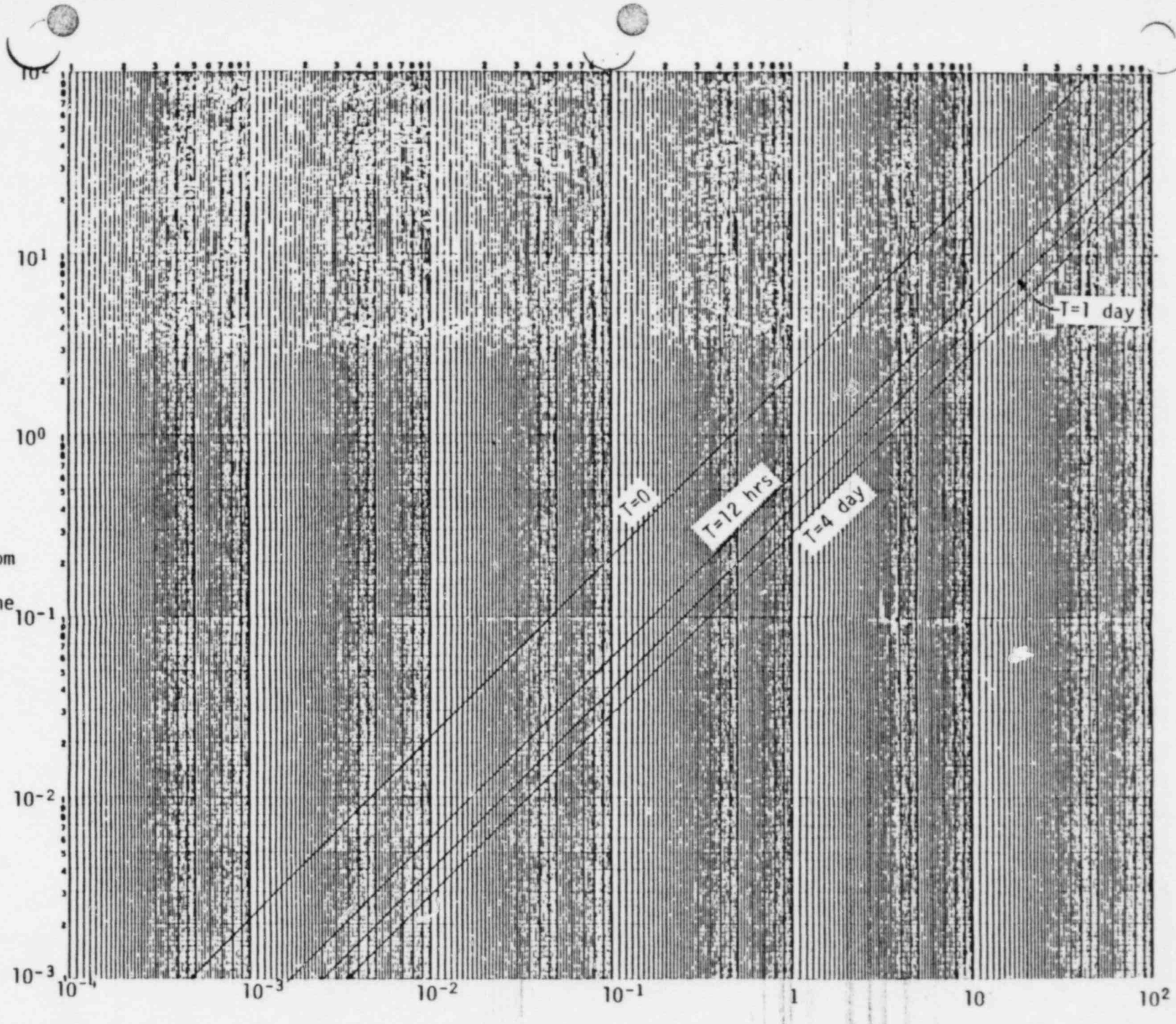


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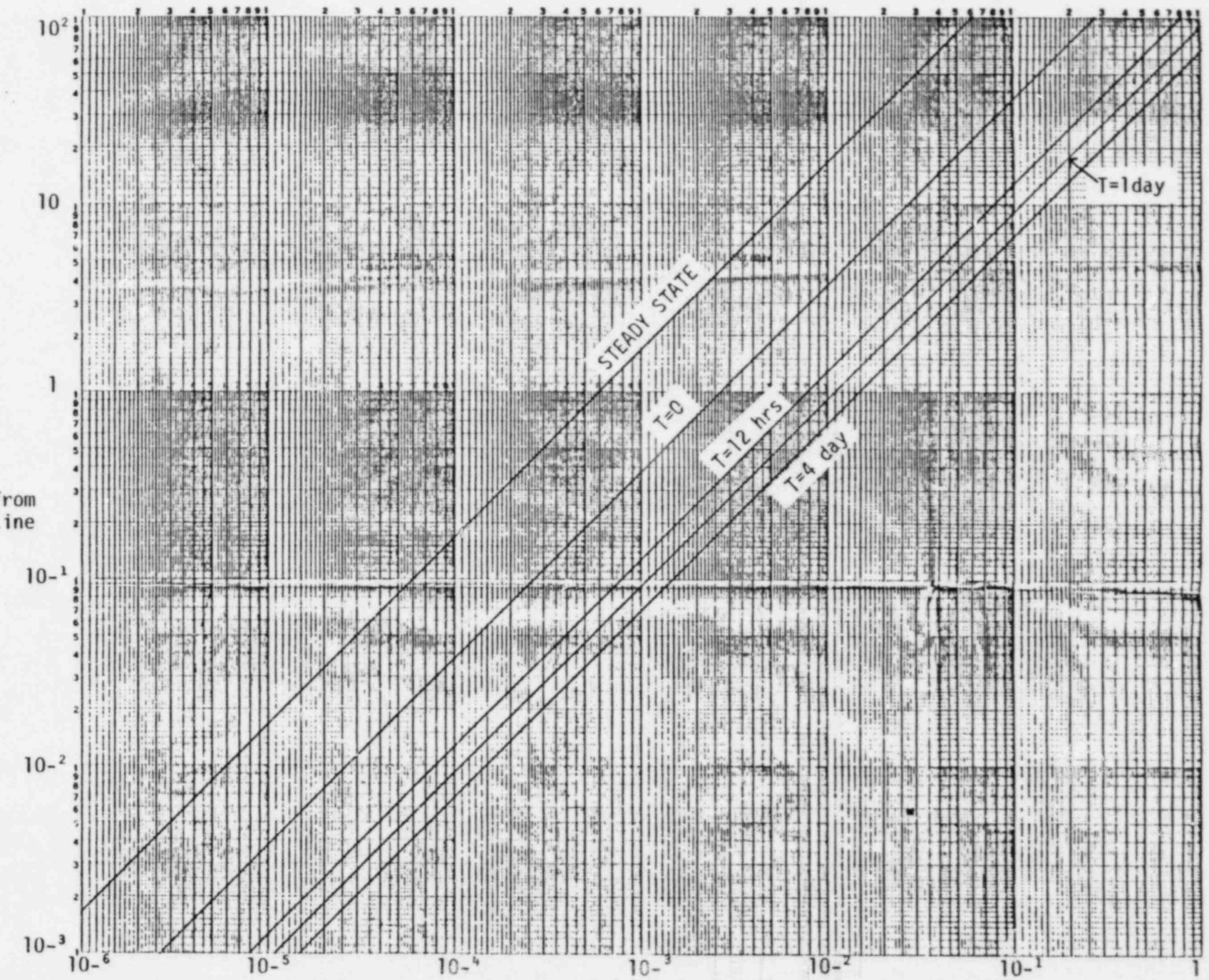
EXHIBIT O

NO. 340 L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.

RADIATION LEVELS VS. CI/SEC RELEASE RATE



R/hr

at 6 inches from
Unit 1 SJAE Line

Ci/sec at 1 cfm

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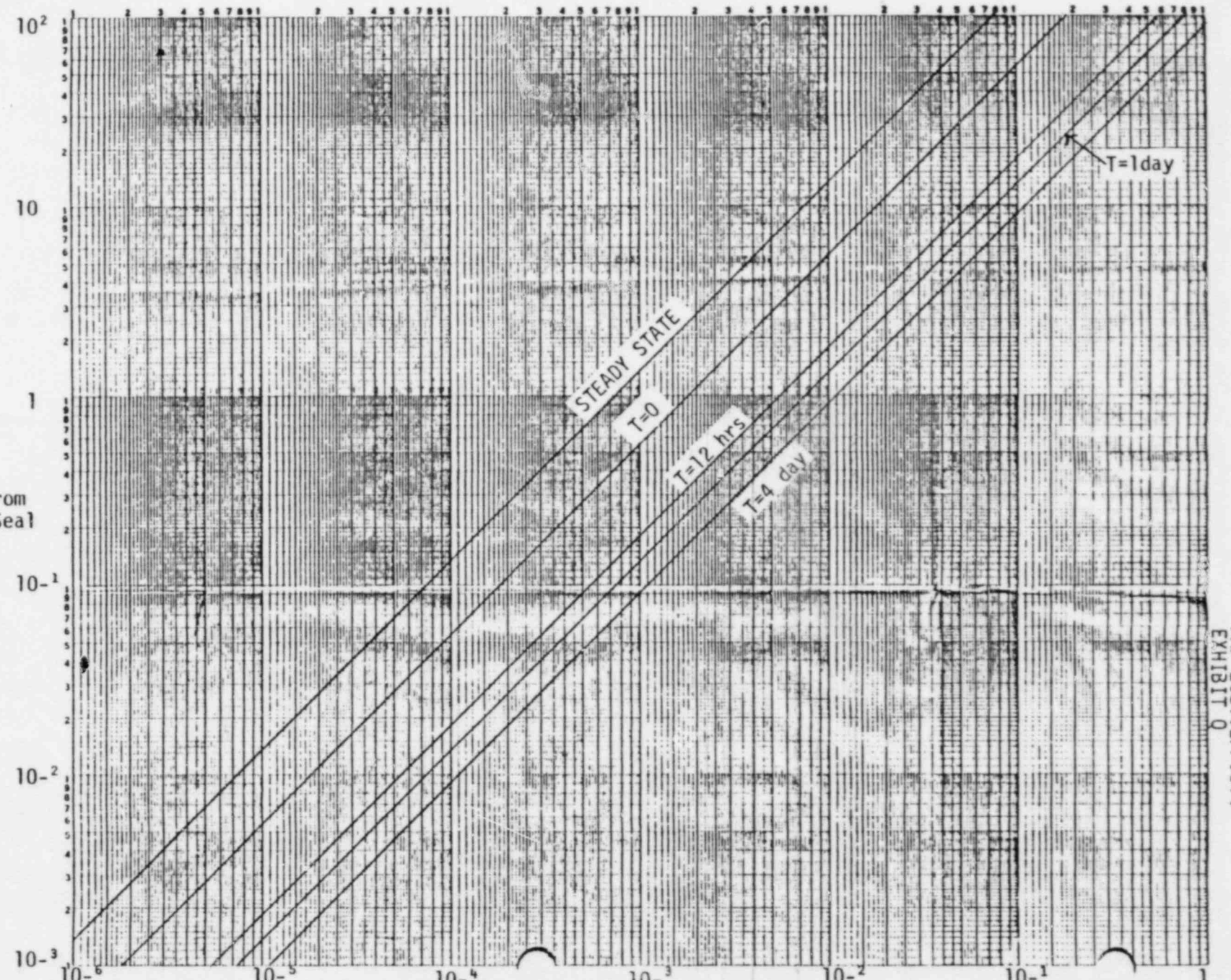
1

PMP 2081.EPP.014
EXHIBIT P

RADIATION LEVELS VS. CI/SEC RELEASE RATE



PMP 2081.EPP.014
EXHIBIT Q

RADIATION LEVELS VS. CI/SEC RELEASE RATE

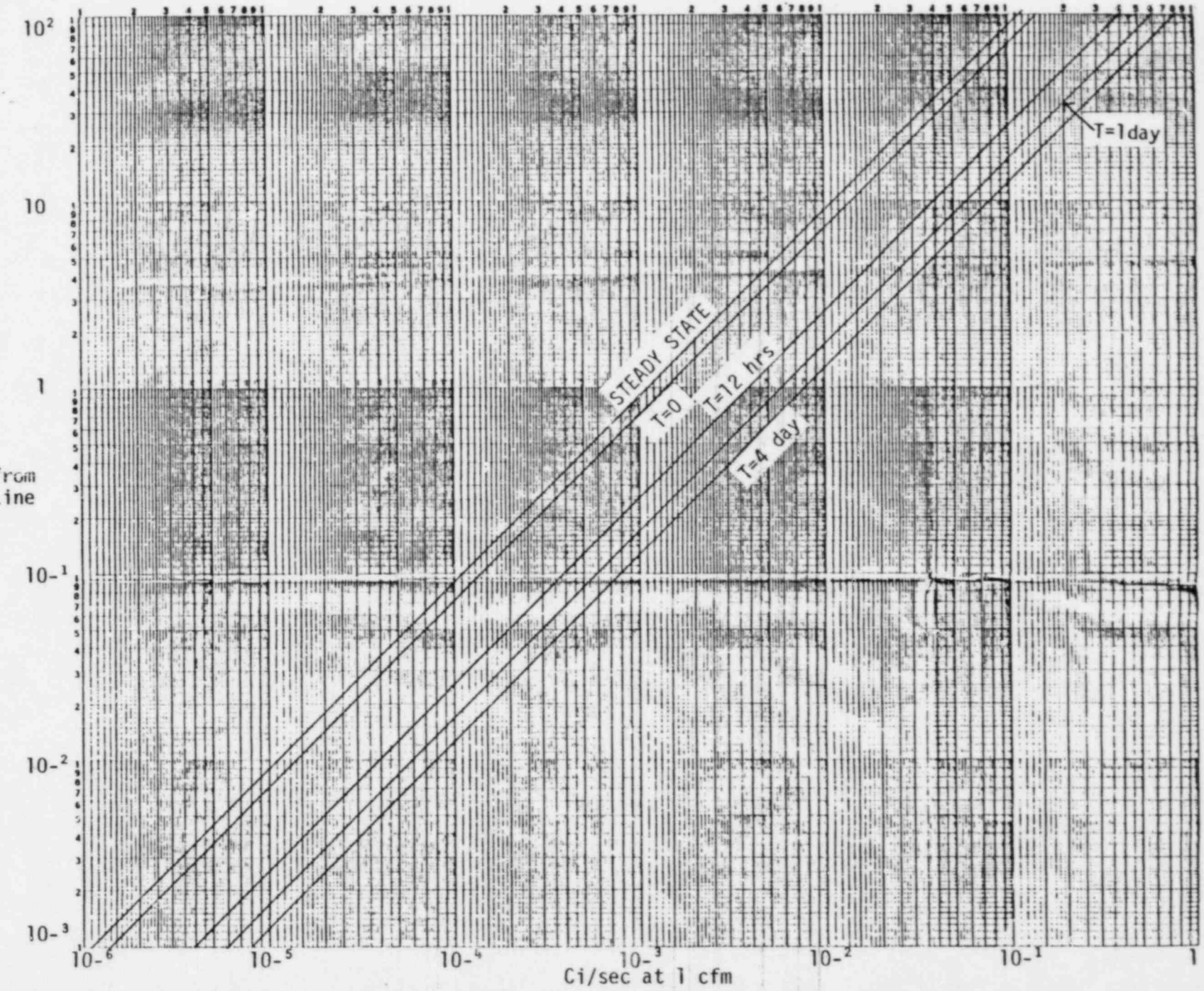


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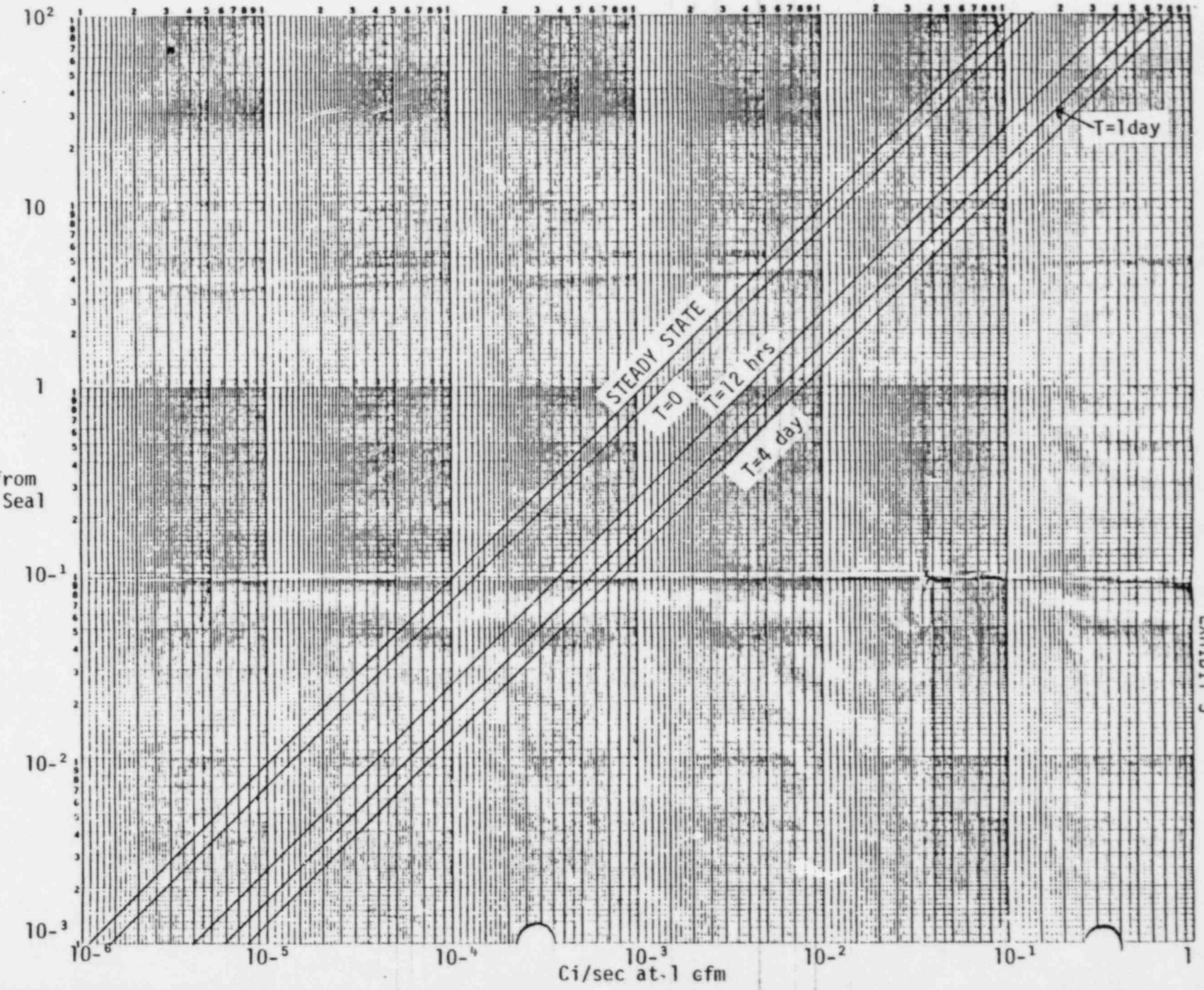
EXHIBIT R

RADIATION LEVELS VS. CI/SEC RELEASE RATE



RECOMMENDED PROTECTIVE ACTIONS FOR POPULATION AND WORKERS

Projected Dose (Rem)		Recommended Action(s)[a]	Comments
To the Population			
Whole Body Thyroid	Less than 1.0 Less than 5.0	No planned protective action[b]. State may issue an advisory to seek shelter and wait further instructions. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Whole Body Thyroid	1.0 to less than 5.0 5.0 to less than 25.0	Seek shelter as a minimum. Consider evacuation. Evacuate unless constraints make it impractical. Monitor environmental radiation levels. Control access.	If constraints, exist, special consideration should be given for evaculation of children and pregnant women.
Whole Body Thyroid	5 and above 25 and above	Conduct mandatory evacuation. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these.	Seeking shelter would be an alternative if evacuation were not immediately possible.
To Emergency Workers			
Whole Body Thyroid	25 125	Control exposure of emergency team members to these levels except for lifesaving missions. (Appropriate controls for emergency workers include time limitations, respirators, and stable iodine).	Although respirators and stable iodine should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for livesaving missions[c]!
Whole Body	75	Control exposure of emergency personnel performing lifesaving missions to this level. (Control of time of exposure will be most effective.)	

[a] These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.

[b] At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable.

[c] If one or more lives is likely to be saved, no upper limit for thyroid dose is established.

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EXHIBIT U

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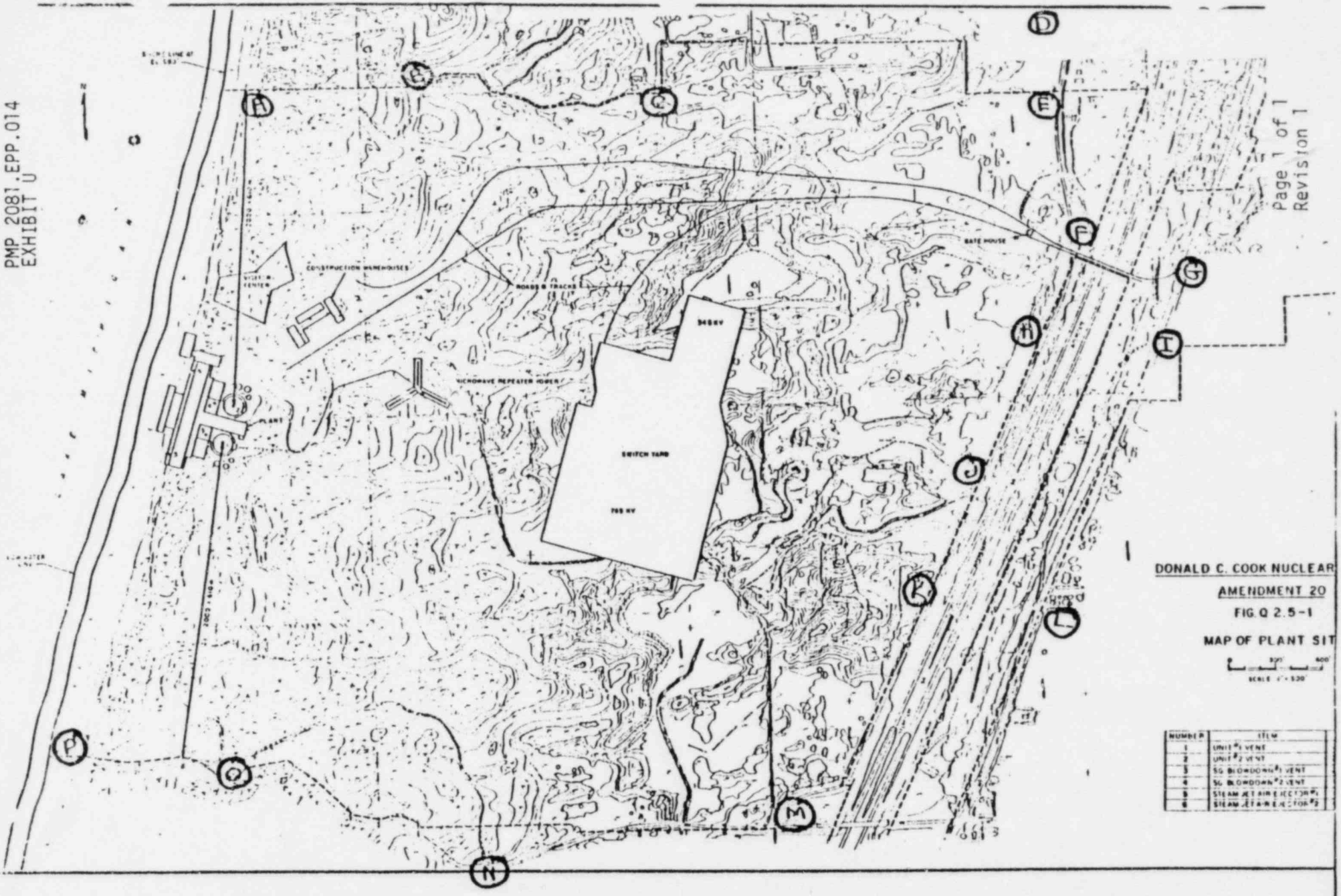


DONALD C. COOK NUCLEAR

AMENDMENT 20

FIG Q 2.5-1

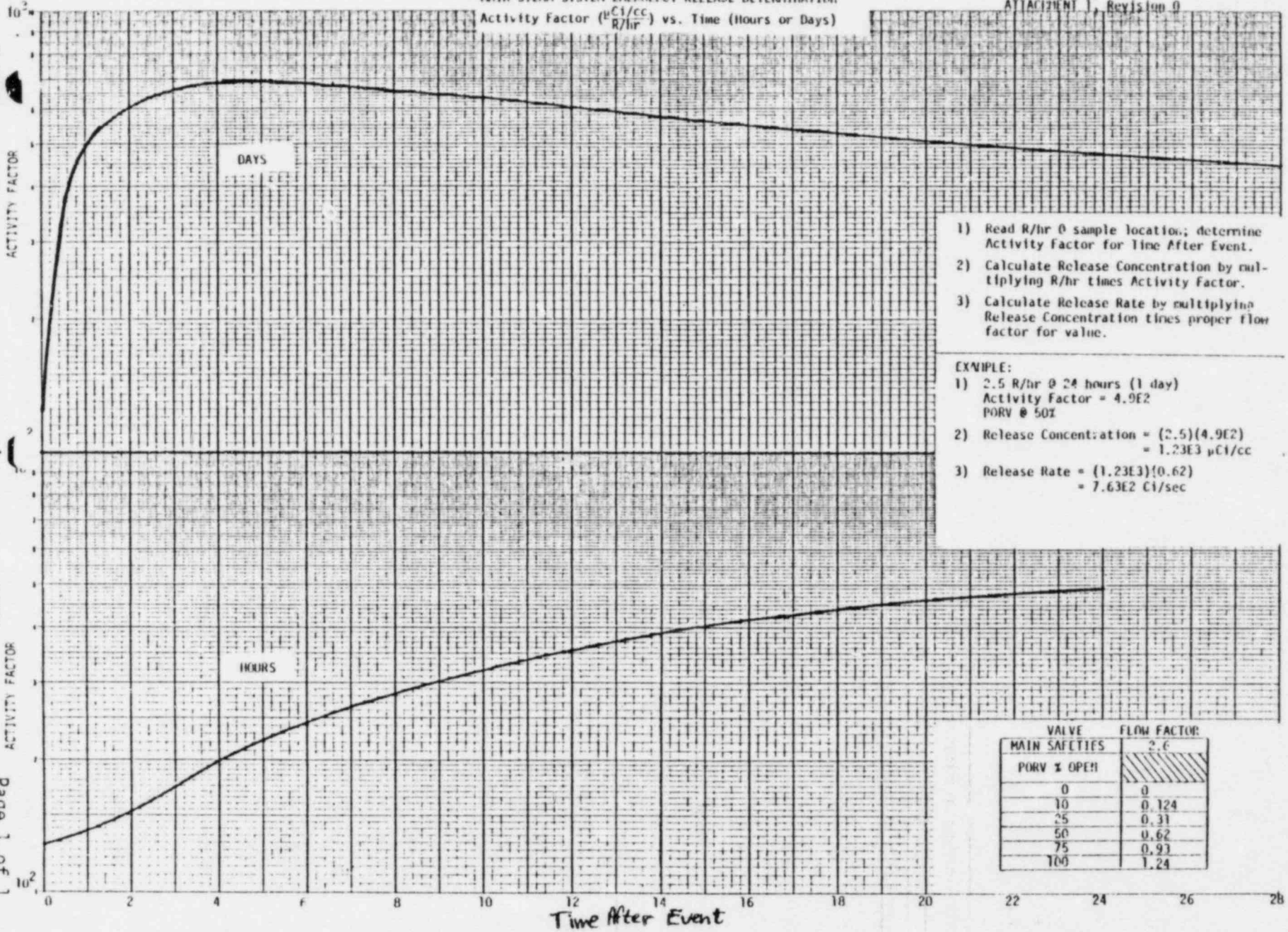
MAP OF PLANT SIT

NUMBER	ITEM
1	UNIT 1 VENT
2	UNIT 2 VENT
3	SG BLOWDOWN 1 VENT
4	SG BLOWDOWN 2 VENT
5	STEAM JET AIR EJECTOR 1
6	STEAM JET AIR EJECTOR 2

LETTER	MI	DISTANCE FROM PLANT IN FEET	KM	DESCRIPTION OF LOCATION
A	.38	2,000	.61	Rosemary Beach House
B	.46	2,450	.75	Entrance Gate to Rosemary Beach House
C	.66	3,500	1.1	Entrance Gate to Rosemary Beach Area
D	1.13	6,000	1.82	Intersection of Willow Road and Thornton Road
E	1.08	5,700	1.74	Houses on Thornton Road
F	1.02	5,375	1.64	I-94 Guard House
G	1.17	6,200	1.89	Red Arrow Highway at Entrance to D. C. Cook Plant
H	.98	5,150	1.57	Under 345KV Lines on Thornton Road
I	1.12	5,900	1.80	Near 345KV Lines at Red Arrow Highway
J	.88	4,650	1.42	Back Gate at Thornton Road
K	.87	4,600	1.40	Under 745KV Lines on Thornton Road
L	.98	5,200	1.59	Near 745KV Lines at Red Arrow Highway
M	.80	4,250	1.30	Intersection of Livingston and Thornton Roads
N	.62	3,250	.99	Entrance Road to OS Station #5 at Livingston Road
O	.42	2,200	.67	Road from OS Station #5 at Livingston Road
P	.43	2,250	.69	Livingston Road at Beach

MAIN STEAM SYSTEM EMERGENCY RELEASE DETERMINATION

Activity Factor ($\frac{\mu Ci/cc}{R/hr}$) vs. Time (Hours or Days)



1) Read R/hr @ sample location; determine Activity Factor for Time After Event.
2) Calculate Release Concentration by multiplying R/hr times Activity Factor.
3) Calculate Release Rate by multiplying Release Concentration times proper flow factor for value.

EXAMPLE:
1) 2.5 R/hr @ 24 hours (1 day)
Activity Factor = 4.9E2
PORV @ 50%
2) Release Concentration = (2.5)(4.9E2)
= 1.23E3 μCi/cc
3) Release Rate = (1.23E3)(0.62)
= 7.63E2 Ci/sec

VALVE	FLOW FACTOR
MAIN SAFETIES	2.6
PORV % OPEN	
0	0
10	0.124
25	0.31
50	0.62
75	0.93
100	1.24

PMP 2081.EPP.014
EXHIBIT W

INDIANA & MICHIGAN
ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

PROCEDURE COVER SHEET

Procedure No. PMP 2080 EPP.001
Revision No. 3

TITLE EMERGENCY PLAN ACTIVATION AND CONDITION CLASSIFICATION

SCOPE OF REVISION

Rev. 1 - Complete Revision to clarify Operations responsibilities in case of emergency.

Rev. 2 - Incorporated Temporary Sheets. Clarified Emergency Condition categories and activation of emergency centers.

Rev. 3 - Incorporated Temporary Sheets 1 and 2. Incorporated changes made to ESS's in Emergency Plan section 12.3.5.5.1, revision 1.

SIGNATURES

	ORIGINAL	Rev. 1	REV. 2	Rev. 3
PREPARED BY	R. Keith D. Webster	R. Begor	R. Begor	D Krause
QUALITY ASSURANCE REVIEW	J. Stietzel	J. Stietzel	J. Stietzel	
INTERFACING DEPARTMENT HEAD CONCURRENCE	N/A	N/A	N/A	
DEPARTMENT HEAD APPROVAL	N/A	N/A	N/A	N/A
PLANT NUCLEAR SAFETY COMMITTEE	R. Keith	B. Svensson	E. Townley	
PLANT MANAGER APPROVAL	B. Svensson	D. Shaller	W. Smith	
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LIST OF EFFECTIVE PAGES

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INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

EMERGENCY PLAN ACTIVATION AND CONDITION CLASSIFICATION

1.0 OBJECTIVES

The objectives of this procedure are to ensure that proper actions are taken to place the plant in a safe condition; minimize the hazard to the public and plant personnel; assist injured personnel; and obtain adequate support to cope with the emergency.

2.0 RESPONSIBILITIES

2.1 The Shift Supervisor is responsible for initiation of this procedure.

2.2 The Shift Supervisor shall act as the On-Site Emergency Coordinator (OSEC) until relieved of this responsibility as described in PMP 2080 EPP.015, Responsibilities of the On-Site Emergency Coordinator.

2.3 The Shift Technical Advisor (STA) is responsible for reviewing and making an independent diagnosis of plant conditions. The STA then determines whether operator responses are correct and advises the SS/OSEC accordingly.

3.0 APPLICABILITY

This procedure is to be initiated any time the S.S. recognizes the existence of, or potential for, off-normal conditions which may directly lead to, meet, or exceed the Emergency Action Levels shown in Exhibit A.

4.0 INSTRUCTIONS

4.1 Implement Abnormal and/or Emergency Operating Procedures as dictated by plant conditions or indications.

4.2 In the event of:

4.2.1 Radiological Hazard requiring personnel to evacuate their work areas:

4.2.1.1 Evacuate personnel by PA if the condition is local, or

4.2.1.2 Evacuate by use of the Nuclear Emergency Alarm, if the condition includes significant portions of the plant, and initiate PMP 2081 EPP.005 Personnel Evacuation

4.2.2 Fire or Explosion: Sound the fire alarm and announce the condition over the P.A. Implement PMP 2080 EPP.009, Fire Emergency Guidelines.

4.2.3 Personnel Injury: Implement PMP 2080 EPP.014, Personnel Injury.

4.2.4 Toxic Gas Release: Implement PMP 2080 EPP.010, Toxic Gas Release.

4.2.5 Gaseous Release: Determine any off-site dose effects as per PMP-2080 EPP.006. Initial Dose Assessments (Gaseous).

4.2.6 Liquid Release: Notify the Chemical Lab to implement PMP 2080 EPP.007, Initial Release Assessments (Liquid).

4.2.7 Natural Emergency: Implement PMP 2080 EPP.011, Natural Emergency Guidelines.

4.3 Classify the Emergency Condition, using Exhibit A, according to the highest classification (Unusual Event, Alert, Site Emergency or General Emergency) the condition exceeds.

4.3.1 In the event of an Alert:

4.3.1.1 Activation (via Step 4.4 below) of the Technical Support Center and Operations Staging Area is required.

4.3.2 In the event of a Site Emergency:

4.3.2.1 Sound the Nuclear Emergency Alarm (NEA)

4.3.2.2 Follow the NEA with a P.A. announcement indicating whether or not personnel are to evacuate.

4.3.2.3 Activate (via Step 4.4 below) the Technical Support Center, Operations Staging Area, Joint Public Information Center and Emergency Operations facility.

4.3.3 In the event of a General Emergency:

4.3.3.1 Sound the Nuclear Emergency Alarm (NEA)

4.3.3.2 Follow with a P.A. announcement indicating wether or not personnel are to evacuate.

4.3.3.3 Recommend the Berrien County Sheriff's Department and Michigan State Police consider the following protective actions, as a minimum:

4.3.3.3.1 Activation of the Siren Warning System

4.3.3.3.2 Sheltering within a two-mile radius and five miles downwind

4.3.3.3.3 Placing cows within ten miles on stored feed, if appropriate

4.3.3.4 Activation (via Step 4.4 below) of the Technical Support Center, Operations Staging Area, Joint Public Information Center and Emergency Operations facility is required.

NOTE

See PMP 2080.EPP.015, Exhibit A, Responsibility of the On-Site Emergency Coordinator for a listing of on-site and off-site actions for each emergency condition.

4.4 Implement PMP 2080 EPP.008, Calling Off-Duty Plant Personnel.

4.5 Implement PMP 2080 EPP.012, Initial Off-Site Notifications if the Plant Manager or Operations Superintendent cannot be reached promptly.

4.6 Notify the NRC via red telephone within 1 hour. Be prepared to provide one person full time to communicate information over this phone to the NRC if so requested.

4.7 Be prepared to provide updates or additional information to the Michigan Department of Public Health if so requested.

4.8 Start trend blocks 12 through 16 on the Prodac. Start the TSC printers.

4.9 Upon arrival of support personnel:

4.9.1 Activate the Technical Support Center Operation as per PMP 2081 EPP.020 by designating an interim TSC Manager.

4.9.2 The SS shall continue to act as the On-Site Emergency Coordinator until appropriately relieved as per PMP 2080 EPP.015, Responsibilities of the On-Site Emergency Coordinator.

4.10 Continue to monitor plant conditions:

4.10.1 Ensure notification of the Berrien County Sheriff's Department, Michigan State Police, and NRC if emergency classification changes.

4.10.2 If significant state, local, and federal sources have been activated, attempt to obtain concurrence between all parties prior to de-escalation and entry into the recovery phase of operations.

4.11 Terminate use of this procedure when plant conditions are safe and/or within normal operating parameters.

EMERGENCY CONDITION CATEGORIES

ECC-1	Aircraft Crash or Missiles from any source
ECC-2	Control Room Evacuation
ECC-3	Earthquake
ECC-4	Explosion
ECC-5	Fire
ECC-6	Seiche
ECC-7	Security Threat or Compromise
ECC-8	Tornado or Severe Winds
ECC-9	Toxic Gas
ECC-10	Loss of AC Power
ECC-11	Loss of DC Power
ECC-12	Loss of Plant Shutdown Functions
ECC-13	Other Conditions or Systems required by Tech. Specs.
ECC-14	Fission Product Barriers and Loss of Coolant Accident
ECC-15	Fuel Damage
ECC-16	Loss of Secondary Coolant
ECC-17	Steam Generator Tube Rupture
ECC-18	Fuel Handling Accident
ECC-19	Radiation Releases
ECC-20	Personnel Injury
ECC-21	Other Hazards
ECC-22	Loss of Control Room Annunciators/Alarm
ECC-23	Liquid Release

ECC-1: AIRCRAFT CRASH OR MISSILES FROM ANY SOURCE

Unusual Event

1. Aircraft crash on-site.
2. Unusual aircraft activity by SS's judgment.

Alert

1. Aircraft crash in the protected area or switchgear 345KV, 765KV or Emergency power yards.
2. Missiles from any source landing in the protected area.

Site Emergency

1. Aircraft crash which, in the judgment of the SS, affects the Aux. Building or Containment.
2. Missile damage which, in the judgment of the SS, causes damage to safe shutdown equipment such that it cannot fulfill its safety function.

General Emergency

N/A

ECC-2: CONTROL ROOM EVACUATION

Unusual Event

N/A

Alert

1. Evacuation of Control Room is anticipated.

2. Evacuation of Control Room is required with control of unit shutdown systems at local station established within 15 minutes.

Site Emergency

1. The Control Room is evacuated and control of all the following systems or equipment is not established within 15 minutes:

   a. Auxiliary Feedwater and

   b. Boric Acid Transfer Pumps and

   c. Pressurizer Heaters and

   d. Atmospheric Steam Dump Valves and

   e. Charging Pumps and

   f. Charging Flow Control Valve and

   g. Letdown Isolation Valves.

General Emergency

N/A

ECC-3: EARTHQUAKE

Unusual Event

1. Any actuation of seismic instrumentation that is verified to be the result of an earthquake.

Alert

1. Earthquake that is readily felt but does not cause observable damage to the plant or surrounding structures.

Site Emergency

1. Earthquake that is of sufficient magnitude to cause significant damage to the plant or surrounding structures. It may cause an automatic trip of the reactor and/or turbine due to equipment or instrumentation malfunctions.

General Emergency

N/A

ECC-4: EXPLOSION

Unusual Event

1. Any explosion Near or On Site

Alert

1. Explosion damage to the plant affecting unit operation or offsite power supplies.

Site Emergency

1. Explosion damage which, in the judgment of the SS, causes damage to safe shutdown equipment such that it cannot fulfill its safety function.

General Emergency

N/A

ECC-5: FIRE

Unusual Event

1. Any significant fire lasting more than 10 minutes on plant site (protected area) or switchgear yards.

Alert

1. Fire potentially affecting safety systems as judged by the SS.

Site Emergency

1. Fire affecting any safety system as judged by the SS.

General Emergency

N/A

ECC-6: SEICHE

Unusual Event

1. Lake level deviation, from operating levels (on screen house water level monitor) by more than 5 ft. up or down but less than 8 ft. up or down.

Alert

1. Screen house level indication shows a deviation between 8 ft. and 11 ft.

Site Emergency

1. Screen house level indication shows a deviation greater than 11 ft.

General Emergency

N/A

ECC-7: SECURITY THREAT OR COMPROMISE

Unusual Event

1. Security threat, attempted entry, or attempted sabotage in the judgment of the SS and/or shift security supervisor.

Alert

1. Ongoing security compromise in the judgment of the SS and/or shift security supervisor.

Site Emergency

1. Loss of physical control of the facility is likely in the judgment of the SS based on the advice of the shift security supervisor.

General Emergency

1. Loss of physical control of the facility as determined by the S.S. based on advice from the shift security supervisor.

ECC-8: TORNADO OR SEVERE WINDS

Unusual Event

1. Any tornado near or on site.

Alert

1. Tornado damage to the plant affecting unit operation or offsite power supplies.
2. Sustained winds in excess of 85 mph.

Site Emergency

1. Sustained winds in excess of 100 mph.

General Emergency

N/A

ECC-9: TOXIC GAS

Unusual Event

1. Near or on-site toxic or flammable gas release.

Alert

1. Entry into the protected area of lethal or concentrated volumes of toxic or flammable gas.

Site Emergency

1. Entry into vital areas of lethal or concentrated volumes of toxic or flammable gas which in the judgment of the SS affects operation of the safe shutdown equipment.

General Emergency

N/A

ECC-10: LOSS OF AC POWER

Unusual Event

1. Loss of all off-site AC power capabilities, including 69KV emergency power, such that the T-11 A, B, C, D buses for U-1 (or T-21 A, B, C, D buses for U-2) cannot be energized from these sources or all on-site AC power capabilities (both diesel generators for one unit are unavailable or inoperable due to mechanical, electrical, or error effects) is lost, this includes the main generator.

Alert

1. Loss of all off-site power supplies with a) rapid increase of primary to secondary tube leakage to several gpm, and b) off-scale readings on R-15 (SJAE Monitor), and c) large increase on Steam Generator Blowdown Monitor R-19, and d) confirmation of high radiation levels.

2. Loss of off-site power and loss of on-site AC power capacity as indicated by failure of Emergency Diesel Generators to start, and load ampmeters for buses 1A, 1B, 1C, 1D for Unit 1 and buses 2A, 2B, 2C, 2D for Unit 2 are at zero.

Site Emergency

1. Loss of off-site power is indicated by all ampmeters for the 4160 buses reading 0 amps; and

   Steam Generator tube rupture indicated by readings on the Condenser Air Ejector Monitor (R-15) greater than 1 X 10^{5} cpm and these readings have been confirmed; and

   SI initiated by the Engineered Safety Feature Actuation System

2. Ampmeters for 4160V buses all read 0 amps, and

   Voltmeters for 4160 V buses read 0 volts, and

   Above conditions last for more than 15 minutes.

General Emergency

N/A

ECC-11: LOSS OF DC POWER (A & B TRAIN BATTERIES)

Unusual Event

N/A

Alert

1. All battery voltmeters read zero, and board indicating lights are off.

Site Emergency

1. All battery voltmeters indicate 0 volts and no indication of availability of backup DC voltage, and the condition lasts for more than 15 minutes.

General Emergency

N/A

ECC-12: LOSS OF PLANT SHUTDOWN FUNCTIONS

Unusual Event

1. Plant shutdown as required by Technical Specification for loss of essential assessment or communication capabilities, such as:

   a. Reactor trip instrumentation
   b. Engineered Safety Feature Actuation Instrumentation
   c. Radiation Monitoring Channels
   d. Post Accident Monitoring Channels
   e. Essential communication to off-site authorities including back-up capability.

Alert

1. Loss of all Residual Heat Removal (RHR) pumps, heat exchangers and/or controls, with loss of all auxiliary feedwater capacity needed.

Site Emergency

1. Loss of all the following systems, equipment or controls:

   a. Auxiliary Feedwater System
   b. Boric Acid Transfer Pumps
   c. Pressurizer Heaters
   d. Atmospheric Steam Dump Valve
   e. Charging Pumps
   f. Letdown Isolation Valves or Letdown Flow Control

General Emergency

N/A

ECC-13: OTHER CONDITIONS OR SYSTEMS REQUIRED BY TECHNICAL SPECIFICATIONS

Unusual Event

1. ECCS initiation by valid signal as listed in Technical Specifications Tables 3.3-3 and 3.3-4.

2. Environmental Technical Specification 2.1.1 (liquid waste effluent limits) or 2.1.3 (gaseous effluent limits) possibly have been exceeded with verification by Radiation Protection analysis, as indicated by readings on any of:

   a. Condenser air ejector monitor (R-15) exceeds 1×10^{6} cpm

   b. WDS liquid effluent monitor (R-18) exceeds 1×10^{4} cpm

   c. Blowdown Liquid Monitor (R-19) exceeds 1×10^{4} cpm

   d. ESW monitors (R-20 and R-28) exceed 300 cpm

   e. Blowdown treatment monitor (R-24) exceeds 7×10^{4} cpm

   f. Unit vent air particulate (R-25) exceeds 1.3×10^{4} cpm

   g. Unit vent gas monitor (R-26) exceeds:

      1×10^{4} cpm (fresh gas) or
      1×10^{3} cpm (old gas)

ECC-13: OTHER CONDITIONS OR SYSTEMS REQUIRED BY TECHNICAL SPECIFICATIONS (CONT'D)

Use the "old gas" criterion for:

1. Release originating from a gas decay tank shown by unexplained GDT pressure decrease seen on recorders MR058 or MR059.
2. Release originating from a CVCS holdup tank, shown by unexplained CVCS holdup tank header pressure decrease (QPA 600) and possibly excessive cover gas demand.

Use "fresh gas" condition for:

1. Releases from sources other than those listed above.

h. Unit vent radio-iodine (R-32) exceeds 2 X 10^3 cpm

NOTE

Before applying this criterion, ensure the "window" selector is set to .4, and the "input mode" (iodine) selector is set to N.

3. Abnormal coolant temperature, pressure, and/or abnormal fuel temperatures exceeding Technical Specification 2.1.1 or 2.1.2 safety limits exceeded and exceeding Limiting Safety Systems Settings listed in Technical Specification 2.2.1, without a unit trip, with the excursion confirmed.

ECC-13 OTHER CONDITIONS OR SYSTEMS REQUIRED BY TECHNICAL SPECIFICATIONS (CONT'D)

4. Containment integrity Technical Specifications exceeded with a unit shutdown required by the associated Technical Specification.

5. Engineered Safety Features or Fire Protection System causing unit shutdown due to associated action statement in the applicable Technical Specification caused by malfunction, procedural error, or personnel error.

6. Reactor Coolant Leakage exceeds Tech. Spec. 3.4.6.2 and the Unit is shut down for this reason.

Alert

1. Radiation monitoring channels exceed indicated levels with confirmational analysis by radiation protection.

   a. R-1 (Control Room Area Monitor) exceeds 10mR/hr.

   b. R-3 (Radiochemistry Lab) exceeds 100 mR/hr.

   c. R-4 (Charging Pump Room) exceeds 1 R/hr.

   d. R-5 (Spent Fuel Area) exceeds 100 mR/hr.

   e. R-6 (Nuclear Sampling Room) exceeds 1 R/hr.

   f. R-26 (Unit Vent Gas Monitor) exceeds 10^5 cpm.

2. Failure of the reactor trip logic to provide a reactor trip when a signal is received for a setpoint as listed in Technical Specification Table 2.2-1, with rod indication showing no trip has occurred and manual trip circuitry fails to provide a trip.

3. Analysis of effluent samples confirms that instantaneous limits stated in Environmental Technical Specification 2.1.1 and 2.1.3 have been exceeded by a factor of 10.

Site Emergency

N/A

General Emergency

N/A

ECC-14: FISSION PRODUCT BARRIERS/LOSS OF COOLANT

Unusual Event

1. Technical Specification Limits 3.4.6.2a, b, c, & d are exceeded and the unit is shutdown for these reasons.

2. Pressurizer safety valves or power operated relief valves stay open as indicated by temperature in the line and by the acoustic monitor.

Alert

1. Rapid increase of primary to secondary leakage to several gpm with off-scale readings on steam jet air ejector montitor (R-15) and large increase on steam generator blowdown monitor R-19 with confirmation of high radiation levels and with loss of off-site power.

2. Large primary to secondary leak rate likely as indicated by an increase to maximum of charging flow and off-scale radiation readings on R-15 and R-19 confirmed.

3. Steam line break as indicated by a Safety Injection (SI) for Technical Specification listed in Table 3.3-4 with primary to secondary leak rate in excess of 10 gpm as calculated by the most recent leak rate.

4. Primary Coolant leak rate is too high for one charging pump to maintain level in pressurizer above 22% (leak rate is greater than 50 gpm over that total allowed in Technical Specification 3.4.6.2), or a second charging pump has to be started to maintain pressurizer level above 22%.

Site Emergency

1. Safety Injection (SI) initiation followed by containment spray (and Phase B) initiation due to high (2.9 psig) containment pressure, with increasing containment sump levels and increasing radiation levels in containment.

General Emergency

1. Loss of 2 out of 3 fission product barriers with a potential loss of the third barrier.

   a. Confirmed loss of core geometry, and

   b. Confirmed loss of Reactor Coolant System integrity, and

   c. High potential for loss of Containment integrity

ECC-15: FUEL DAMAGE

Unusual Event

1. Unit is shutdown as required by Tech. Spec. 3.4.8.

2. An increase in failed fuel detector gross gamma readings to off-scale and by chemical laboratory analysis indicating an increase of greater than .1% failed fuel within 30 minutes.

Alert

1. Very high coolant activity (exceeds 300 μCi/cc dose equivalent Iodine).

2. A sudden increase in possible failed fuel as indicated by a rapid gross gamma reading increase on failed fuel monitor and rapid increase on Charging Pump Room Area Monitor radiation levels.

3. Loss of fl[illegible] e or more reactor coolant loops initiates [illegible]ctor trip (manual below 50% power) followed by specific activity of the primary coolant increasing to greater than 300 μCi/cc equivalent of I-131.

Site Emergency

1. Core saturation curve or core subcooling monitor indicates subcooling of 0°F or less and this reading is confirmed.

General Emergency

N/A

ECC-16: STEAM LINE BREAK

Unusual Event

1. Steam generator safety valves, or power operated relief valves stay open with significant gpm primary to secondary leakage existing as indicated by off-scale readings on condenser air ejector and gland steam seal radiogas monitors.

Alert

1. Steam line break as indicated by a safety injection with primary to secondary leak rate in excess of 10 gpm as per latest calculated rate.

2. Steam line break with failure of steam line isolation valve to close as indicated by continued high steam line flow on the flow meters.

Site Emergency

1. Steam line break as indicated by any of following SI conditions: High steam line flow coincident with steam line pressure or coincident with Low Low Tavg, (for U-1, for U-2 is low steam line pressure) or high differential pressure between steam generators (both units), or

   low pressurizer press (both units) as per Technical Specification Table 3.3-4 setpoints, and

2. Calculated primary to secondary leak of 50 gpm, and

3. Fuel damage as indicated by Reactor Coolant dose equivalent I-131 greater than 300 μc/g.

General Emergency

N/A

ECC-17: STEAM GENERATOR TUBE RUPTURE

Unusual Event

1. Tech. Spec. 3.4.6.2.c exceeded.

Alert

1. Primary to secondary leak rate in excess of 10 gpm as per latest calculated rate with steam line break as indicated by a Safety Injection (SI) for Technical Specification listed in Table 3.3-4.

2. Rapid increase of primary to secondary leakage to several gpm with off-scale readings on Steam Jet Air Ejector Monitor (R-15) and large increase on Steam Generator Blowdown Monitor (R-19) and confirmed high radiation levels with loss of off-site power.

3. Large primary to secondary leak rate likely as indicated by an increase to maximum of charging flow and off-scale radiation readings on R-15 and R-19 confirmed.

Site Emergency

1. a. Steam generator tube rupture indicated by reading on the Steam Jet Air Ejector Monitor (R-15) greater than 1×10^{6} cpm and these readings have been confirmed; and

   b. SI initiated by the Engineered Safety Feature Actuation System; and

   c. Loss of off-site power is indicated by all ampmeters for the 4160 volt buses reading 0 amps.

2. a. Calculated primary to secondary leak of 50 gpm; and

   b. Steam line break as indicated by any of the following SI initiating conditions: High steam line flow coincident with low steam line pressure or coincidnet with Low Low Tavg (for U-1, for U-2 is low steam line pressure), or high differential pressure between steam generators (both units) or low pressurizer pressure (both units) as per Technical Specification Table 3.3-4 setpoints, and

   c. Fuel damage indicated by Reactor Coolant dose equivalent I-131 greater than 300 µc/g.

General Emergency

N/A

ECC-18 FUEL HANDLING ACCIDENT

Unusual Event

N/A

Alert

1. If an apparent accident occurs and containment area monitor (R-2) shows a reading 100 times previous reading while handling fuel during refueling, or R-5, spent fuel area monitor exceeds 100 times previous reading while moving fuel or objects over spent fuel pit. Analysis confirms fuel failure by detection of fission products.

Site Emergency

1. A heavy object (Technical Specification 3.9.7) impacts spent fuel while the spent fuel is in containment or in the spent fuel pit.

2. Water level in the vessel or spent fuel pit drops below the top of the fuel.

General Emergency

N/A

ECC-19: RADIATION RELEASE

Unusual Event

See also ECC-13 for classifications of specific RMS monitor readings.

Alert

See also ECC-13 for classifications of specific RMS monitor readings.

1. Measured or projected dose rate of 2 mR/hr whole body at site boundary under existing weather conditions.

Site Emergency

1. Measured or projected dose rate of

   50 mR/hr whole body or

   250 mR/hr thyroid

   at the site boundary under existing weather conditions.

General Emergency

1. Measured or projected dose rate of

   250 mR/hr whole body or

   1250 mR/hr thyroid

   at the site boundary under existing conditions.

ECC-20: PERSONNEL INJURY

Unusual Event

1. Transportation of contaminated individual(s) to off-site hospital.

2. Any fatality, or serious injury occurring on site requiring a stay at a medical facility in excess of 48 hours.

3. Any serious personnel radioactive contamination requiring extensive on-site decontamination or outside assistance.

Alert

N/A

Site Emergency

N/A

General Emergency

N/A

ECC-21: OTHER HAZARDS

Unusual Event

1. Turbine failure with resulting damage but not penetrating outside turbine housing.

2. Rapid uncontrolled depressurization of the secondary side.

3. Unit is shut down in an uncontrolled manner or conditions exist which might escalate to a more severe class; such as, uncontrolled rod withdrawal, dropped RCCA assembly or bank, uncontrolled dilution, loss of one or more Reactor Coolant Pumps above 50% power, loss of load, loss of normal feedwater or malfunction (overcooling, excessive load increase), inactive RCS loop startup, steam line break.

Alert

1. Other plant conditions exist that warrant precautionary activition of Technical Support Center and near-site emergency operations center, as per SS judgment.

2. Turbine failure causing damage as judged by the SS penetration outside turbine housing.

Site Emergency

1. SS judgment, i.e., a less severe emergency class has escalated to meet Site Emergency criteria.

General Emergency

1. Loss of Coolant Accident (LOCA), (large or small), with the failure of the Emergency Core Cooling System (ECCS) to function leading to severe core degradation or melt. With core melt sequences, ultimate containment failure likely with several hours available for response.

2. Transient due to loss of the Feedwater System or Condensate System followed by the failure of the Auxiliary Feedwater System for an extended period. Core melting is possible in several hours with ultimate containment failure likely if core melts.

(Cont'd)

ECC-21: OTHER HAZARDS (CONT'D)

3. Transient condition requiring operation of Reactor Protection System with a failure to trip the reactor followed by a failure of ECCS and makeup system which would lead to a core melt.

4. Failure of offsite and onsite power along with total loss of emergency feedwater capability for several hours which would lead to eventual core melt and likely containment failure.

5. Small LOCA with initial ECCS actuation successful with subsequent failure of containment heat removal systems. Ultimate core melting is likely with probable containment failure.

ECC-22: LOSS OF CONTROL ROOM ANNUNCIATORS/ALARMS

Unusual Event

N/A

Alert

1. All annunciator panels in Control Room non-functioning.

2. The unit is undergoing a transient while the annunciators are inoperable.

Site Emergency

N/A

General Emergency

N/A

ECC-23: LIQUID RELEASE

Unusual Event

1. Environmental Technical Specification 2.1.1 (liquid waste effluent limits) or 2.1.3 (gaseous effluent limits) exceeded with verification by radiation protection analysis.

Alert

1. Radioactive liquid effluent releases which exceed 10 X Technical Specification limits.

Site Emergency

1. Radioactive liquid effluent releases which for a single isotope or mixed isotopes exceeds 50 X MPC in water (averaged over 24 hours).

General Emergency

1. Radioactive liquid effluent releases which for a single isotope or mixed isotopes exceeds 500 X MPC in water (averaged over 24 hours).