INDIANA & MICHIGAN
ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

PROCEDURE COVER SHEET

Procedure No.	PMP 2081.EPP.027
Revision No.	0

TITLE UNIT VENT EMERGENCY RELEASE LEVEL DETERMINATION

SCOPE OF REVISION

SIGNATURES

	ORIGINAL	Rev. 1	REV. 2	Rev. 3
PREPARED BY				
QUALITY ASSURANCE REVIEW				
INTERFACING DEPARTMENT HEAD CONCURRENCE				
DEPARTMENT HEAD APPROVAL	NA			
PLANT NUCLEAR SAFETY COMMITTEE				
PLANT MANAGER APPROVAL				
DATE OF ISSUE	3-1-83			

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INDIANA & MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

UNIT VENT EMERGENCY RELEASE LEVEL DETERMINATION

1.0 PURPOSE

1.1 The purpose of this procedure is to provide guidance in determination of concentrations and release rates of noble gas at the Auxiliary Building Unit Vent.

2.0 REFERENCES

2.1 Figure 1, Vent Stack Sampling Lines, AEPSC drawing supplied by P. K. Eapen.

2.2 Computer Program Output; Job #2001 NSLSSTOP; 13 March, 1980, 9:28 p.m.

3.0 INITIAL CONDITIONS

3.1 R-26 has reached or is expected to reach full scale indication.

3.2 It has been determined by the Shift Supervisor, Plant Radiation Protection Supervisor, their designees, or other responsible plant staff personnel, that additional information on the potential releases through the plant vent is needed.

4.0 PRECAUTIONS

4.1 Very high dose rates and high levels of airborne radioactivity may be preseht in unexpected locations in the Auxiliary Building. Precautions to keep internal and external exposure to a minimum shall be taken. These may include, but are not limited to the following precautions:

4.1.1 At least two individuals shall be sent when there is doubt about the radiological conditions in the Auxiliary Building.

4.1.2 At least one functioning high range dose-rate instrument shall be available at all times. This normally means carrying a suitable spare instrument.

4.1.3 The instruments used for survey may be either GM or Ion Chamber type. If an instrument with a sealed chamber (such as the PIC-6A) is not available, an RM-16 with bullet probe may be used.

4.1.4 Normally, if vent release conditions are serious enough to require activation of this procedure, airborne conditions in the Auxiliary Building would require the use of pressure demand type supplied air respirators by all personnel involved.

5.0 ENVIRONMENTAL CONDITIONS

5.1 In all cases involving a significant increase in airborne activity, licensed Control Room personnel should consult PMP 2080 EPP.001; ECC-19 and ECC-13 to determine if any emergency action levels (EAL's) have been exceeded. Upon exceeding an EAL, the proper emergency condition shall be declared and the Emergency Plan activated by implementing PMP 2080 EPP.001.

6.0 PROCEDURE

6.1 Obtain portable communication radio from the Technical Support Center, Control Room or an Emergency Station. Survey data taken at the sample station should be transmitted to the Control Room every fifteen (15) minutes.

NOTE: Communication can also be made to the Technical Support Center and Operational Support Center, if necessary or desired.

6.2 Obtain calibrated, operable, dose-rate reading instruments. This should include, if possible, an RM-16 (2 mR/hr to 20 R/hr) with bullet probe. If the range of the RM-16 is expected to be exceeded, a PIC-6A (1 mR/hr to 1000 R/hr) survey instrument from an emergency station should be obtained for use.

6.3 Carefully proceed to the 650' elevation sample station.

6.4 Remove the shield plug and insert the detector so that it is 6 inches from the sample line inside the shield. For exact positioning of instruments, see Figure 2 for PIC-6A, or Figure 3 for RM-16 bullet probe.

6.5 If RM-16 with bullet probe is used in shield, slide lead plug up against bullet probe retainer to minimize radiation shine from sample line.

6.6 Open the remote operated sample valves and start the sample pump (controls are located near the sample station).

6.7 Obtain a reading on the survey instrument.

6.8 Using Attachment #1, determine the Activity Factor at Time After Event.

NOTE 1: Computer program CPM.002 may be used instead of steps 6.8 through 6.12.

NOTE 2: The Activity Factors of Attachment #1 correspond to one (1) R/hr at six inches from the sample line (activity factor units $\frac{\mu Ci/cc}{1 R/hr}$). The concentration required to give 1 R/hr will change with time. It is important that Attachment #1 be referenced frequently to insure that the proper activity factor is used.

6.9 Calculate the Unit Vent Release Concentration by multiplying the measured R/hr at the sample station times the activity factor.

6.10 Calculate the Unit Vent Release Rate by multiplying the release concentration times the unit vent flowrate (in CFM) times 4.72E-4.

EXAMPLE:

2.5 R/hr @ 24 hours (1 day)
Activity Factor = 5.2E3
Release Concentration = (2.5)(5.2E3)
= 1.3E4 μCi/cc
Release Rate = (1.3E4)(50,000 CFM)(4.72E-4)
= 3.1E5 Ci/sec

6.11 When completed, turn sample pump OFF, close valves, remove survey instruments and replace shield plug.

6.12 To determine Release Concentration and Release Rate of Total Iodine and Iodine 131, obtain Iodine Fraction from Attachment #2. Then multiply the Iodine Fraction times values from 6.9 and 6.10 from Attachment #2 and #3.

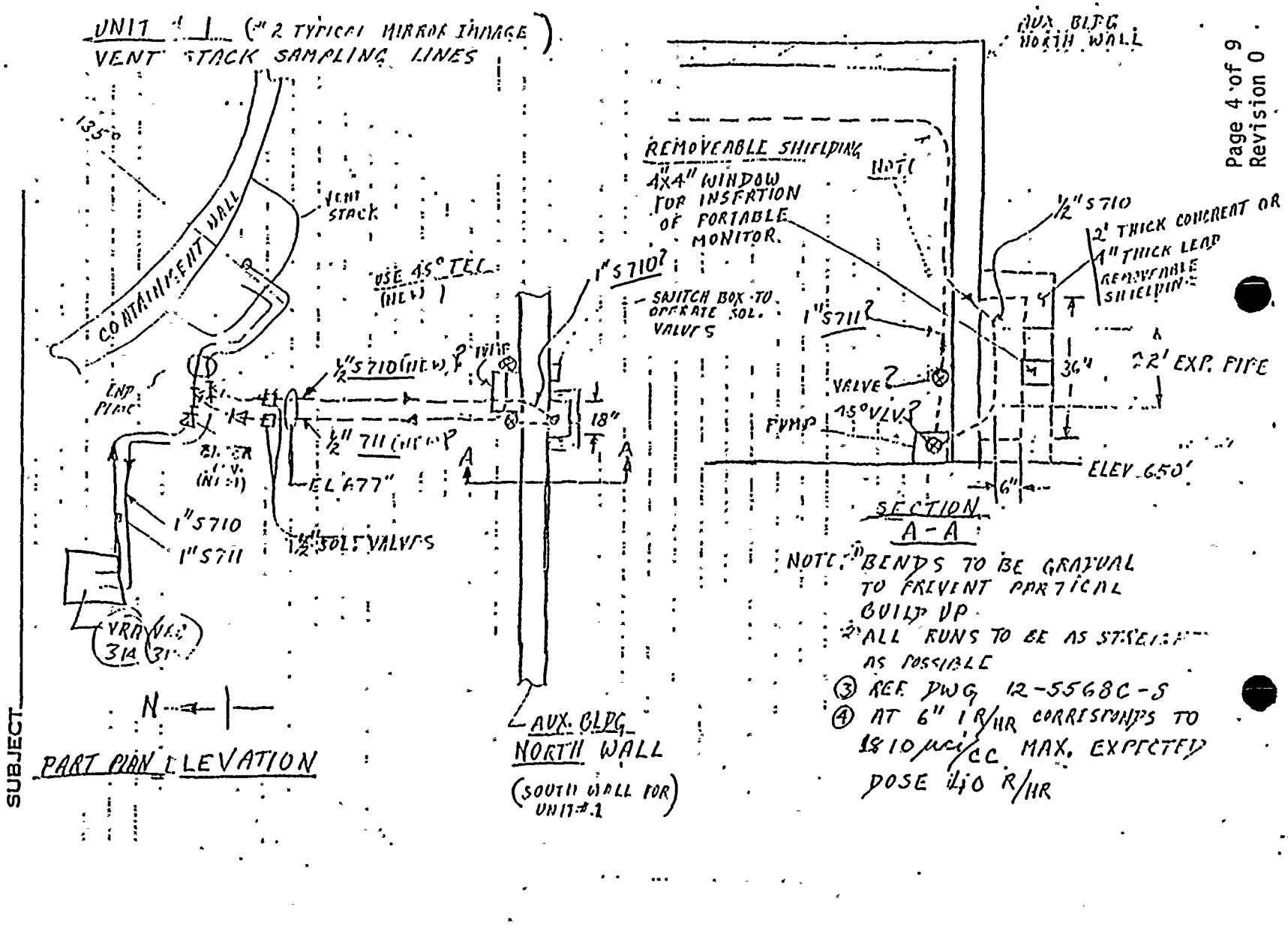
7.0 FINAL CONDITIONS

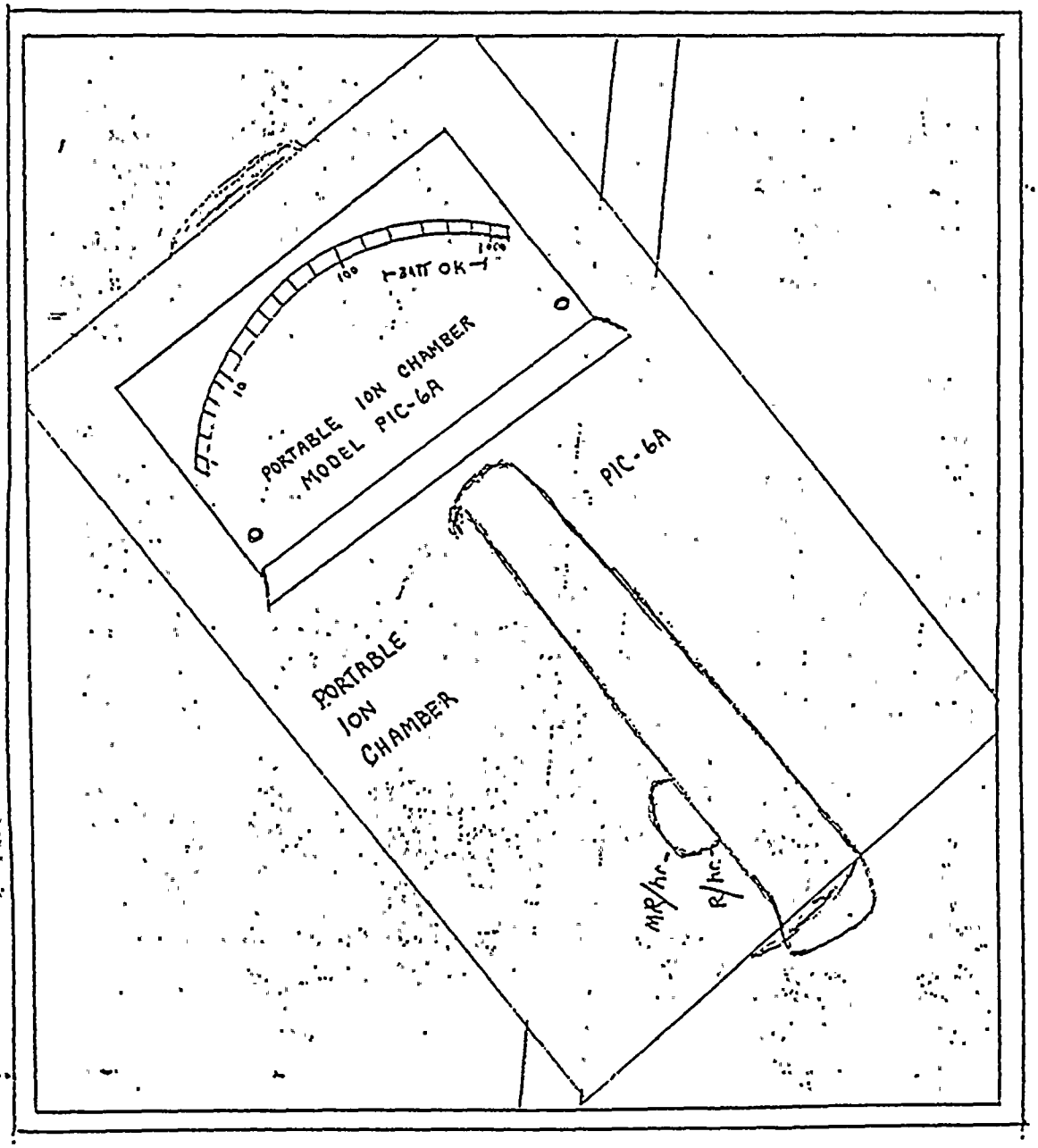
7.1 Record data obtained in appropriate logs.

7.2 Inform the Shift Supervisor and/or Plant Radiation Protection Supervisor of results and any personnel exposure or unusual conditions noted in the Auxiliary Building.

ENGINEERING DEPT.
AMERICAN ELECTRIC POWER SERVICE CORP.
2 BROADWAY
NEW YORK

DATE _____ SHEET _____ OF _____
COMPANY _____ BY _____ CK _____
PLANT _____ G.O. _____

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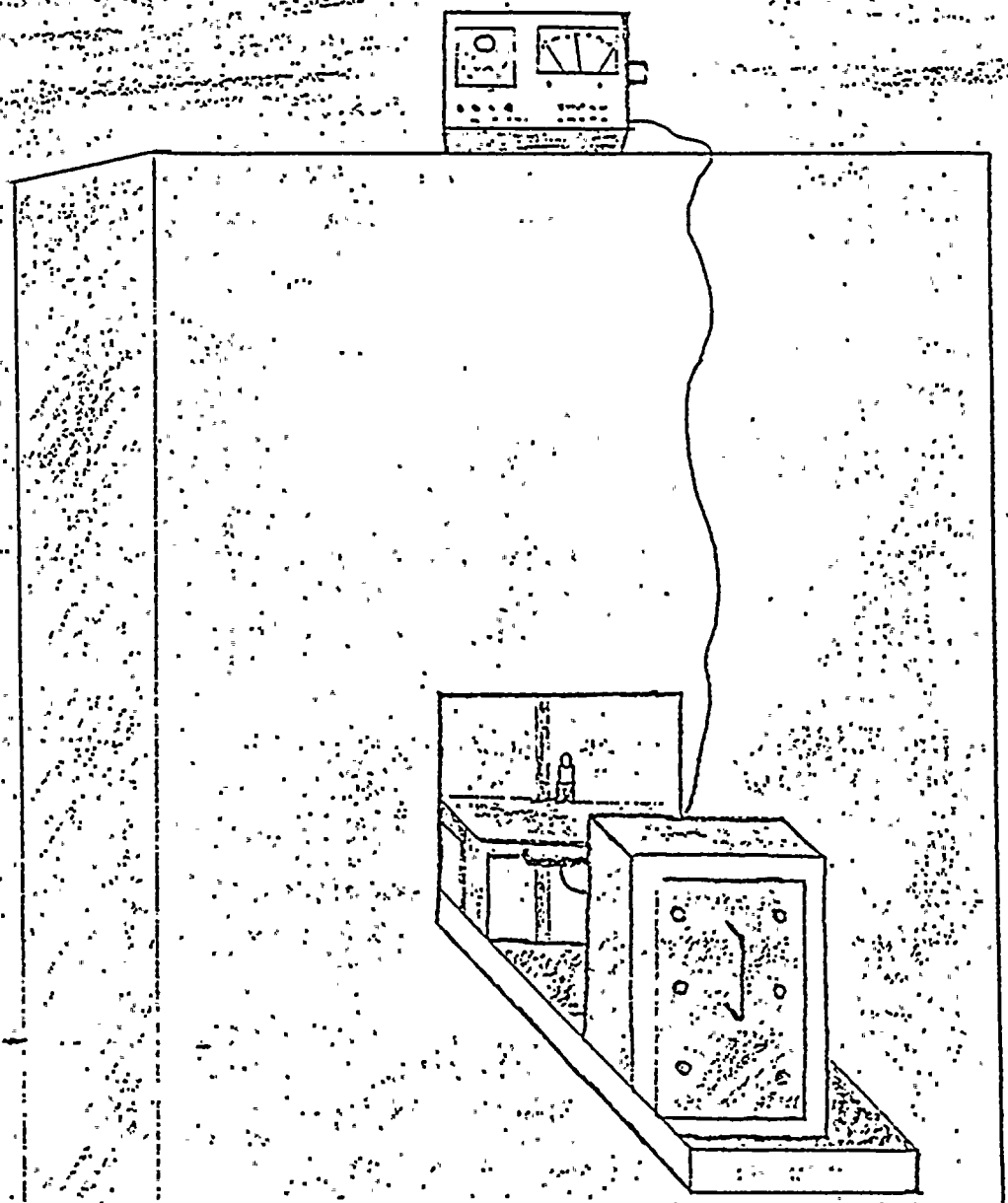
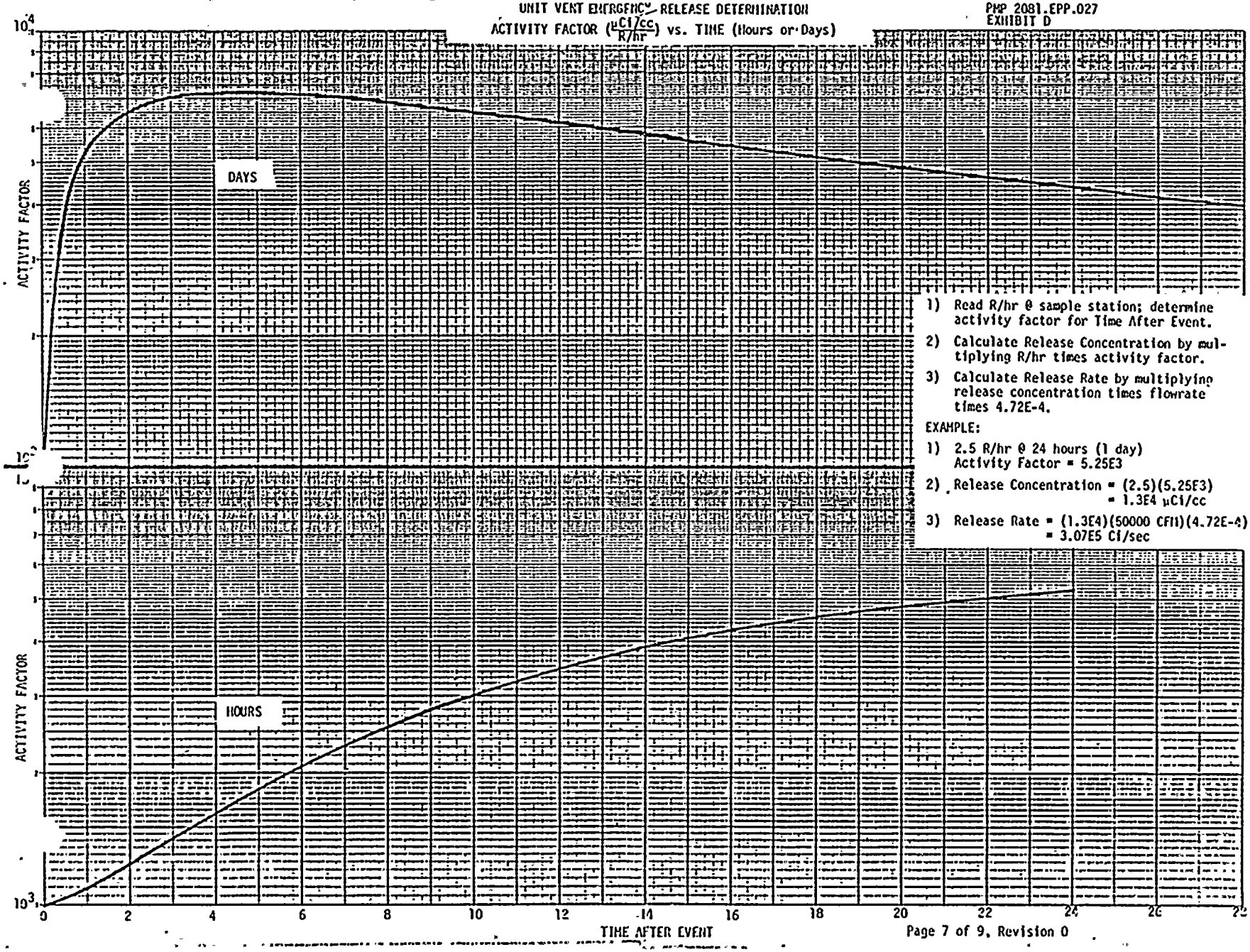


UNIT VENT EMERGENCY RELEASE DETERMINATION

ACTIVITY FACTOR ($\frac{\mu Ci/cc}{R/hr}$) vs. TIME (Hours or Days)



1) Read R/hr @ sample station; 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 flowrate times 4.72E-4.

EXAMPLE:

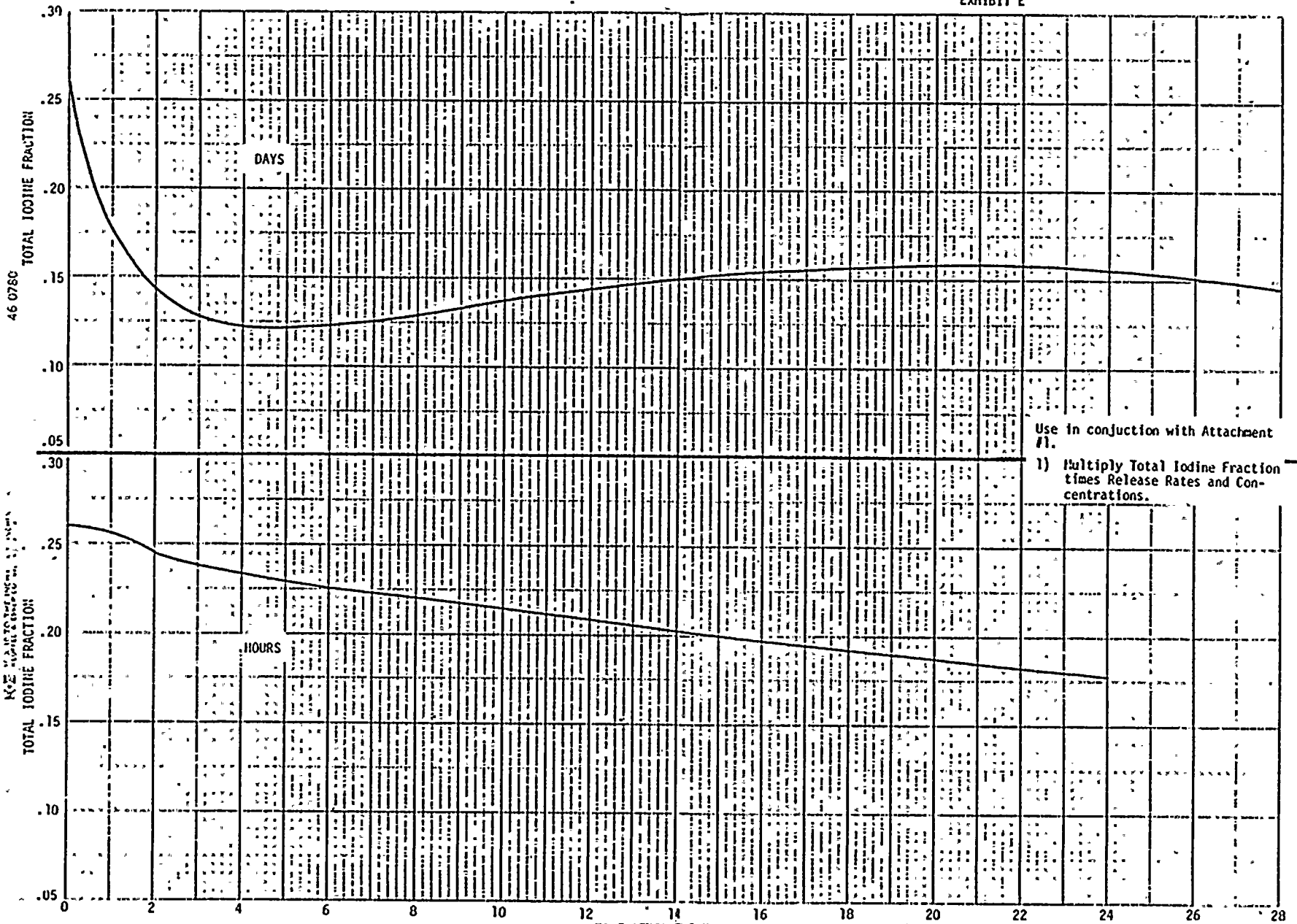
1) 2.5 R/hr @ 24 hours (1 day)
Activity Factor = 5.25E3

2) Release Concentration = (2.5)(5.25E3)
= 1.3E4 µCi/cc

3) Release Rate = (1.3E4)(50000 CFM)(4.72E-4)
= 3.07E5 Ci/sec

UNIT VENT TOTAL IODINE RELEASE DETERMINATION

PNP 2081.EPP.027
EXHIBIT E



Use in conjuction with Attachment #1.

1) Multiply Total Iodine Fraction times Release Rates and Concentrations.

INDIANA & MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT

PLANT MANAGER PROCEDURE

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Identification Number	Title	Revision No. And Date	Comments
PMP 2081 EPP.025	Activation and Operation of the Emergency News Source (ENS) (An Emergency Operations Facility)	Revision 1 6-24-82	
EPP.026	Use of Stable Iodine for Thyroid Blocking During a Radiation Emergency	Revision 1 9-8-82	
EPP.027	Unit Vent Emergency Release Level Determination	Revision D 3-1-83	

LIST OF EXHIBITS

PMP 2081 EPP.025

EXHIBIT A PLAN FOR REPORTING NON-ROUTINE INCIDENTS AT COOK NUCLEAR PLANT

PMP 2081 EPP.026

CHECKLIST A USE OF A STABLE IODINE FOR THYROID BLOCKING DURING A RADIATION EMERGENCY

PMP 2081 EPP.027

EXHIBIT A UNIT 1 (#2 TYPICAL MIRROR IMAGE) VENT STACK SAMPLING LINES

EXHIBIT B PORTABLE ION CHAMBER

EXHIBIT C (DRAWING OF EQUIPMENT)

EXHIBIT D UNIT VENT EMERGENCY RELEASE DETERMINATION ACTIVITY FACTOR VS. TIME (HOURS OR DAYS)

EXHIBIT E UNIT VENT TOTAL IODINE RELEASE DETERMINATION

PMP 2082 EPP.009

EXHIBIT A EMERGENCY PREPAREDNESS ANNUAL CHECKLIST

EXHIBIT B EMERGENCY PREPAREDNESS SEMI-ANNUAL CHECKLIST

EXHIBIT C EMERGENCY PREPAREDNESS QUARTERLY CHECKLIST