NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06101
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July 1, 1982

Docket Nos. 50-213
50-245
50-336
B10529

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Regulatory Commission
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

HADDAM NECK PLANT
MILLSTONE NUCLEAR POWER STATION, UNIT NOS. 1 AND 2
EMERGENCY PLAN PROCEDURES

Due to revisions to previously submitted Emergency Plan Implementing Procedures (EPIPs) related to the Millstone Nuclear Power Station Emergency Plan and pursuant to Section V of Appendix E to 10CFR50, Northeast Nuclear Energy Company (NNECO) hereby submits ten (10) copies of the following procedures:

(1) EPIP 4102, Revision 6, "Alert"
(2) EPIP 4103, Revision 6, "Site Area Emergency"
(3) EPIP 4104, Revision 6, "General Emergency"
(4) EPIP 4203, Revision 2, "EMT #1 - In Plant Radiological Sampling and Monitoring"
(5) EPIP 4204, Revision 3, "EMT #2 - Protective Actions for Onsite Personnel"
(6) EPIP 4211, Revision 2, "On Call Procedure"
(7) EPIP 4218, Revision 0, "Use of Potassium Iodide (KI) Tablets as a Thyroid Blocking Agent"
(8) EPIP 4304, Revision 4, "Emergency Response Center and Facilities"
(9) EPIP 4501, Revision 1, "Radioactive Materials Transport Accident"
(10) EPIP 4502, Revision 1, "Toxic Material Release"
(11) EPIP 4601, Revision 1, "Page/Siren System Evacuation Alarm Tests"
(12) EPIP 4602, Revision 3, "Communications Telephone Test"
(13) EPIP Form 4102-4, Revision 2, "Alert Emergency: Director of Station Emergency Operations"
(14) EPIP Form 4103-4, Revision 2, "Site Area Emergency: Director of Station Emergency Operations"
(15) EPIP Form 4104-4, Revision 2, "General Emergency: Director of Station Emergency Operations"
(16) EPIP 4214, Revision 0, "Unit 1 Reactor Coolant Post Accident Sampling"

(17) EPIP 4215, Revision 0, "Unit 1 Containment Air Post Accident Sampling"
(18) EPIP 4216, 0, "Unit 1 Reactor Coolant Post Accident Sampling"
(19) EPIP 4217, Revision 0, "Unit 2 Containment Air Post Accident Sampling"
(20) EPIP Form 4214-1, Revision 0, "Millstone Post Accident Sampling Data Sheet"
(21) EPIP Form 4214-2, Revision 0, "Post Accident Sampling - Reactor Coolant Isotopic Worksheet"
(22) EPIP Form 4214-3, Revision 0, "Post Accident Sampling - Reactor Coolant Chemical Analysis"
(23) EPIP Form 4214-4, Revision 0, "Determination of Total Dissolved Gas"
(24) EPIP Form 4214-5, Revision 0, "Post Accident Sampling - Calculation of Gas Sample Volume"
(25) EPIP Form 4214-6, Revision 0, "Post Accident Sample Data Sheet Reactor Coolant Gaseous Activity"
(26) EPIP Form 4215-1, Revision 0, "Unit #1 Containment Gaseous Activity Post Accident Sample Data Sheet"
(27) EPIP Form 4217-1, Revision 0, "Unit #2 Containment Gaseous Activity Post Accident Sample Data Sheet"
(28) EPIP 4503, Revision 2, "Hazardous Waste and Toxic Substance Spill Incident"
(29) EPIP Form 4102-1, Revision 3, "Alert Emergency: Shift Supervisor/ Manager of Control Room OPS"
(30) EPIP Form 4103-1, Revision 2 "Site Area Emergency: Shift Supervisor/ Manager of Control Room OPS"
(31) EPIP Form 4104-1, Revision 3, "General Emergency: Shift Supervisor/ Manager of Control Room OPS"
(32) EPIP Form 4201-1, Revision 1, "Worksheet #1 Noble Gas Release Rate"
(33) EPIP Form 4603-1, Revision 1, "Emergency Operations Facility Radiological Kits"
(34) EPIP Form 4603-2, Revision 2, "Emergency Operations Facility Access Road - Inventory List"
(35) EPIP Form 4603-3, Revision 2, "Unit Control Rooms Emergency Equipment"
(36) EPIP Form 4603-5, Revision 2, "CPF Assemble Area - Radiological Kit"
(37) EPIP Form 4603-8, Revision 1, "Emergency Equipment Inventory List"
(38) OP 501, Change No. 1 to Revision 2, "Incident Assessment and Classifcation-Unit 1"
(39) EPIP 4305B, Revision 0, "EOF TSO Computer Terminal Operation"
(40) EPIP 4307, Revision 0, "Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation"
(41) EPIP 4603, Revision 1, "Emergency Radiological Equipment Maintenance and Inspection"

Additionally, ten (10) copies of the Corporate Organization for Nuclear Incidents (CONI) Procedure Manual are hereby submitted by Connecticut Yankee Atomic Power Company (CYAPCO) and NNECO on behalf of the Haddam Neck Plant and the Millstone Nuclear Power Station, respectively.

Should you have any questions, please feel free to contact us.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil

W. G. Counsil
Senior Vice President

cc: Mr. Ronald C. Haynes (3 copies)
Mr. Brian K. Grimes (w/o)
Mr. Falk Kantor (w/o)

4000 SERIES

EMERGENCY PLAN IMPLEMENTING PROCEDURES

NUMBER	TITLE	REV.	DATE ISSUED
4101	Unusual Event Actions	1	9/15/81
4102	Alert	4	2/19/82
4103	Site Area Emergency	4	2/19/82
4104	General Emergency	4	2/19/82
4201	Radiological Dose Assessment	2	12/21/81
4202	Post Accident Sampling	2	3/1/82
4203	EMT #1-In Plant Radiological Sampling and Monitoring	1	9/15/81
4204	EMT #2-Protective Actions for Onsite Personnel	2	12/8/81
4205	EMT #3-Site Boundary Radiological Sampling/Monitoring	1	9/15/81
4206	EMT #4, #5 - Offsite Radiological Sampling and Monitoring	2	12/8/81
4207	Radiological Sampling During An Emergency	0	7/15/81
4208	Aid to Affected Personnel	0	7/15/81
4209	Emergency Operations Re-Entry	0	7/15/81
4210	Emergency Recovery	0	7/15/81
4211	On Call Procedure	0	2/19/82
4212	Drywell/Containment Curie Level Estimation	0	2/19/82
4213	Radiation Protection During Emergencies	0	3/1/82
4301	Communications - Radiopaging & Callback Recorder Operations	2	12/8/81
4302	Emergency Operations Facility Ventil-lation System	0	7/15/81
4303	Emergency Operations Facility Emergency Diesel Generator	0	7/15/81

4304	Emergency Response Center and Facilities	3	3/1/82
4305A	Meteorological Tower EOF Computer Terminal Operation	0	2/24/82
4305B	EOF TSO Computer Terminal Operation	0	3/15/82
4306	E.O.F.Fire Detection System	0	7/15/81
4307	Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation	0	3/15/82
4501	Radioactive Materials Transport Accident	0	7/15/81
4502	Toxic Material Release	0	7/15/81
4503	Hazardous Waste and Toxic Substance Spill Incident	1	8/5/81
4504	Personnel Emergency	2	1/22/82
4505	Atmospheres Immediately Hazardous to Life	0	7/15/81
4506	Loss of Licensed Non-Exempt Radioactive Sources	0	1/6/82
4601	Page/Siren System Evacuation Alarm	0	7/15/81
4602	Communications Telephone Test	1	12/8/81
4603	Emergency Radiological Equipment Maintenance and Inspection	1	3/18/82
4604	Emergency Call List Surveillance	0	7/15/81
4605	Emergency Operations Facility Ventilation System Filter Testing Annual	0	7/15/81
4606	EOF Emergency Diesel Generator Operability Test	0	7/15/81
4608	EOF Air Lock Operability Test	0	7/15/81
4609	EOF Fire Detection System Test	0	7/15/81
4610	Communications-Radiopaging and Callback Recorder Monthly Test	3	11/26/81

4611	Station PA Speaker Inspection	0	7/15/81
4612	Waterford, State and Tri Town Radio Test	1	10/13/81
4613	Communications-Radiopaging Daily Test	1	9/15/81

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4305B   Rev. 0

Title EOF TSO COMPUTER TERMINAL OPERATION

Prepared By B. A. Bodnar

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	C P Scopelitis	2/26/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes)   YES [ ]   NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes)   YES [ ]   NO [X]

D. PORC/SORC APPROVAL

PORC/SORC Meeting Number 82-09

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

3-15-82
Effective Date

SF-301
Rev. 5

EOF TSO COMPUTER TERMINAL OPERATION

Page No.	Eff. Rev.
1 - 8	0

1. OBJECTIVE

1.1 This procedure is provided for operation of the IBM Model 3101 computer terminal and the IBM Model 3102 printer. This terminal equipment will normally be used to access the Berlin Engineering Computer (IBM Model 370/3033) via the dial up telephone network. Other computer systems may be accessed if they are compatible with this equipment and if the terminal operator is familiar with them.

2. LICENSE REQUIREMENTS

N/A

3. FSAR REFERENCES

N/A

4. PLANT OPERATING REQUIREMENTS

N/A

5. PRE-REQUISITES

5.1 Basic familiarity with computer terminal operation.

5.2 Active TSO ID and password.

5.3 Emergency plan managers without a personal TSO ID should refer to SF 141.

6. PRE-CAUTIONS

6.1 Ensure that the terminal and printer are plugged into 120 VAC outlets.

6.2 Turn the power switch located on the left front of the CRT and the one located on the left front panel of the printer to the "ON" position (bar symbol depressed).

6.3 Verify that the "TEST/NORMAL" switch located at the right front of the CRT is in the "NORMAL" position.

6.4 Verify that the "AL", "ST", "RDL", and "DL" buttons are in the "OUT" position on the 212A Modem (located under the telephone 444-4705).

6.5 Verify that the "MC" and "TR" lamps are illuminated on the front panel of the 212A Modem.

6.6 Verify that the "HS" button is depressed (in the "IN" position) on the 212A Modem.

7. PROCEDURE

7.1 Establishing Terminal To Computer Connection

7.1.1 Depress the "TALK" button on the telephone

7.1.2 Pick up the telephone handset and dial a Berlin computer telephone number.

7.1.2.1 Berlin computer telephone numbers in order of preference:

7.1.2.1.1

7.1.2.1.2

7.1.2.1.3

7.1.2.1.4

7.1.2.1.5

7.1.2.1.6

7.1.2.1.7

7.1.3 Listen for the high pitched tone, depress the "DATA" button on the telephone and hang up the handset.

7.1.4 The terminal will display the following prompt on the CRT screen: "NUSCO ECS: ENTER TSO, VSPC OR CICS". Type in the requested mode (i.e. "TSO", typed without the quotes) followed by the $\boxed{\hookleftarrow}$ key to "ENTER" this data.

7.1.5 The terminal will respond with "ENTER LOGON ID-". Type in your ID as requested followed by the $\boxed{\hookleftarrow}$ key to "ENTER" it.

7.1.6 The terminal will respond with "ENTER PASSWORD-". Type in your PASSWORD as requested followed by the $\boxed{\hookleftarrow}$ key to "ENTER" it.

7.2 USING THE TSO TERMINAL

7.2.1 Use this terminal as you would any other TSO terminal with the following exceptions:

7.2.1.1 The "SEND" key does not work; always use the ↵ key to "ENTER" information.

7.2.1.2 Session Manger does not work on this terminal, therefore scrolling and erase keys (as well as PF keys) are not operable.

7.2.2 Refer to the "TSO USERS GUIDE" (Figure 8.1) for specific TSO operation.

7.2.3 Refer to the IBM Instruction (Figure 8.2 and 8.3) for specific terminal and printer operation.

7.3 USING THE TERMINAL PRINTER

7.3.1 The printer may be used in one of two modes:

7.3.1.1 Depress the "PRINT" key at the left edge of the keyboard to print a copy of the image currently displayed on the CRT.

7.3.1.2 Simultaneously depress the "ALT" and "PRINT" key to put the printer in a "Continuous Print" mode. In this mode it will print everything which is sent to the CRT screen. However, since the printer prints more slowly than the modem can receive data, the printer's buffer may fill up and some data may be lost when a large amount of data is continuously scrolled on the CRT. This "BUFFER FULL" condition will be indicated by the illumination of the "CHECK" lamp. This alarm may be reset by pushing up on the "RESET" switch on the front of the printer.

7.3.1.3 Simultaneously depress the "ALT" and "PRINT" keys a second time to remove the printer from the "Continuous Print" mode.

8. FIGURES AND OPERATIONAL DATA

Figure 8.1 - TSO USER'S GUIDE

Figure 8.2 - IBM 3101 DISPLAY TERMINAL DESCRIPTION

Figure 8.3 - IBM 3102 PRINTER DESCRIPTION

BAB:jms

Northeast Utilities Service Company
Engineering Computer Services

TSO / SPF

Introduction and User's Guide

FIGURE 8.1

January, 1982
James Oleksiw

GA18-2033-1
File No. S370/4300/8100/S1 - 09

Systems

IBM 3101 Display Terminal Description

IBM

FIGURE 8.2

GA18-2065-1
File No. S370/4300/8100/S1-09

Systems

IBM 3102 Printer Description

FIGURE 8.3

IBM

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4307 Rev. 0

Title Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation

Prepared By C. Conklin

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	R Ayel	3/9/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [✓]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [✓]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

PORC/SORC Meeting Number 82-09

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

3-15-82
Effective Date

SF-301
Rev. 5

Unit 1/Unit 2 Control Room
Closed Circuit Television (CCTV) System Operation

Page No.	Eff. Rev.
1 - 4	0

1. OBJECTIVE

To provide a procedure for the operation of the Unit 1 and Unit 2 Control Room CCTV System.

2. LICENSE REQUIREMENTS

None

3. REFERENCES

N/A

4. PLANT OPERATING REQUIREMENTS

N/A

5. PREREQUISITES

N/A

6. PRECAUTIONS

N/A

7. PROCEDURE

7.1 Unit 1 Control Room CCTV System

The Unit 1 Control Room may be viewed on the television monitor in the Technical Support Center (TSC) (The Unit 1 and Unit 2 Computer Rooms) and in the Emergency Operations Facility (EOF). The television camera for viewing the Unit 1 Control Room can be controlled from the TSC (Unit 1 Computer Room) as the EOF. There is no override function. Control will exist for whichever area controls first.

7.1.1 Television Camera operation from the TSC (Unit 1 Computer Room).

7.1.1.1 Turn the control panel power switch to the "ON" position.

7.1.1.2 Turn the television monitor power switch to the "On" position. Select "Unit 1" on the Unit 1/Unit 2 monitor switch.

7.1.1.3 Control the pan and tilt with th joystick. Joystick positions are "UP", "DOWN", "RIGHT" and "LEFT".

7.1.1.4 Control the contrast with the Iris buttons. Iris positions are "OPEN" and "CLOSE".

7.1.1.5 Control the forms with the Focus buttons. Focus positions are "IN" and "OUT".

7.1.1.6 Control the lens zoom with the Zoom buttons. Zoom positions are "FAR" and "NEAR".

7.1.1.7 Control rate of speed of all functions with the lens speed control knob.

7.1.1.8 To view the Unit 2 Control Room from the TSC (Unit 1 Computer Room), place the Unit 1/Unit 2 monitor switch to the "UNIT 2" position. This is a view function only, control remains at the TSC (Unit 2 Computer Room) as the EOF. The Unit 2 control panel power switch must be "ON" to receive a picture.

7.1.2 Television Camera Operation from the EOF.

7.1.2.1 Turn the control panel power switch to the "ON" position. The control panel power switch in the TSC (Unit 1 Computer Room) must be "ON" to receive a picture.

7.1.2.2 Turn the television monitor power switch to the "ON" position.

7.1.2.3 Control the camera as stated in steps 7.1.1.3 through 7.1.1.7.

7.2 Unit 2 Control Room CCTV System.

The Unit 2 Control Room may be viewed on the television monitor in the TSC (The Unit 1 and Unit 2 Computer Rooms) and the EOF. The television camera for viewing the Unit 2 Control Room can be controlled from the TSC (Unit 2 Computer Room) as the EOF. There is no override function. Control will exist for whichever area controls first.

7.2.1 Television Camera Operation form the TSC (Unit 2 Computer Room)

- 7.2.1.1 Turn the control panel power switch to the "ON" position.
- 7.2.1.2 Turn the television monitor switch to the "ON" position. Select "UNIT 2" on the Unit 1/Unit 2 monitor switch.
- 7.2.1.3 Control the camera as stated in steps 7.1.1.3 through 7.1.1.7.
- 7.2.1.4 To view the Unit 1 Control Room from the TSC (Unit 2 Computer Room), place the Unit 1/Unit 2 monitor switch to the "UNIT 1" position. This is a view function only. Control remains at the TSC (Unit 1 Computer Room) and the EOF. The Unit 1 Control Panel power switch must be "ON" to receive a picture.

7.2.2 Television Camera Operations from the EOF.

- 7.2.2.1 Turn the control panel power switch to the "ON" position. The control panel power switch in the TSC (Unit 2 Computer Room) must be "ON" to receive a picture.
- 7.2.2.2 Turn the television monitor power switch to the "ON" position.
- 7.2.2.3 Control the camera as stated in steps 7.1.1.3 through 7.1.1.7.

CC:jms

APPROVAL: E. J. Mroczka
Station Superintendent

DATE: 6-18-80

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4603 Rev. 1

Title Emergency Radiological Equipment Maintenance and Inspection

Prepared By A. G. Cheatham

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGCheatham	~~3/10/~~ AGC 3/9/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-09

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the dates below:

EJMroczka	3-11-82	3-18-82
Station Superintendent/Unit Superintendent	Approved Date	Effective Date

SF-301
Rev. 3

EMERGENCY RADIOLOGICAL EQUIPMENT
MAINTENANCE AND INSPECTION

PAGE NO.	Eff. Rev.
1 - 5	1

1. OBJECTIVE

1.1 To ensure that emergency equipment is available in proper quantities and is maintained in good working condition.

2. ACCEPTANCE CRITERIA

2.1 The minimum quantity of equipment is found at the locations specified on the inventory forms.

2.2 Radiological equipment is found to be in satisfactory working condition and has not deteriorated.

2.3 Respiratory Equipment has been inspected in accordance with SHP 4932.

2.4 Instrumentation has been calibrated in accordance with HP 904/2904.

3. REFERENCES

3.1 None

4. PREREQUISITES

4.1 None

5. INITIAL CONDITIONS

5.1 N/A

6. PRECAUTIONS

6.1 Any unit found deficient will be immediately repaired or removed from service until repairs are made.

6.2 Any inventory shortage will be corrected as soon as reasonably achievable. Any items removed from the kits for repair or replacement other than for routine calibration, should be noted on the kits.

6.3 All inventory and inspection records shall be maintained. Periodically, records will be forwarded to the Nuclear Plant Records Facility for permanent storage and retained in accordance with ACP-QA-10.04.

7. PROCEDURE

7.1 Technical Support Center, CPF Assembly Area, Security, Emergency Operations Facility, Control Room, and Radiological Kit Inspection

7.1.1 Check operability of tape recorders.

7.1.2 Update EDO books, plans and procedure manuals as necessary.

7.1.3 Check operability of TV/AM-FM Radio.

7.1.4 Check calibration due date on dosimeters.

7.1.5 Check operability of dosimeter chargers.

7.1.6 Check operability of calculators.

7.1.7 Perform radio check of two-way radios with Security. Good transmission and reception indicates operability. (Batteries should be used (Run Down) to increase the effectiveness and life of the battery).

7.1.8 Check batteries and source check the following and ensure they are within calibration:

7.1.8.1 Count rate meters.

7.1.8.2 Scalers.

7.1.8.3 Dose rate meters.

7.1.9 Ensure all air samplers are within calibration. If an appropriate power supply is available, check their operability.

7.1.10 Check emergency lanterns, replace batteries if necessary.

7.1.11 Inspect respiratory protection equipment in accordance with SHP 4932.

7.1.12 Check operability of the PING-3 air monitor.

7.1.13 Check operability of the VAMP ARM using check source.

7.1.14 Check date on TLD badges, replace if they are more than 3 months old.

7.1.15 Check stop watch. Restore in run condition to relieve spring tension.

7.1.16 Check strobe light by connecting it to a 12 VDC power supply.

7.1.17 Check operability of portal monitor (CPF Assembly Area only).

7.1.18 Check operability of Megaphones (Team 2 and CPF Assembly Area only).

7.1.19 Ensure battery operated instruments are restored to the "OFF" position.

7.1.20 Emergency kits, Teams 1-5 should have a NNECO seal attached to each kit.

7.1.21 Ensure all lockers and equipment are properly restored.

7.1.22 Complete Check-off/Inventory lists Form EPIP 4603-1, 4603-2, 4603-3, 4603-4, 4603-5 and 4603-8.

7.2 Acid Spill Kits

7.2.1 Inspect Masks in accordance with SHP 4932.

7.2.2 Complete Form EPIP 4603-9.

7.3 Ambulance Kit Inspection

7.3.1 Check dosimeter calibration dates.

7.3.2 Check date on TLD badges. Replace if more than 3 months old.

7.3.3 Check dosimeter charger for operability.

7.3.4 Complete Inventory Sheet Form EPIP 4603-7.

7.4 First Aid Emergency Rescue Kits

7.4.1 Inventory of first aid kits.

7.4.1.1 Check calibration sticker and operability of the count rate meter.

7.4.1.2 Complete Form EPIP 4603-6 (Items 1-10) and reseal kit.

7.4.2 Emergency Film Badges

7.4.2.1 Check date on TLD badges. Replace if more than 3 months old.

8. RESTORATION

8.1 N/A

9. FORMS

EPIP 4603-1	Emergency Operations Facility Radiological Kits
EPIP 4603-2	Emergency Operations Facility - Inventory List
EPIP 4603-3	Unit Control Rooms Emergency Equipment
EPIP 4603-4	Unit Technical Support Center Rad. Equip. Checklist.
EPIP 4603-5	CPF Assembly Area Radiological Kit.
EPIP 4603-6	First Aid Emergency Rescue Kits and Emergency Dosimetry.
EPIP 4603-7	Ambulance Kit Inventory.
EPIP 4603-8	Emergency Equipment Inventory List.
EPIP 4603-9	Acid Spill Kits.

AGC:jms

E.H. Meyer   12-14-81
Form Approved By Station Superintendent   Effective Date

STATION PROCEDURE CHANGE FORM

A. IDENTIFICATION

PROCEDURE NUMBER OP-501   REV. 2   CHANGE NO. 1

PROCEDURE TITLE INCIDENT ASSESSMENT AND CLASSIFICATION - UNIT 1

INITIATED BY A.G. CHEATHAM

B. CHANGE ① ADD ATTACHED PAGE BEHIND PAGE 12 OF REV. 2 OF PROCEDURE
② ON ADDED PAGE UNDER "GENERAL EMERGENCY" CHANGE AS NOTED: 1. UNIT 1 STACK GAS MONITOR OFFSCALE "AND"
2. EMT'S DETECT LEVELS OF:

REASON FOR CHANGE
① PAGE OMITTED FROM REV. 2
② CHANGE WORD "OR" TO "AND" DUE TO OFF-SITE DOSE RATES HAVE TO BE VERIFIED BY EMT'S PRIOR TO DECLARING AN ALPHA INCIDENT

D. NON-INTENT CHANGE AUTHORIZATION (N/A for Intent Changes)

TITLE	SIGNATURE	DATE
Shift Supervisor (on duty)		

E. REVIEWED

Department Head   A.G. Cheatham   RADIOLOGICAL SERVICES SUPV.

Unreviewed Safety Question Evaluation Documentation Required:
(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes)   [ ] YES   [X] NO

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes)   [ ] YES   [X] NO

F. PORC/SORC RECOMMENDS APPROVAL (or confirmation of interim change within 14 days)

PORC/SORC Meeting Number PORC 1-82-20

G. APPROVAL AND IMPLEMENTATION

The change is hereby implemented and is effective this date, except for interim changes which were implemented and effective per the Authorization of D above.

R. Herbert   3/16/82
Station Superintendent/Unit Superintendent   Date

SF-302
Rev. 5
Page 1 of 1

NRC CLASS	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
INCIDENT DESCRIPTION				
VI. Release of Radioactivity/ High Radiation Levels (contd)	See Previous Page	See Previous Page	2. (contd.) 2. a. Dose rate greater than 50 mrem/hr or b. I-131 concentrations greater than $5x10^{-7}$ uCi/cc. CHARLIE-TWO	2. (contd.) 2. a. Dose rates greater than 1 rem/hr b. I-131 concentrations greater than $1x10^{-5}$ uCi/cc. BRAVO Radiation monitors detect levels corresponding to greater than 5 rem whole body dose or greater than 25 rem thyroid dose at the site boundry. 1. Unit 1 stack gas monitor offscale* ~~or~~ AND 2. EMT's detect levels of: a. Dose rates greater than 5 rem/hr. b. I-131 concentrations greater than $5x10^{-5}$ uCi/cc. ALPHA *If necessary, dispatch EMT #1 to determine I-131 concentrations and whole body dose rate at site boundary.

4000 SERIES

EMERGENCY PLAN IMPLEMENTING FORMS

NUMBER	TITLE	REV.	EFF. Date
4101-1	Unusual Event Checklist Shift Supervisor/Designee	0	7/15/81
4101-2	Unusual Event Checklist Shift Technical Advisor/SSSA	1	9/15/81
4101-3	Unusual Event Checklist Duty Officer	0	7/15/81
4102-1	Alert Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4102-2	Alert Emergency Shift Technical Advisor/SSSA	1	9/15/81
4102-3	Alert Emergency Duty Officer/Manager of TSC	0	7/15/81
4102-4	Alert Emergency Director of Station Emergency Operations	1	2/19/82
4102-5	Alert Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4102-6	Alert Emergency Manager of Public Information	0	7/15/81
4102-7	Alert Emergency Manager of External Communication	1	9/15/81
4102-8	Alert Emergency Manager of Security	1	1/6/82
4102-9	Alert Emergency Manager of On-Site Resources	2	10/26/81
4102-10	Alert Emergency Manager of Engineering Support	0	7/15/81
4103-1	Site Area Emergency Shift Supervisor/Manager of Control Room OPS	2	4/13/82
4103-2	Site Area Emergency Shift Technical Advisor/SSSA	1	9/15/81

4103-3	Site Emergency Duty Officer/Manager of TSC	0	7/15/81
4103-4	Site Area Emergency Director of Station Emergency Operations	1	2/19/82
4103-5	Site Area Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4103-6	Site Area Emergency Manager of Public Information	0	7/15/81
4103-7	Site Area Emergency Manager of External Communication	1	9/15/81
4103-8	Site Area Emergency Manager of Security	1	1/6/82
4103-9	Site Emergency Manager of On-Site Resources	2	10/26/81
4103-10	Site Area Emergency Manager of Engineering Support	0	7/15/81
4104-1	General Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4104-2	General Emergency Shift Technical Advisor/SSSA	1	9/15/81
4104-3	General Emergency Duty Officer/Manager of TSC	0	7/15/81
4104-4	General Emergency Director of Station Emergency Operations	1	2/19/82
4104-5	General Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4104-6	General Emergency Manager of Public Information	0	7/15/81
4104-7	General Emergency Manager of External Communication	1	9/15/81

4104-8	General Emergency Manager of Security	1	1/6/82
4104-9	General Emergency Manager of On-Site Resources	2	10/26/81
4104-10	General Emergency Manager of Engineering Support	0	7/15/81
4201-1	Worksheet #1 Noble Gas Release Rate	1	4/13/82
4201-2	Worksheet #2 Iodine-131 Release Rate	0	7/15/81
4201-3	Worksheet #3 Meteorological Data	1	12/8/81
4201-4	Worksheet #4 Noble Gas Dose	0	7/15/81
4201-5	Worksheet #5 Thyroid Dose	0	7/15/81
4201-6	Worksheet #6 Doses Vs. Distance	2	1/5/82
4201-7	Dose Calculation Data Sheet	0	7/15/81
4201-8	Air Sample Activity Concentrations Worksheet	0	7/15/81
4201-9	Radiation Dose Rate Worksheet	0	7/15/81
4202-1	Millstone Post Accident Sampling Data Sheet	0	12/8/81
4202-2	Post Accident Sample Data Sheet Stack/Vent Particulate and/or Charcoal Release	0	3/1/82
4202-3	Post Accident Sample Data Sheet Drywell/Containment Particulate and/or Charcoal Activity	0	3/1/82
4202-4	Post Accident Sample Data Sheet Stack/Vent Gaseous Release	0	3/1/82
4202-5	Post Accident Sample Data Sheet Drywell/ Containment Gaseous Activity	0	3/1/82
4202-6	Post Accident Sampling Reactor Coolant Isotopic Worksheet	0	3/1/82
4202-7	Post Accident Sampling Reactor Coolant Chemical Analysis	0	3/1/82

4203-1	EMT #1 Worksheet	1	12/8/81
4204-1	EMT #2 Worksheet	0	7/15/81
4205-1	EMT #3 Data Sheet	0	7/15/81
4205-2	Air Sample Work Sheet	0	7/15/81
4206-1	Offsite EMT Data Sheet	0	7/15/81
4206-2	Air Sample Work Sheet	0	7/15/81
4208-1	First Aid Kits	0	7/15/81
4208-2	Basket & Stretchers	0	7/15/81
4208-3	Personnel Contamination Form	0	7/15/81
4209-1	Emergency Re-Entry Checklist	0	7/15/81
4212-1	Worksheet #1 MP-1 Drywell Curie Level Estimation	0	2/19/82
4212-2	Worksheet #2 MP-2 Containment Curie Level Estimation	0	2/19/82
4601-1	Page/Siren System Evacuation Alarm Test	0	7/15/81
4602-1	Telephone Communications Test	1	2/10/82
4603-1	Emergency Operations Facility Radiological Kits	1	4/13/82
4603-2	Emergency Operations Facility Access Road - Inventory List	2	4/13/82
4603-3	Unit Control Rooms Emergency Equipment	2	4/13/82
4603-4	Unit 1 Technical Support Center Radiological Equipment Checklist	1	12/21/81
4603-5	CPF Assembly Area - Radiological Kit	2	4/13/82
4603-6	First Aid Emergency Rescue Kits and Emergency Dosimetry	1	12/21/81
4603-7	Ambulance Kit Inventory	0	7/15/81

4603-8	Emegency Equipment Inventory List	1	4/13/82
4603-9	Acid Spill Kits	1	12/21/81
4605-1	Emergency Operations Facility Ventilation System Filter Test	0	7/15/81
4606-1	EOFEDG Operability Test	0	7/15/81
4608-1	E.O.F. Air Lock OP Test	0	7/15/81
4609-1	E.O.F. Fire Detection Test	0	7/15/81
4610-1	Unit 1/Unit 2 Data Sheet	3	11/26/81
4610-2	Unit 2 Data Sheet	Cancelled 9/1/81 (SORC 81-38)	
4611-1	PA Speaker Inspection Form	0	7/15/81
4612-1	Tri-Town Radio Test-Unit 1 Control Room	0	7/15/81
4612-2	Tri-Town Radio Test-EOF	0	7/15/81
4612-3	State Police Radio Test	0	7/15/81
4612-4	Waterford Police Radio Test	0	7/15/81
4613-1	Radiopage - Daily Test Log Sheet	1	11/24/81

Approved: [signature] Eff. Date: 4-13-82 SORC Mtg. No. 82-12

ALERT EMERGENCY

Shift Supervisor/Manager of Control Room OPS
Emergency Organization Member (Title)

Date

STEP	ACTION	TIME	INITIAL
1.	Sound the station evacuation siren for one minute. Repeat as necessary.		
2.	Announce that an ALERT emergency exists and the unit status over the P. A. System.		
3.	Carry out applicable unit operational and/or emergency procedure.	N/A	N/A
4.	Contact the Duty Officer.		
5.	Contact both Shift Technical Advisors for accident assessment and communications assistance.		
6.	Notify Security at the CAS (yellow intercom Dial or Ext. or the SAS (yellow intercom Dial or Ext. of the nature and location of the emergency.		
7.	Direct the SS of the non-affected Unit to notify by telephone the on-call Director and Managers. Direct the SS of the non-affected Unit to assist the STA/SSSA in notifying and calling in EMT's and the NNECO emergency organization managers and directors who are not on call. (Until relieved by the Manager of On-Site Resources). (See Station Form 120)		
8.	Direct the SS of the non-affected unit to check time sheet for the affected unit operations. Verify through affected units SS/SCO that all operations personnel of the affected unit are safe. Notify Security at Ext. of the results, including the names of personnel on-duty from both units.		
9.	Dispatch an EMT team comprised of the on-shift Health Physics Technician and a PEO from the non-affected unti to survey the area around the unit (if necessary). Use the On-site Team #1 kit provided for this purpose located in the Control Room.		

ALERT EMERGENCY

Shift Supervisor/Manager of Control Room Operations
Emergency Organization Member (Title)

Date

STEP	ACTION	TIME	INITIALS
10.	Escalate to a more severe class or de-escalate, if necessary.	N/A	N/A
11.	Continue to assess the condition of the unit.	N/A	N/A
12.	Take actions necessary to bring the emergency under control.	N/A	N/A
13.	Transfer responsibilities as Director of SEO to the on-call Director upon his arrival at the EOF.		
14.	Assume position of Manager of Control Room Operations and request any required support from the Manager of Technical Support or the Director of Station Emergency Operations.		
15.	Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take corrective actions as necessary	N/A	N/A
16.	Upon being notified by the Director of Station Emergency Operations, announce over P. A. System to terminate the ALERT Emergency.		
17.	Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.	N/A	N/A
18.	Consider overriding certain security doors to allow expedient resolution of any unit problem.	N/A	N/A

Approved: Efflurgka Date: 4-13-82 SORC Mtg. No. 82-12

SITE AREA EMERGENCY

Shift Supervisor/Manager of Control Room OPS
Emergency Organization Member (Title)

Date

STEP	ACTION	TIME	INITIAL
1.	Sound the station evacuation siren for one minute. Repeat as necessary.		
2.	Announce that a site area emergency exists and the unit status over the P. A. System.		
3.	Carry out applicable unit operational and/or emergency procedures.	N/A	N/A
4.	Contact the Duty Officer.		
5.	Contact both Shift Technical Advisors for accident assessment and communications assistance.		
6.	Notify Security at the CAS (yellow intercom Dial or Ext) or the SAS (yellow intercom Dial , or Ext.) of the nature and location of the emergency.		
7.	Direct the SS of the non-affected unit to notify by telepone the on-call Directors and Managers. Direct the SS of the non-affected unit to assist the STA/SSSA in notifying and calling in EMT's and the NNECO emergency organization managers and directors who are not on call. (Until relieved by the Manager of On-Site Resources). (See Station Form 120).		
8.	Direct the SS of the non-affected unit to check time sheet for the affected unit operations. Verify through affected units SS/SCO that all operations personnel of the affected unit are safe. Notify Security at Ext. of the results, including the names of personnel on-duty from both units.		
9.	Dispatch an EMT team comprised of the on-shift Health Physics Technician and a PEO from the non-affected unit to survey the area around the unit (if necessary). Use the On-site Team #1 kit provided for this purpose located in the Control Room.		

SITE AREA EMERGENCY (CONT'D)

Shift Supervisor/Manager of Control Room Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
10.	Escalate to a more severe class or de-escalate if necessary.	N/A	N/A
11.	Continue to assess the condition of the unit.	N/A	N/A
12.	Take actions necessary to bring the emergency under control.	N/A	N/A
13.	Transfer responsibilities as Director of SEO to the on call Director upon his arrival at EOF.		
14.	Assume position of Manager of Control Room Operations and request any required support from the Manager of Station Technical Support or the Director of Station Emergency Operations.		
15.	Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take corrective actions as necessary.		
16.	Upon being notified by the Manager of Site Emergency Operations, announce over P. A. System to terminate the Site Area Emergency.		
17.	Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.		
18.	Consider overriding certain security doors to allow expedient resolution of any unit problem.		

Approved: E.J. Mroczka Date: 4-13-82 SORC Mtg. No. 82-12

GENERAL EMERGENCY

Shift Supervisor/Manager of Control Room OPS
Emergency Organization Member (Title)

____
Date

STEP	ACTION	TIME	INITIAL
1.	Sound the station evacuation siren for one minute. Repeat as necessary.	____	____
2.	Announce that a general emergency exists and the unit status over the P. A. System.	____	____
3.	Carry out applicable Unit Operational and/or emergency procedures.	N/A	N/A
4.	Contact the Duty Officer.	____	____
5.	Contact both Shift Technical Advisors for accident assessment and communications assistance.	____	____
6.	Notify Security at the CAS (yellow intercom Dial or Ext. or the SAS (yellow intercom Dial , or Ext. of the nature and location of the emergency.	____	____
7.	Direct the SS of the non-affected Unit to notify by telephone the on-call Director and Managers. Direct the SS of the non-affected Unit to assist the STA/SSSA in notifying and calling in EMT's and the NNECO emergency organization managers and directors who are not on call. (Until relieved by the Manager of On-Site Resources). (See Station Form 120)	____	____
8	Direct the SS of the non-affected unit to check time sheet for the affected unit operations. Verify through affected units SS/SCO that all operations personnel of the affected unit are safe. Notify Security at Ext. of the results, including the names of personnel on-duty from both units.	____	____
9.	Dispatch an EMT team comprised of the on-shift Health Physics Technician and a PEO from the non-affected unit to survey the area around the unit (if necessary). Use the On-site Team #1 kit provided for this purpose located in the Control Room. Team #1 may also be used to survey the Site boundary to aid in classification of the emergency.	____	____

GENERAL EMERGENCY (CONT'D)

Shift Supervisor/Manager of Control Room Operations
Emergency Organization Member (Title)

Date ______________

STEP	ACTION	TIME	INITIALS
10.	Continue to assess the condition of the unit.	N/A	N/A
11.	Take actions necessary to bring the emergency under control.	N/A	N/A
12.	Transfer responsibilities as Director of SEO to the on-call Director upon his arrival at EOF.		
13.	Assume position of Manager of Control Room Operations and request any required support from the Manager of Technical Support or the Director of Station Emergency Operations.		
14.	Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take corrective actions as necessary.	N/A	N/A
15.	Upon being notified by the Manager of Site Emergency Operations, announce over P. A. System to terminate the General Emergency.		
16.	Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.	N/A	N/A
17.	Consider overriding certain security doors to allow expedient resolution of any unit problem.	N/A	N/A

APPROVAL: E. J. Mroczka DATE: 4-13-82 SORC MTG. NO. 82-12

WORKSHEET #1
NOBLE GAS RELEASE RATE

DATE: ______________ TIME: ______________ NAME: ______________

1. MP1 Stack Monitor

   ______ cps $\times 10^{-4}$ = ______ (1) Ci/sec

2. Interim MP1 Stack High Range ARM - MP1 Accident

   ______ mR/HR $\div$ 2C (Page 2) = ______ (2) Ci/sec

3. Interim MP1 Stack-High Range ARM - MP2 Accident

   ______ mR/HR $\times 5 \times 10^{3}$ = ______ (3) Ci/sec

4. MP2 Stack Monitor

   ______ cpm $\times 10^{-5}$ = ______ (4) Ci/sec

5. Interim MP2 Stack Duct-High Range ARM

   ______ R/HR $\times$ 50 = ______ (5) Ci/sec

6. MP2 Atmospheric Steam Dump or Safeties = ______ (6) Ci/sec

7. Grab Sample Results = ______ (7) Ci/sec

8. Other (Default Value If No Information Available)
   Value from Step 3.2.7 = ______ (8) Ci/sec

9. Total Noble Gas Release Rate = ______ (9) Ci/sec
   (Sum (1) through (8))

MP-1 STACK ARM FACTOR WORKSHEET

STABILITY CLASS	INTERIM HIGH RANGE STACK MONITOR**
A (ΔT 374 $\leq$ -3.5^{O}F)	13 mr/hr per Ci/Sec @base of stack
B (ΔT 374 -3.4 to -3.2)	2.0 mr/hr per Ci/Sec @base of stack
C (ΔT 374 -3.1 to -2.8^{O}F)	1.8 mr/hr per Ci/Sec @base of stack
D (ΔT 374 -2.7 to -1.0^{O}F)	1.5 mr/hr per Ci/Sec @base of stack
E (ΔT 374 -0.9 to 2.8^{O} F)	1.4 mr/hr per Ci/Sec @base of stack
F (ΔT 374 $\geq$ 2.9^{O}F)	1.3 mr/hr per Ci/Sec @base of stack

1. Stability Class________

2. Interim High Range Stack Monitor Factor (above)________Mr/Hr per Ci/Sec
(2A)

3. Wind Speed __________M/Sec
(2B)

4. Release Rate Stack Factor:

2A ÷ 2B x 10 = __________ Mr/Hr per Ci/Sec.
(2C)

* Dose rates assume a prompt noble gas mix with a 0.25 hr decay

** At a wind speed of 10 m/sec (22mph); for other wind speeds adjust factor by multiplying by:

10 m/sec ÷ actual 374 ft. wind speed in m/sec
(22 mph ÷ actual 374 ft. wind speed in mph)

Approved By: E.J. Morylka Date: 4-13-82 SORC Mtg. No. 82-12

EMERGENCY OPERATIONS FACILITY

RADIOLOGICAL KITS

	TEAM 2			
	Required Qty.	As Found Qty.	Missing Qty.	Date Returned
Portable Count Rate Meter	2			
Coin Envelopes	12			
PS-2-2/HP 210 or Equiv.	1			
RO-2A or Equip.	1			
Dosimeters 0-200MR	4			
Dosimeters 0-5000MR	4			
Dosimeter Charger	1			
Bullhorn	1			
Portable Air Sampler (12 Volt)	1			
Yellow Strobe Light	1			
Rain Gear, (Sets)	4 Sets			
Batteries, Spares for Bullhorn	1 Set			
Batteries, Spares for Survey Meters	4 Sets			
Source Plaque	1			
Film or TLD Badges	4			
Smear Discs and Folders (Pkg of 12)	1			
Pens, Ballpoint	2			
Marker, Felt Tip	2			
Bags 6" x 12", Clear	6			
Stopwatch	1			
Barrier Tape	2			
Tape, Yellow	2			
Forceps	1			
Filters, Particulate (Pkg of 50)	1			
Batteries, Spares for Charger	1 Set			
Form EPIP 4204-1	12			
Procedure EPIP 4204, 4207	1			
Bags, Clear Plastic 4" x 6"	12			
Silica Gel Cartridges	12			
Calculator and Extra Battery	1			
Screwdriver	1			
Surgical Gloves, (Pairs)	6			
Stapler	1			
Box of Staples	1			

Inventoried By ______________________ Date ______________

Reviewed By ______________________ Date ______________

EMERGENCY OPERATIONS FACILITY

RADIOLOGICAL KITS

TEAM 3

ITEM DESCRIPTION	As Found	Missing	Date Item Ret'd
PS-2-2 Scaler Meter and Cord or Equivalent	1		
HP 210 Detector	1		
Bags, Plastic, Clear 4" x 6"	12		
RO-2 or Equiv.	1		
Dosimeters 0-200MR	2		
Dosimeters 0-5000MR	2		
Dosimeter Charger	1		
Batteries, Spares for Charger	1 set		
Portable Air Sampler (12V)	1		
Filters, Particulate (Pkg of 50)	1		
Forceps, Filter Handling	1		
Stopwatch	1		
Tape	1		
Bags, Plastic Clear 6" x 12"	6		
Scissors	1		
Marker, Felt Tip, Black	2		
Pens (Ballpoint)	2		
Smear Discs and Folders (Pkg of 25)	1		
Film or TLD Badges	2		
Source Plaque	1		
Instructions, Set (EPIP 4905,4207)	1		
Batteries, Spares for Survey Meters	2 sets		
Rain Gear, Sets	2		
Coin Envelopes	12		
Form EPIP 4205-1 and 4205-2	12		
Silica Gel Cartridges	12		
Calculator and Extra Battery	1		
Screwdriver	1		
Surgical Gloves, (Pairs)	6		
Stapler	1		
Box of Staples	1		
Map of Sample Locations	1		

Inventoried By ____________________ Date ________________

Reviewed By ______________________ Date ________________

EMERGENCY OPERATIONS FACILITY

RADIOLOGICAL KITS

ITEM DESCRIPTION		TEAM 4 As Found	TEAM 4 Missing	TEAM 4 Date Item Ret'd	TEAM 5 As Found	TEAM 5 Missing	TEAM 5 Date Item Ret'd
PS-2-2 Scaler Meter and Cord or Equivalent	1						
HP 210 Detector	1						
Bags, Plastic, Clear 4" x 6"	12						
RO-2 or Equiv.	1						
Dosimeters 0-200MR	2						
Dosimeters 0-5000MR	2						
Dosimeter Charger	1						
Batteries, Spares for Charger	1 Set						
Portable Air Sampler (12V)	1						
Filters, Particulate (Pkg of 50)	1						
Forceps, Filter Handling	1						
Stopwatch	1						
Tape	1						
Bags, Plastic Clear 6" x 12"	6						
Scissors	1						
Marker, Felt Tip, Black	2						
Pens (Ballpoint)	2						
Smear Discs and Folders (Pkg of 25)	1						
Film or TLD Badges	2						
Source Plaque	1						
Instructions, Set (EPIP 4206, 4207)	1						
Batteries, Spares for Survey Meters	2 Sets						
Rain Gear, Sets	2						
Coin Envelopes	12						
Form EPIP 4206-1 and Form 4206-2	12						
Silica Gel Cartridges	12						
Calculator and Extra Battery	1						
Screwdriver	1						
Surgical Gloves, (Pairs)	6						
Stapler	1						
Extra Staples (Box)	1						
Map of Sample Locations	1						

Inventoried By ______________________ Date ______________

Reviewed By ______________________ Date ______________

Approved By: E J Mroczka Date: 4-13-82 SORC Mtg. No. 82-12

EMERGENCY OPERATIONS FACILITY - ACCESS ROAD

INVENTORY LIST

Item	Qty.	As Found	Missing	Date Replaced
EMERGENCY DIRECTOR				
Emergency Plan	1			
Tape Recorder	1			
Logbook	1			
EDO Book	1			
Telephone Directory (N.U.)	1			
N.U. Special Directory	1			
COMMUNICATIONS MANAGER				
Tape Recorder	1			
Radio (AM-FM)	1			
Logbook	1			
Telephone Directory (N.U.)	1			
N.U. Special Directory	1			
MANAGER, RADIOLOGICAL CONSEQUENCE ASSESSMENT				
Calculators	10			
Tape Recorder	3			
Dosimeters (0-1R)	50			
Key, Emergency Telephone Box	1			
Film or TLD Badges	50			
Diffusion Map	1			
Stopwatch	3			
Ballpoint Pens	20			
Telephone Directory (N.U.)	1			
HP 4900 Procedures	1 Set			
HP 900/2900 Procedures	1 Set			
Tape Recorder Tapes (90 Min.)	10			

Inventoried By ______________________ Date ______________

Reviewed By ______________________ Date ______________

EMERGENCY OPERATIONS FACILITY - ACCESS ROAD

INVENTORY LIST

Item	Qty.	As Found	Missing	Date Replaced
Area Street Map	2			
Logbook	1			
Parallel Guides; Set	1			
Pads of Paper	2			
Pencil, China Marking	2			
Radiation Work Permits	20			
Forms EPIP 4201-1 Thru 4201-9	12 Sets			
Copy of 10 CFR Parts 1-100	1			
Dosimeter Charger	2			
Spare Batteries for Charger	2 Sets			
Spare Batteries for Tape Recorder	5 Sets			
Millstone Personnel Roster	1			
RMC Manual	2			
Emergency Plan (Millstone)	2			
State Emergency Plan	2			
EDO Book	1			
Form EPIP 4205-1 and 4205-2	12 ea.			
Dosimeter Issue Forms	50			

Inventoried By ______________________ Date ______________

Reviewed By ______________________ Date ______________

EMERGENCY OPERATIONS FACILITY - ACCESS ROAD

INVENTORY LIST

Item	Qty.	As Found	Missing	Date Replaced
LOCKER # 1				
Respirators with charcoal cannisters	50			
LOCKERS #2				
110 Volt Air Samplers	5			
12 Volt Air Samplers	3			
Silica Gel Iodine Cartridge	100			
Particulate Filters	100			
LOCKER #3				
E140N/HP210 or Equiv	6			
RO2A or Equiv	5			
PS-2-2/HP210 or Equiv	2			
Teletectors or Eqiv	8			
Source Placques	2			
Screw Driver	1			
9-Volt Batteries	40			
D-Cell Batteries	22			
Spare Batteries for Teletectors/Equiv	8 (Sets)			
LOCKER #4				
EMT Kits 2,3,4,&5				
LOCKER #5				
Respirators with charcoal cartridges	10			
Complete Sets of P.C.'s	20			
Emergency Lanterns	5			
Portable Radios	11			
Roof Mount Antenna	6			
Vehicle Keys (4-Sets)	4			
Extension Power Cords (50')	4			

Inventoried By ____________________ Date ______________

Reviewed By ____________________ Date ______________

EMERGENCY OPERATIONS FACILITY - ACCESS ROAD

INVENTORY LIST

Item	Qty.	As Found	Missing	Date Replaced
LOCKER #6				
Box Tide Detergent	1			
Box Corn Meal	1			
Cans Shaving Cream	8			
Bars Lava Soap	20			
Bottles Shampoo	10			
Bars Ivory Soap	42			
Razors	18			
First Aid Kits	12			
Cloth Scissors	1			
Brushes	24			
Disposable Towels (Boxes)	4			
Pkg. of Q-Tips	1			
Urine Cups	30			
Surgical Gloves, (Boxes)	2			
Blankets	6			
LOCKER #7				
Manager of Site Eng. Support EDO Book	1			
Manager of Site Eng. Support Telephone Directory	1			
Manager of Site Eng. Support Log Book	1			
Manager of Security EDO Book	1			
Manager of Security Telephone Book	1			
Manager of Security Log Book	1			
Manager of On-Site Resources EDO Bk.	1			
Manager of On-Site Resources Telephone Directory	1			
Manager of On-Site Resources Log Book	1			
Manager of On-Site Resources INPO Resource Man.	1			
Manager of Public Information EDO Bk	1			
Manager of Public Information Log Bk	1			
Manager of External Communications EDO	1			
Manager of External Communications Log Book	1			
Spare Battery Paks for Portable Radios	6			

Inventoried By ____________________ Date ______________

Reviewed By ____________________ Date ______________

EMERGENCY OPERATIONS FACILITY - ACCESS ROAD

INVENTORY LIST

Item	Qty.	As Found	Missing	Date Replaced
LOCKER #8				
Emergency Lanterns	15			
Plastic Bags 24" x 24" (Roll)	1			
LOCKER #9				
Smear Discs (Box)	8			
Smear Folders (Box)	8			
Rad Ribbon (Rolls)	20			
Yellow Tape (Rolls)	12			
Vinyl Gloves (Pr)	50			
Cotton Gloves (Pr)	50			
Scissors	6			
Radiation Area Signs	20			
High Radiation Area Signs	20			
Contaminated Area Signs	20			
Airborne Radioactivity Signs	20			
Hoods	50			
Booties, Plastic (Pr)	50			
Step-off Pads	10			
Radioactive Material Stickers/ Labels	50			
Ball Point Pens	36			
Paper Suits	75			
SUPPLEMENTARY EQUIPMENT				
Scott Air Paks	12			
Spare Air Pak Bottles	50			
Ping-3 Air Monitor	1			
Area Rad Monitor (Vamp)	1			
4000 Series EPIP Procedures	1			
FSAR Vol (1,2,3,&4 = Set)	1			
Friskers for Entrances to EOF	2			
Cots	6			

Inventoried By ______________________ Date __________________

Reviewed By ________________________ Date __________________

Approved By [signature] Date 4-13-82 SORC Mtg. No. 82-12

UNIT CONTROL ROOMS EMERGENCY EQUIPMENT

( ) Unit 1 Control Room ( ) Unit 2 Control Room

TEAM 1 KIT	Req. Qty.	As Found	Missing	Date Returned
Dosimeters 0-200MR	2			
RO-2A or Equivalent	1			
Clipboard with EPIP 4203, 4207	1			
High Range Dosimeters (0-5R)	2			
Film or TLD Badges	2			
Respirators with Charcoal Canisters	2			
Pens	2			
Plastic Booties, Pairs	8			
Cotton Gloves, Pairs	8			
Surgical Gloves, Pairs	8			
Paper Coveralls, Sets	4			
Rain Gear, Sets	4			
Dosimeter Charger	1			
Batteries, Spares for Charger	1 Set			
Batteries, Spares for Meters	2 Sets			
Survey Forms (13 Pages)	1 Set			
Smears (Pkg of 50)	1			
Form EPIP 4203-1	12			
EMERGENCY LOCKER				
Radios (Operable) Unit 1 Only	1			
EPIP Forms 4205-2	5			
Coin Envelopes	5			
Plastic Bags (6' x 12")	5			
Forceps	1			
Air Sampler (110V)	1			
RAD III or Equivalent	1			
PS-2-2/HP 210 or Equivalent	1			
Dosimeters (0-5R)	10			
Dosimeter Charger	1			
P.C.'s Complete	10			
Respirators with Charcoal Canisters	10			
Scott Air Paks	2			
Particulate Filters (Pkg of 12)	1			
Batteries, Spares for Survey Meters	3 Sets			

UNIT CONTROL ROOMS EMERGENCY EQUIPMENT

( ) Unit 1 Control Room ( ) Unit 2 Control Room

	Req. Qty.	As Found	Missing	Date Returned
Camera	1			
Stopwatch	1			
Calculator	1			
Source Placque	1			
Batteries, Spares for Charger	1 Set			
Silica Gel Cartridges	12			
Pens	2			
Teletector or Equivalent	1			
INSTALLED EQUIPMENT				
PING-3 CAM	1			

Inventoried By ______________________ Date ______________

Reviewed By ______________________ Date ______________

APPROVED *E. J. Mroczka* DATE *4-13-82* SORC Mtg. No. *82-12*

CPF ASSEMBLY AREA

RADIOLOGICAL KIT

TEAM 2

ITEM DESCRIPTION	Qty	As Found	Missing	Date Item Ret'd
Coin Envelopes	12			
PS-2-2 Scaler Meter and cord or Equiv.	1			
HP 210 Detector	1			
Bags,Plastic, Clear 4" x 6"	12			
RO-2A or Equiv.	1			
Dosimeters 0-200MR	4			
Dosimeters 0-5000MR	4			
Dosimeters Charger	1			
Batteries, Spares for Charger	1 set			
Portable Air Sampler (12V)	1			
Filters, Particulate (Pkg of 50)	1			
Forceps, Filter Handling	1			
Stopwatch	1			
Yellow Tape	2			
Barrier Tape	2			
Bags, Plastic, Clear 6" x 12"	6			
Marker, Felt Tip, Black	2			
Pens	2			
Form EPIP 4904-1	12			
Smear Discs and Folders (Pkg of 25)	1			
Film or TLD Badges	4			
Source Plaque	1			
Instruction, Set (EPIP 4204, 4207)	1			
Batteries, Spares for Survey Meters	4 sets			
Rain Gear, Sets	4			
Bullhorn	1			
Batteries, Spares for Bullhorn	1 set			
Stapler	1			
Portable Count Rate Meter	2			
Silica Gel Cartridges	12			
Calculator and Extra Battery	1			
Screwdriver	1			
Surgical Gloves (pairs)	6			
Box of Extra Staples	1			

Inventoried By________________ Date____________

Reviewed By________________ Date____________

APPROVAL: [signature] DATE: 4-13-82 SORC MTG. NO. 82-12

EMERGENCY EQUIPMENT INVENTORY LIST

CPF ASSEMBLY AREA

	Qty.	As Found	Missing	Date Returned
Ball point pens	20			
Megaphone	1			
Dose Rate Meter or A.R.M 1	1			
Frisker (SML-2 or Equiv)	1			
Portal Monitor	1			
Respirators with Charc. Cartridges	15			
Emergency Lanterns	5			
Full Sets of P.C.'s	30			
Ping-3 CAM	1			
Production Test Office				
EDO Books	2			
Logbooks	2			
First Aid Area				
[illegible]de (Box)	1			
Cornmeal (Box)	1			
Lava Soap (Bars)	8			
Shampoo (Bottles)	6			
Ivory Soap (Bars)	24			
Razors	10			
Clothes Scissors	1			
Brushes	12			
Disposable Towels (Boxes)	2			
Cots	6			
First Aid Kits	6			
Security Stations				
PAP-ARM or Dose Rate Meter	1			
AAP-ARM or Dose Rate Meter	1			
CPF AAP-ARM or dose Rate Meter	1			
SAS-ARM or Dose Rate Meter	1			

Inventoried By________________ Date__________

Reviewed By________________ Date__________

4000 SERIES

EMERGENCY PLAN IMPLEMENTING PROCEDURES

NUMBER	TITLE	REV.	EFF. DATE
4101	Unusual Event Actions	1	9/15/81
4102	Alert	5	4/13/82
4103	Site Area Emergency	5	4/13/82
4104	General Emergency	5	4/13/82
4201	Radiological Dose Assessment	2	12/21/81
4202	Post Accident Sampling	2	3/1/82
4203	EMT #1-In Plant Radiological Sampling and Monitoring	1	9/15/81
4204	EMT #2-Protective Actions for Onsite Personnel	2	12/8/81
4205	EMT #3-Site Boundary Radiological Sampling/Monitoring	1	9/15/81
4206	EMT #4, #5 - Offsite Radiological Sampling and Monitoring	2	12/8/81
4207	Radiological Sampling During An Emergency	0	7/15/81
4208	Aid to Affected Personnel	0	7/15/81
4209	Emergency Operations Re-Entry	0	7/15/81
4210	Emergency Recovery	0	7/15/81
4211	On Call Procedure	1	4/13/82
4212	Drywell/Containment Curie Level Estimation	0	2/19/82
4213	Radiation Protection During Emergencies	0	3/1/82
4301	Communications - Radiopaging & Callback Recorder Operations	2	12/8/81
4302	Emergency Operations Facility Ventil-lation System	0	7/15/81
4303	Emergency Operations Facility Emergency Diesel Generator	0	7/15/81

4304	Emergency Response Center and Facilities	3	3/1/82
4305A	Meteorological Tower EOF Computer Terminal Operation	0	2/24/82
4305B	EOF TSO Computer Terminal Operation	0	3/15/82
4306	E.O.F.Fire Detection System	0	7/15/81
4307	Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation	0	3/15/82
4501	Radioactive Materials Transport Accident	0	7/15/81
4502	Toxic Material Release	0	7/15/81
4503	Hazardous Waste and Toxic Substance Spill Incident	2	4/23/82
4504	Personnel Emergency	2	1/22/82
4505	Atmospheres Immediately Hazardous to Life	0	7/15/81
4506	Loss of Licensed Non-Exempt Radioactive Sources	0	1/6/82
4601	Page/Siren System Evacuation Alarm	0	7/15/81
4602	Communications Telephone Test	2	3/26/82
4603	Emergency Radiological Equipment Maintenance and Inspection	1	3/18/82
4604	Emergency Call List Surveillance	0	7/15/81
4605	Emergency Operations Facility Ventilation System Filter Testing Annual	0	7/15/81
4606	EOF Emergency Diesel Generator Operability Test	0	7/15/81
4608	EOF Air Lock Operability Test	0	7/15/81
4609	EOF Fire Detection System Test	0	7/15/81
4610	Communications-Radiopaging and Callback Recorder Monthly Test	3	11/26/81

4611	Station PA Speaker Inspection	0	7/15/81
4612	Waterford, State and Tri Town Radio Test	1	10/13/81
4613	Communications-Radiopaging Daily Test	1	9/15/81

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4503 Rev. 2

Title Hazardous Waste and Toxic Substance Spill Incident

Prepared By S. Kane

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	John D. [illegible]	4-21-82
Radiological Services Supv	[illegible]	4/21/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-17

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

4-23-82
Effective Date

SF-301
Rev. 5

HAZARDOUS WASTE AND TOXIC SUBSTANCE SPILL INCIDENT

Page No.	Eff. Rev.
1-5	2
Attachment A	2

1. OBJECTIVE

1.1 This procedure provides a Contingency Plan in the event that a Hazardous Waste Spill Incident occurs having the potential for harming life or the environment. Hazardous Wastes are defined in ACP 6.09. The procedure also describes cleanup measures to be used for P.C.B. oil spills within the station.

2. DISCUSSION

2.1 Demineralizer regenerant chemicals, sulfuric acid and caustic are only considered as hazardous wastes if spilled.

The bulk regenerants are delivered to two plant areas.

1. South end of Unit 1 to diked 7,000 gallon (ea.) bulk storage tanks.
2. Inside the C.P.F. to 8,000 gallon (ea) bulk storage tanks.

The sulfuric acid concentration is 98% and the caustic (sodium hydroxide) concentration is 50%. The concentrated chemicals are pumped to day tanks (100 and 300 gallons), when needed for regenerations.

2.2 Liquid acid and caustic spilled outside a plant building.

2.2.2 Personnel assigned to clean up the spill must wear eye protection (preferably goggles) and must wear coveralls, rubber gloves, and green booties.

2.2.3 Diking or trenching may be necessary to prevent discharge directly to the environment.

2.2.4 The liquid spill can be soaked up with absorbent materials.

2.2.5 The saturated absorbents will be placed into double plastic lined 55-gallon drums.

2.2.6 Filled drums will be sealed properly labeled and stored in the Hazardous Waste Storage Facility.

2.2.7 Call Chemistry supervisory personnel for assistance and utilize the Communications and Outside Assistance Procedure, ACP 1.07 if needed.

2.3 Liquid acid and caustic spilled inside the plant.

2.3.1 Acid and caustic spills inside the plant are not hazardous wastes as long as their PH can be neutralized prior to discharge.

2.3.2 Personnel assigned to clean up the spill must wear eye protection (preferably goggles) and must wear protective clothing.

2.3.3 Determine the nearest sump or drain available and notify Radwaste personnel of spill quantity if the drains will go to radwaste.

2.3.4 If the nearest sump has a normal direct discharge, minimize water makeup to the sump and stop sump discharge.

2.3.5 Slowly wash the liquid spill to the drain area.

2.3.6 With the aid of the on-call Chemistry Technician, neutralize the sump pH.

<u>NOTE:</u> If it is determined that the chemical spill should not be drained to a sump, proceed as in 2.2 and place drums in the Hazardous Waste Storage Facility.

2.4 Dow Solidification Chemicals Spill

2.4.1 For any spill of dow solidification binder, notify the Shift Supervisor immediately. Prevent spilled materials from entering the floor drain or storm drain system. Take action per Attachment (A).

2.5 Hazardous Waste Spills

2.5.1 For any spill or uncontrolled dumping of a defined hazardous waste material, the Shift Supervisor will conduct emergency operations to contain the spill by diking, trenching or by using an absorbent material.

2.5.2 Deposit the spilled materials and soaked absorbents of spilled materials into double lined 55-gallon drums. Label, seal and place the drums in the Hazardous Waste Storage Facility.

2.6 If a fire or explosion were to occur which would effect hazardous waste storage or spillage, the Shift Supervisor will follow station emergency procedures and take steps to minimize hazardous waste release.

2.7 PCB oil is defined as a toxic substance, not a hazardous waste. PCB oil spills, although unlikely could occur during the malfunction or refilling of a Unit's Ground Neutral Transformer.

2.7.1 Personnel assigned to cleanup the spill should wear plastic lined coveralls, green booties, vinyl or rubber gloves and goggles.

2.7.2 Prevent any PCB spill from discharging to the environment.

2.7.3 Record approximate amount of spill.

2.7.4 Soak up oil with speedy dry or rags and wipe down area using wet soapy rags.

2.7.5 Place the soaked materials into double plastic lined 55 gallon drums. Label drums as P.C.B. Oil Soaked Waste.

2.7.6 Place drums in the Hazardous Waste Storage Facility.

2.7.7 Arrange to have the PCB waste shipped within 30 days to a PCB Storage Facility by contacting the NUSCO Distribution Engineering Department.

2.7.8 During the next working day, contact NUSCO Distribution Engineering who will make appropriate reports to Government Agencies if required.

2.7.9 Call Chemistry Supervisory personnel and utilize the communications and Outside Assistance Procedure, ACP 1.07 if needed.

3. SYMPTOMS

3.1 A report of a chemical spill has been received by either unit control room.

4. AUTOMATIC ACTION

None

5. IMMEDIATE ACTION

5.1 Operations personnel

5.1.1 Respond to the scene of the spill.

5.1.2 Determine the nature and extent of the spill.

5.1.3 Provide aid and assistance to any injured personnel using the guidelines of EPIP 4504, Personnel Emergency.

5.1.4 Initiate cleanup operation as described in section 2.

5.2 Station Personnel

5.2.1 Station personnel should report a chemical spill to the control room immediately.

5.2.2 Take all precautions necessary to avoid injury and leave the area.

5.2.3 If injured by a chemical burn, proceed to the nearest, safe eye wash station and wash burn with large volume of water.

5.3 Chemistry Personnel

5.3.1 Procure the necessary personal protective equipment and offer guidance to personnel containing the spill.

5.3.2 Offer guidance to personnel cleaning up the spill.

6. SUBSEQUENT ACTION

6.1 Chemistry Dept, Operations, Engineering

6.1.1 Investigate the cause of the spill and provide necessary corrective actions.

6.1.2 Submit a P.I.R. and within 15 days of a Hazardous Waste spill submit a written report to the Regional Administrator of the E.P.A. as per 40 CFR 265 Subpart G.

7. ATTACHMENTS

Attachment (A) Chem - Nuclear Procedure for Dow Chemical Spills

SK:jms

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
-			

CONTROLLED COPY

CNSI SAFETY REVIEW
BOARD APPROVAL
BY David F. Jones
DATE 4/24/81

COPY NO. 3

REVISION STATUS

SHEET	1	2	3	4													
REV.	-	-	-	-													
SHEET																	
REV.																	

PREPARED	DATE	
[illegible]	5/18/81	CHEM – NUCLEAR SYSTEMS, INC.
CHECKED		TITLE
[illegible]	5/2/81	EMERGENCY PROCEDURE FOR DOW CHEMICAL SPILLS
ENGINEER		
G. R. Patten	5/18/81	
QUALITY		
D. Lee	5/2/81	

APPROVED		CONTRACT NO.	DOCUMENT NO.	REV.	SHEET
[illegible]			SD-EM-001	-	1

1.0 SCOPE

1.1 Purpose

This is a procedure for emergency action in the event of a chemical spill involving the non-radioactive materials used in the Dow Solidification Process.

1.2 Applicability

This procedure applies wherever Dow Solidification Process Chemicals are used or stored. All CNSI employees responsible for handling or use of Dow chemicals shall be familiar with this document.

2.0 REFERENCES

2.1 Topical Report, The Dow System for Solidification of Low-Level Radioactive Waste from Nuclear Power Plants, DNS-RSS-001-P-A.

2.2 Technical Marketing Information Dow Solidification Process.

2.3 Process Control Program for CNSI Mobile Solidification Units Using The Dow Process, SD-OP-005.

2.4 Operating Procedure for the CNSI Mobile Solidification Units Using The Dow Process.

2.5 ANI/MAERP Guidlines Dow Solidification System

3.0 REQUIREMENTS

3.1 Tools, Materials, Equipment

Rubber Gloves
Absorbent non-combustible material - diatomacious earth, expanded shale, vermiculite, etc.
Safety glasses or face shield
Fire extinguisher - A,B,C.
Methylene chloride

3.2 Precautions, Limits

- o KEEP BINDER WITHIN TEMPERATURE LIMITS OF 50-75°F.
- o DO NOT SMOKE IN CHEMICAL STORAGE AREAS.

- DO NOT ALLOW CATALYST AND PROMOTER TO MIX TOGETHER. They will react and give off considerable heat.
- PREVENT SKIN AND EYE CONTACT WITH CHEMICALS. FLUSH WITH WATER FOR 15 MINUTES.
- WEAR RUBBER GLOVES, EYE PROTECTION, AND PROTECTIVE CLOTHING WHEN HANDLING CHEMICALS.
- AVOID BREATHING FUMES, GAS OR SMOKE RESULTING FROM A CHEMICAL FIRE.

4.0 INSTRUCTIONS

CAUTION: IN ANY SPILL OF THE FOLLOWING MATERIALS BE AWARE OF THE POSSIBILITY OF BOTH RADIOACTIVE CONTAMINATION AS WELL AS CHEMICAL HAZARDS.

4.1 Clean Up Binder Spill

NOTE: IN CASE OF FIRE, USE HALON, FOAM, DRY POWDER, OR CARBON DIOXIDE TO EXTINGUISH FIRE. FIRE EXTINGUISHER TYPE A, B, C.

(a) Place a lid or cap on any binder container. spilled

(b) Soak up spilled binder with absorbent material.

CAUTION: DO NOT ALLOW METHYLENE CHLORIDE TO COME IN CONTACT WITH BINDER WHICH WILL BE USED FOR SOLIDIFICATION. METHYLENE CHLORIDE WILL DECOMPOSE BINDER MAKING IT UNUSABLE.

(c) Clean residue with methylene chloride after absorbent material has been used.

(d) Survey materials used in clean up. Dispose of radioactively contaminated materials as radioactive waste. If materials ARE NOT radioactively contaminated, they may be burned or disposed of as non-radioactive waste.

4.2 Clean Up Promoter Spill

NOTE: IN CASE OF FIRE, USE, HALON WATER, FOAM, DRY POWDER, OR CARBON DIOXIDE TO EXTINGUISH FIRE. FIRE EXTINGUISHER TYPE A, B, C.

(a) Soak up spilled promoter with absorbant material.

CAUTION: DO NOT ALLOW PROMOTER TO CONTACT SKIN OR EYES. BE SURE TO WEAR RUBBER GLOVES, EYE PROTECTION, AND PROTECTIVE CLOTHING.

(b) Clean up any residue with rags.

CAUTION: DO NOT DISPOSE OF MATERIALS USED TO CLEAN UP PROMOTER IN SAME CONTAINER WITH ANY CATALYST.

(c) Survey materials used in clean up. Dispose of radioactively contaminated materials as radioactive waste. If materials ARE NOT radioactively contaminated, they may be burned or disposed of as non-radioactive waste.

4.3 Clean Up Catalyst Spill

NOTE: IN CASE OF FIRE, USE HALON, WATER, FOAM, DRY POWDER, OR CARBON DIOXIDE TO EXTINGUISH FIRE. FIRE EXTINGUISHER A, B, C.

(a) Clean most of spilled catalyst with rags.
(b) Clean up any residues with a moistened rag or paper towel.

CAUTION: DO NOT DISPOSE OF MATERIALS USED TO CLEAN UP CATALYST IN SAME CONTAINER WITH ANY PROMOTER.

(c) Rags or other materials used on clean up may be burned or disposed of as non-radioactive waste.

CHEMICAL	PRECAUTIONS	CLEANUP
BINDER	1. Keep within temp. limits of 50-75°F. 2. DO NOT Smoke around chemicals. 3. Prevent skin and eye contact.	1. Use absorbent material to soak up spill. 2. Use methylene chloride to remove residue. 3. Dispose of materials used in cleanup.
PROMOTER	1. DO NOT allow promoter to mix with catalyst. 2. DO NOT Smoke around chemicals. 3. Prevent skin and eye contact.	1. Flush with water. 2. Absorb with rags or absorbent material. 3. Dispose of materials used in cleanup.
CATALYST	1. DO NOT allow catalyst to mix with promoter. 2. DO NOT Smoke around chemicals. 3. Prevent skin and eye contact. 3. Prevent skin and eye contact	1. Flush with water. 2. Absorb with rags or absorbent materia. 3. Use moistened rag to remove any residue. 4. Dispose of materials used in cleanup.

4000 SERIES

EMERGENCY PLAN IMPLEMENTING PROCEDURES

NUMBER	TITLE	REV.	EFF. DATE
4101	Unusual Event Actions	1	9/15/81
4102	Alert	5	4/13/82
4103	Site Area Emergency	5	4/13/82
4104	General Emergency	5	4/13/82
4201	Radiological Dose Assessment	2	12/21/81
4202	Post Accident Sampling	2	3/1/82
4203	EMT #1-In Plant Radiological Sampling and Monitoring	1	9/15/81
4204	EMT #2-Protective Actions for Onsite Personnel	2	12/8/81
4205	EMT #3-Site Boundary Radiological Sampling/Monitoring	1	9/15/81
4206	EMT #4, #5 - Offsite Radiological Sampling and Monitoring	2	12/8/81
4207	Radiological Sampling During An Emergency	0	7/15/81
4208	Aid to Affected Personnel	0	7/15/81
4209	Emergency Operations Re-Entry	0	7/15/81
4210	Emergency Recovery	0	7/15/81
4211	On Call Procedure	1	4/13/82
4212	Drywell/Containment Curie Level Estimation	0	2/19/82
4213	Radiation Protection During Emergencies	0	3/1/82
4214	Unit 1 Reactor Coolant Post Accident Sampling	0	6/1/82
4215	Unit 1 Containment Air Post Accident Sampling	0	6/1/82
4216	Unit 2 Reactor Coolant Post Accident Sampling	0	6/1/82

4217	Unit 2 Containment Air Post Accident Sampling	0	6/1/82
4301	Communications - Radiopaging & Callback Recorder Operations	2	12/8/81
4302	Emergency Operations Facility Ventilation System	0	7/15/81
4303	Emergency Operations Facility Emergency Diesel Generator	0	7/15/81
4304	Emergency Response Center and Facilities	3	3/1/82
4305A	Meteorological Tower EOF Computer Terminal Operation	0	2/24/82
4305B	EOF TSO Computer Terminal Operation	0	3/15/82
4306	E.O.F.Fire Detection System	0	7/15/81
4307	Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation	0	3/15/82
4501	Radioactive Materials Transport Accident	0	7/15/81
4502	Toxic Material Release	0	7/15/81
4503	Hazardous Waste and Toxic Substance Spill Incident	2	4/23/82
4504	Personnel Emergency	2	1/22/82
4505	Atmospheres Immediately Hazardous to Life	0	7/15/81
4506	Loss of Licensed Non-Exempt Radioactive Sources	0	1/6/82
4601	Page/Siren System Evacuation Alarm	0	7/15/81
4602	Communications Telephone Test	2	3/26/82
4603	Emergency Radiological Equipment Maintenance and Inspection	1	3/18/82
4604	Emergency Call List Surveillance	0	7/15/81

4605	Emergency Operations Facility Ventilation System Filter Testing Annual	0	7/15/81
4606	EOF Emergency Diesel Generator Operability Test	0	7/15/81
4608	EOF Air Lock Operability Test	0	7/15/81
4609	EOF Fire Detection System Test	0	7/15/81
4610	Communications-Radiopaging and Callback Recorder Monthly Test	3	11/26/81
4611	Station PA Speaker Inspection	0	7/15/81
4612	Waterford, State and Tri Town Radio Test	1	10/13/81
4613	Communications-Radiopaging Daily Test	1	9/15/81

Form Approved by Station Superintendent E. J. Mroczka

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4214 Rev. 0

Title Unit-1 Reactor Coolant Post Accident Sampling

Prepared By D. Wilkens

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	[signature]	5-21-82
UNIT #1 ASSIST. CHEM. SUP.	David L. Wilkens	5-21-82
Unit 2 Assist Chem Sup	Robert H. Langer	5-21-82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E. J. Mroczka
Station/Service/Unit Superintendent

6-1-82
Effective Date

SF-301
Rev. 5

UNIT #1 REACTOR COOLANT

POST ACCIDENT SAMPLING

PAGE	EFFECTIVE REVISION
1	0

1.0 OBJECTIVE

TO PROVIDE INSTRUCTIONS FOR SAMPLING REACTOR COOLANT AFTER AN INCIDENT WHEN HIGH RADIOACTIVITY LEVELS MAY PRECLUDE THE NORMAL SAMPLE METHODS.

2.0 DISCUSSION

2.1 IN THE POST ACCIDENT CONDITION IT WILL BE NECESSARY TO MEASURE VARIOUS PARAMETERS OF THE REACTOR COOLANT TO ASSIST IN ESTIMATING THE EXTENT OF CORE DAMAGE. THEREFORE, THE PROCEDURE DESCRIBES THE SAMPLING AND ANALYSIS TO BE USED FOR THE FOLLOWING SYSTEMS: REACTOR RECIRCULATION, SHUTDOWN COOLING AND LOW PRESSURE CORE INJECTION.

2.2 PREPLANNING IS NECESSARY PRIOR TO OBTAINING A SAMPLE. THE MANAGER OF RADIOLOGICAL ASSESSMENT AND HEALTH PHYSICS PERSONNEL WILL DETERMINE STAY TIMES, ROUTES, PROTECTIVE CLOTHING, RESPIRATORY PROTECTION, DOSIMETRY AND OTHER HEALTH PHYSICS REQUIREMENTS NEEDED TO KEEP INDIVIDUALS WITHIN ALLOWABLE EXPOSURE LIMITS AND CONTROL THE SPREAD OF RADIOACTIVE MATERIALS.

2.3 AN RWP WILL BE WRITTEN FOR THE SPECIFIC SAMPLING TO BE DONE. HEALTH PHYSICS PERSONNEL MAY MONITOR THE SAMPLING AS IT IS PERFORMED BECAUSE INITIATION OF SAMPLE FLOW WILL CHANGE RADIATION CONDITIONS.

3.0 INSTRUCTIONS

3.1 THE MANAGER OF RADIOLOGICAL ASSESSMENT SHALL BE THE SOLE ORIGINATOR OF ALL REQUIRED SAMPLES AND SHALL SPECIFY:

3.1.1 TYPE OF SAMPLE REQUIRED

3.1.2 R.W.P. REQUIREMENTS

3.1.3 SAMPLE ROUTE SO AS TO MINIMIZE EXPOSURE.

3.1.4 IF A HEALTH PHYSICS ESCORT IS REQUIRED FOR SAMPLE ACQUISITION.

3.2 PRIOR TO LEAVING THE CHEMISTRY LAB TO RETRIEVE THE SAMPLE:

3.2.1 PERFORM THE CHECK PROGRAM ON THE GeLi COUNTING SYSTEM AS PER CP 801/2801 N.

3.2.2 PERFORM A 10 MINUTE BACKGROUND ON GeLi COUNTING SYSTEM SO AS TO ENSURE BACKGROUND IS WITHIN ACCEPTED UNITS. IF BACKGROUND IS TOO HIGH, INFORM THE MANAGER OF RADIOLOGICAL ASSESMENT AND PERSUE THE UTILIZATION OF HEALTH PHYSICS COUNTING SYSTEM.

3.2.3 OBTAIN EPIP FORMS 4214-1, 4214-2, 4214-3, 4214-4, 4214-5 AND EPIP FIGURE 4214-4.1.

3.2.4 ENSURE THAT THE LEAD BRICK SHIELD IS IN TACT IN THE PRIMARY SAMPLE HOOD. FILL A ONE LITER PLASTIC BOTTLE WITH DEMINERALIZE WATER AND PLACE BOTTLE IN THIS SHIELD.

3.2.5 STOPPER A 14.4 ml GAS VIAL.

3.2.6 PREPARE TRANSPORT CART AND CONTAINER FOR SAMPLES

3.2.6.1 OBTAIN THREE 100 µl SYRINGES AND CHECK THEM <u>OPEN</u>. (NEEDLE IS SCREWED UP AGAINST SYRINGE BODY.)

3.2.6.2 PLACE SYRINGES IN CONTAINER

3.2.7 TRANSFER THE CHLORIDE TITRATION BURET TO ONE SIDE OF THE HOT HOOD. FABRICATE A BRICK SHIELD AROUND THE CHLORIDE CASSEROLE 6 INCHES HIGH OR SUCH THAT ANY LIQUID SAMPLE WILL BE SHIELDED FROM THE ANALYST AND OTHER LAB PERSONNEL.

3.2.8 FABRICATE A BRICK SHIELD AROUND A SMALL PLASTIC BEAKER AT THE ICP 5000 SAMPLE ASPIRATOR.

3.2.9 ENSURE THAT THE EXHAUST HOOD ABOVE THE SIGMA 3B GC IS OPERATIONAL.

3.3 SAMPLING PRECAUTIONS

3.3.1 DO NOT EXCEED 165°F AS READ ON TEMPERATURE INDICATOR T-1.

3.3.2 DO NOT EXCEED 2500 PSIG IN SAMPLE SYSTEM.

3.3.3 DO NOT RUN STRIPPING PUMP DRY FOR LONGER THAN 5 MINUTES.

3.3.4 DO NOT OPEN V-16 or V-17 EXCEPT DURING FLUSH OPERATIONS OR WHEN SYSTEM PRESSURES ARE 250 PSIG OR LESS AS DAMAGE TO THE pH PROBE MAY OCCUR.

3.3.5 V-9 AND V-14 MUST BE CLOSED AT ALL TIMES EXCEPT WHEN THE SYRINGE IS INSERTED INTO THE SAMPLE CHAMBER.

3.3.6 V-1B MUST ALWAYS BE IN THE LOW FLOW POSITION WHEN SYSTEM PRESSURE IS GREATER THAN 400 PSIG TO PREVENT HIGH PRESSURE SPIKES DUE TO WATER HAMMER.

3.4 SAMPLING PREREQUISITES

3.4.1 NOTIFY THE SHIFT SUPERVISOR THAT THE REACTOR COOLANT POST ACCIDENT SAMPLING SYSTEM WILL BE ACTIVATED AND REQUEST:

3.4.1.1 FOR RECIRCULATION SYSTEM SAMPLE

OPEN RECIRCULATION SAMPLE VALVES ON CRP-904

3.4.1.2 FOR SHUTDOWN COOLING SAMPLE

OPEN 1-PAS-1 (FSO-9-75H-1)

3.4.1.3 FOR LOW PRESSURE CORE INJECTION SAMPLE

OPEN 1-PAS-5 (FSO-9-75I-1)

3.4.1.4 ESTABLISH A SAMPLE RETURN PATH TO THE TORUS BY OPENING 1-PAS-24 (FSO-9-75J-1) AND 1-PAS-25 (FSO-9-75J-2).

3.4.2 MEETING ALL R.W.P. REQUIREMENTS, PROCEED TO THE MODULE AREA (AT THIS TIME, LEAVE TRANSPORT CART AND SYRINGES IN THE CHEMISTRY LAB).

3.4.3 UNLOCK AND REMOVE ANTI-TAMPER COVERS FROM RESPECTIVE MODULES.

3.4.4 AT SAMPLE CABINET:

3.4.4.1 CHECK CLOSED V-9 (HANDLE IS PARALLEL TO HOUSING).

3.4.4.2 OPEN VALVES 1-PAS-15 AND 1-PAS-16 (SAMPLE CABINET INFLUENT AND EFFLUENT).

3.4.4.3 ENSURE 2ml SHIELDED REMOVABLE GRAB SAMPLE IS INSTALLED AND QUICK CONNECTS ARE PROPERLY ALIGNED.

3.4.5 OPEN NITROGEN BOTTLE ISOLATION VALVE AND REGULATE DOWNSTREAM PRESSURE TO 400 PSIG.

3.4.6 CHECK DEMINERALIZED WATER FLUSH TANK LEVEL. THE LEVEL SHOULD BE GREATER THAN 1/2 FULL.

3.4.6.1 TO FILL TANK, OPEN VALVES 1-DW-68 AND 1-DW-69. WHEN TANK LEVEL INDICATES FULL, CLOSE 1-DW-68 AND 1-DW-69

3.4.7 OPEN FLUSH PUMP DISCHARGE VALVE 1-PAS-26.

3.4.8 ON OPERATING MODULE:

3.4.8.1 PUSH THE POWER ON BUTTON.

3.4.8.2 REZERO THE TIMER AND REGULATE V-19 TO OBTAIN 80 PSIG.

3.4.8.3 SET TEMPERATURE INDICATOR SWITCH TO T-1.

3.4.8.4 POSITION VALVES AS FOLLOWS:

BY-PASS V-1, V-7, V-8, V-12 AND V-13

CLOSED V-4, V-6, V-15, V-16 AND V-17

GRAB V-2

SAMPLE V-3

LIQUID V-11

LO-FLOW V-18

3.4.9 ON MIMIC PANEL (2404), OPEN 1-PAS-21 (FSO-9-75J-3).

3.4.10 FILL THE SAMPLE MODULE GAS LOOP AS FOLLOWS:

3.4.10.1 POSITION V-11 TO GAS, V-15 TO OPEN, V-7 TO IN-LINE AND V-6 TO OPEN.

3.4.10.2 AFTER 30 SECONDS, POSITION V-12 AND V-13 TO IN-LINE

3.4.10.3 AFTER ANOTHER 30 SECONDS, POSITION V-12 TO BY-PASS AND V-8 TO IN-LINE.

3.4.10.4 WAIT 30 SECONDS, THEN POSITION V-7 AND V-8 TO BY-PA

3.4.10.5 WAIT ANOTHER 30 SECONDS, THEN POSITION V-15 TO CLOSE, V-11 TO LIQUID, V-6 TO CLOSE AND V-13 TO BY-PASS.

3.4.11 LEAVE MODULE AREA AND RETURN TO THE CHEMISTRY LAB.

3.5 OBTAINING THE REQUIRED SAMPLES

3.5.1 FROM STEP 3.4.8.1, ALLOW A MINIMUM OF 15 MINUTES FOR A WARM-UP PERIOD.

3.5.2 MEETING ALL R.W.P. REQUIREMENTS AND WITH EPIP FORM 4214-4, THE TRANSPORT CART, SYRINGES AND (IF REQUIRED) A NEW 2 ml SHIELDED REMOVABLE GRAB SAMPLE, PROCEED TO THE OPERATING AND MIMIC PANEL AREA.

3.5.3 ON MIMIC PANEL (2404), OPEN 1-PAS-21 (FSO-9-75J-3) AND FOR THE REQUIRED SAMPLE POINT:

3.5.3.1 SHUTDOWN COOLING SAMPLE OPEN 1-PAS-2 (FSO-75H-2).

3.5.3.2 LOW PRESSURE CORE INJECTION OPEN 1-PAS-6 (FSO-75I-2).

3.5.3.3 REACTOR RECIRCULATION OPEN 1-PAS-11 (FSO-75S-2).

3.5.4 FROM OPERATING MODULE, RECORD TOTALIZER READING ON EPIP FORM 4214-4 LINE 1.

CAUTION: DO NOT PERFORM STEP 3.5.5 NOR 3.5.6 UNLESS SPECIFICALLY DIRECTED BY THE MANAGER OF RADIOLOGICAL ASSESMENT TO OBTAIN A PRESSURIZED 2mL GRAB SAMPLE (STEP 3.5.5) OR A DEPRESSURIZED 2mL GRAB SAMPLE (STEP 3.5.6). IF NEITHER OF THE ABOVE ARE REQUESTED, PROCEED TO STEP 3.5.7.

3.5.5 PRESSURIZED 2mL GRAB SAMPLE

3.5.5.1 POSITION V-1 AND V-2 TO GRAB. ALLOW ABOUT 30 SECONDS FOR FLOW TO STABLIZE.

3.5.5.2 POSITION V-2 TO BY-PASS (FLOW RATE SHOULD DROP TO ZERO).

3.5.5.3 POSITION V-3 TO NORMAL AND FLUSH.

3.5.5.4 A PRESSURIZED GRAB SAMPLE HAS BEEN COLLECTED. PROCEED TO STEP 3.5.7 IN-LINE SAMPLE.

3.5.6 DEPRESSURIZED 2mL GRAB SAMPLE

3.5.6.1 POSITION V-1 AND V-2 TO THE GRAB POSITION, ALLOW ABOUT 30 SECONDS FOR FLOW TO STABLIZE.

3.5.6.2 POSITION V-1 TO BY-PASS AND V-3 TO NORMAL AND FLUSH

3.5.6.3 A DEPRESSURIZED GRAB SAMPLE HAS BEEN COLLECTED. PROCEED TO STEP 3.5.7 IN-LINE SAMPLE.

3.5.7 IN-LINE SAMPLE

3.5.7.1 POSITION V-1 TO GRAB, V-2 TO BY-PASS, V-4 TO OPEN AND V-6 TO OPEN. MONITOR FLOW ON THE FLOWMETER.

3.5.7.2 AFTER A 20 SECOND WAIT, POSITION V-7 AND V-8 TO IN-LINE.

3.5.7.3 WAIT 15 SECONDS AND POSITION V-8 TO BY-PASS.

3.5.7.4 START THE STRIPPING PUMP AND RUN FOR 15 SECONDS, THEN SECURE THE STRIPPING PUMP.

3.5.7.5 CLOSE V-6 AND WAIT 10 SECONDS (FLOW SHOULD DROP TO ZERO).

3.5.7.6 CLOSE V-4.

3.5.7.7 A PRESSURIZED SAMPLE OF KNOWN VOLUME IS NOW TRAPPED WITHIN THE BOUNDARIES OF V-4, V-6 AND V-11.

3.5.7.8 ON MIMIC PANEL, CLOSE THE VALVE THAT WAS OPENED IN STEP 3.5.3.

3.6 STRIPPING OF DISSOLVED GASES

3.6.1 NOTE AND RECORD THE PRESSURE ON LINE 2 OF EPIP FORM 4214-4.

3.6.2 POSITION V-12 TO IN-LINE AND V-11 TO GAS. ALLOW ENOUGH TIME FOR THE LIQUID LOOP TO DEPRESSURIZE AND DISSIPATE RELEASED GAS TO THE GAS LOOP.

3.6.3 POSITION V-12 AND V-7 TO BY-PASS.

3.6.4 START THE STRIPPING PUMP AND ALLOW IT TO RUN FOR ONE MINUTE THEN STOP THE PUMP.

3.6.5 WHEN PRESSURE, AS READ ON THE DIGITAL READOUT, STABLIZES (ABOUT 15 SECONDS) POSITION V-7, V-8, V-12 AND V-13 TO IN-LINE

3.6.6 RESTART THE STRIPPING PUMP. ALLOW IT TO RUN FOR ONE MINUTE THEN STOP THE PUMP AND ALLOW PRESSURE TO STABLIZE. REPEAT THIS STEP TWO MORE TIMES.

3.6.7 POSITION V-7, V-8, V-12 AND V-13 TO BY-PASS AND V-11 TO LIQU

3.6.8 NOTE AND RECORD THE PRESSURE ON LINE 3 OF EPIP FORM 4214-4

3.6.9 NOTE AND RECORD TEMPERATURE T-2 ON LINE 4 OF EPIP FORM 4214-

3.6.10 PROCEED TO STEP 3.7. DO NOT PERFORM CALCULATIONS AT THIS TIME.

3.7 FLUSHING SAMPLE SYSTEM PRIOR TO SAMPLE RETRIEVAL

3.7.1 IF VALVES ARE NOT IN THE FOLLOWING POSITIONS, REPOSITION THEM.

V-1	BY-PASS	V-7	BY-PASS	V-15	CLOSED
V-2	GRAB	V-8	BY-PASS	V-16	CLOSED
V-3	NORMAL	V-11	LIQUID	V-17	CLOSED
V-4	CLOSED	V-12	BY-PASS	V-18	LO-FLOW
V-6	CLOSED	V-13	BY-PASS		

3.7.2 OPEN THE FOLLOWING VALVE:

3.7.2.1 IF SHUTDOWN COOLING SAMPLE – 1-PAS-29 (FSO-75H-3).

3.7.2.2 IF LOW PRESSURE CORE INJECTION SAMPLE – 1-PAS-31 (FSO-75I-3).

3.7.2.3 IF RECIRCULATION SAMPLE – 1-PAS-33 (FSO-75G-3).

3.7.3 OPEN V-4, V-16 AND V-17. START THE FLUSHING PUMP. A FLOW SHOULD BE EVIDENT ON FLOWMETER.

3.7.4 MONITOR AND RECORD pH ON LINE 6 OF EPIP FORM 4214-4.

3.7.5 START THE STRIPPING PUMP AND POSITION V-18 TO HI-FLOW.

3.7.6 CONTINUE FLUSHING FOR 5 MINUTES. DURING THE FLUSH, CYCLE VALVES V-4, V-16 AND V-17 AT LEAST 3 TIMES TO ENSURE ALL LIQUID IS FLUSHED FROM UNDER THE VALVE SEATS. MONITOR FLOW AND RADIATION LEVELS TO ASSESS FLUSH EFFECTIVENESS.

3.7.7 REPOSITION VALVES AS FOLLOWS:

V-6 TO OPEN   V-16 TO CLOSED   V-17 TO CLOSED

3.7.8 CONTINUE THE FLUSH FOR ANOTHER 2 MINUTES. DURING THIS TIME, CYCLE V-6 AT LEAST 3 TIMES.

3.7.9 POSITION V-11 TO GAS AND FLUSH FOR TWO MINUTES THEN STOP THE STRIPPING PUMP AND CLOSE V-6.

3.7.10 POSITION V-2 TO BY-PASS THEN V-4 TO CLOSED.

3.7.11 AFTER ONE MINUTE, POSITION V-1 AND V-2 TO GRAB.

3.7.12 FLUSH FOR ONE MINUTE IN THIS LINE-UP THEN SECURE THE FLUSHING PUMP AND CLOSE THE VALVE OPENED IN STEP 3.7.2.

3.8 SAMPLE RETRIEVAL

3.8.1 WITH TRANSPORT CART, SYRINGES AND 2ml SHIELDED REMOVABLE GRAB SAMPLE (IF REQUIRED) PROCEED TO SAMPLE MODULE AREA. PERFORM A RAPID RADIATION SURVEY TO INSURE RADIATION LEVELS ARE LOW ENOUGH TO ALLOW ACCESS.

NOTE: IF A 2ml SAMPLE WAS NOT REQUESTED BY THE MANAGER OF RADIOLOGICAL ASSESMENT PROCEED TO STEP 3.8.3.

3.8.2 RETRIEVE THE 2ml GRAB SAMPLE AS FOLLOWS:

3.8.2.1 OPEN THE LOWER SAMPLE MODULE ACCESS DOOR.

3.8.2.2 GRAB THE UNLATCHING KNOB AND PULL THE GRAB SAMPLE TRAY ASSEMBLY FORWARD, OUTSIDE THE MODULE.

3.8.2.3 DISCONNECT THE FLEXIBLE HOSES FROM THE GRAB SAMPLE VALVE OPERATOR.

3.8.2.4 LIFT THE GRAB SAMPLE CHAMBER FROM THE TRAY AND PLACE IT IN THE TRANSFER CONTAINER. PLACE THE LID ON THE CONTAINER.

3.8.2.5 PLACE THE NEW GRAB SAMPLE CHAMBER ON THE SLIDE TRAY. CHECK THAT THE SAMPLE CHAMBER IS LOCATED SO THAT THE QUICK CONNECT COLLARS ARE PROPERLY POSITIONED IN THE YOKE AND THE GRAB SAMPLE CHAMBER IS PRESSED FIRMLY DOWN ONTO SLIDE TRAY.

3.8.2.6 CONNECT THE FLEXIBLE HOSES TO THE GRAB SAMPLE CHAMBER AIR OPERATOR. ENSURE THE BLUE COLORED QUICK-CONNECTS ARE MATED.

3.8.2.7 PUSH THE SLIDE TRAY WITH GRAB SAMPLE CHAMBER BACK INTO THE CABINET UNTIL THE LIQUID QUICK-CONNECTS LATCH.

3.8.2.8 CLOSE THE ACCESS DOOR. IF NO OTHER SAMPLE RETRIEVAL IS REQUIRED PROCEED TO STEP 3.8.5 OTHERWISE PROCEED TO [illegible]

3.8.3 RETRIEVE IN-LINE SAMPLE AS FOLLOWS:

3.8.3.1 OPEN THE LOWER ACCESS DOOR.

3.8.3.2 GENTLY INSERT THE LIQUID SAMPLE SYRINGE INTO THE BRASS NEEDLE GUIDE, BOTTOMING THE NEEDLE ON THE SEPTUM.

3.8.3.3 OPEN V-9 BY GENTLY PULLING THE VALVE HANDLE OUT TO ITS STOP.

3.8.3.4 COMPLETE INSERTION OF THE SYRINGE NEEDLE INTO THE BRASS NEEDLE GUIDE UNTIL THE SYRINGE NEEDLE NUT MATES INTO THE NEEDLE GUIDE SLOT.

3.8.3.5 WITHDRAW 100μl OF SAMPLE, THEN LOCK THE SAMPLE IN THE SYRINGE BY UNSCREWING THE SYRINGE BODY TWO TURNS.

3.8.3.6 WITHDRAW THE SYRINGE CAREFULLY FROM NEEDLE GUIDE AND CLOSE V-9 BY GENTLY PUSHING THE VALVE HANDLE ONTO ITS STOP (HANDLE IS PARALLEL TO CHAMBER).

3.8.3.7 CLOSE ACCESS DOOR AND PLACE SYRINGE IN CONTAINER.

3.8.3.8 IF NO OTHER SAMPLE IS REQUIRED PROCEED TO STEP 3.8.5.

3.8.4 RETRIEVE GASEOUS SAMPLE AS FOLLOWS:

3.8.4.1 OPEN THE UPPER SAMPLE MODULE ACCESS DOOR.

3.8.4.2 GENTLY INSERT GAS SAMPLE SYRINGE INTO THE BRASS NEEDLE GUIDE, BOTTOMING THE NEEDLE ON THE SEPTUM.

3.8.4.3 OPEN V-14 BY GENTLY PULLING THE VALVE HANDLE OUT TO ITS STOP.

3.8.4.4 COMPLETE INSERTION OF THE SYRINGE NEEDLE INTO BRASS NEEDLE GUIDE UNTIL THE SYRINGE NEEDLE NUT MATES INTO THE BRASS NEEDLE GUIDE SLOT.

3.8.4.5 WITHDRAW 100μl OF GAS SAMPLE, THEN LOCK THE SAMPLE IN THE SYRINGE BY UNSCREWING THE SYRINGE BODY TWO TURNS IN THE COUNTER CLOCKWISE DIRECTION

3.8.4.6 WITHDRAW THE SYRINGE CAREFULLY FROM THE BRASS NEEDLE GUIDE. PLACE THE SYRINGE IN THE TRANSPORT CONTAINER.

3.8.4.7 WITH THE LAST EMPTY SYRINGE, PERFORM STEPS 3.8.4.4, 3.8.4.5 AND 3.8.4.6.

3.8.4.8 CLOSE V-14 BY GENTLY PUSHING THE VALVE HANDLE ONTO ITS STOP. CLOSE THE SAMPLE MODULE ACCESS DOOR.

3.8.5 RETURN TO THE CHEMISTRY LAB WITH THE TRANSPORT CART AND SAMPLE

3.9 ANALYSIS

3.9.1 IF DRAWN, PLACE THE 2ml SHIELDED GRAB SAMPLE IN THE SOURCE LOCKER FOR LATER TRANSPORT.

CAUTION: OPEN TRANSPORT CONTAINER COVER AND MEASURE DOSE RATE OF SYRINGES. IF GREATER THAN 1 REM/HOUR, NOTIFY THE MANAGER OF RADIOLOGICAL ASSESMENT AND REQUEST INSTRUCTIONS FOR HANDLING. IF LESS THAN 1 REM/HOUR, TREAT AS A NORMAL RADIOACTIVE SAMPLE AND MINIMIZE EXPOSURES IN PERFORMING THE REQUIRED ANALYSIS.

3.9.2 REMOVE THE 100μl LIQUID SAMPLE SYRINGE FROM TRANSPORT CONTAINER AND INJECT ITS CONTENTS INTO THE LITER BOTTLE THAT WAS PREPARED IN STEP 3.2.4.

3.9.3 ISOTOPIC ANALYSIS

3.9.3.1 OBTAIN EPIP FORM 4214-1, 4214-2 AND FORM 4.1.

3.9.3.2 FILL A 1 LITER PLASTIC BOTTLE WITH DEMINERALIZED WATER AND MARK BOTTLE.

3.9.3.3 TRANSFER 1 ml OF SAMPLE PREPARED IN STEP 3.9.2 INTO THE FILLED ONE LITER BOTTLE, BAG AND COUNT THE SAMPLE AS PER CP 801/2801 N USING A SAMPLE VOLUME OF 1 ml.

3.9.3.4 IF SAMPLE DEAD TIME IS GREATER THAN 20% USE AN APPROPRIATE SHELF HEIGHT TO REDUCE DEAD TIME BELOW 20%. USING FIGURE 4.1, DETERMINE PROPER SHELF RATIO AND RECORD ON EPIP 4214-2

3.9.3.5 LOG DILUTION FACTORS (EPIP FORM 4214-1) ON EPIP FORM 4214-2.

3.9.3.6 USING THE COMPUTER PRINT-OUT SHEET, CALCULATE THE ACTUAL COOLANT ACTIVITY FOR EACH ISOTOPE AS DESCRIBED ON EPIP FORM 4214-

3.9.3.7 REPORT COMPLETED FORM 4214-2 RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT. ATTACH ALL SHEETS AND FILE FOR FUTURE REFERENCE.

3.9.3.8 PLACE THE ANALYZED LITER IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

NOTE: IF THE MANAGER OF RADIOLOGICAL ASSESMENT REQUESTS DATA SHEETS, MAKE TWO COPIES PRIOR TO RELEASING THEM. FILE THE COPIES.

3.9.4 CHLORIDE ANALYSIS

3.9.4.1 OBTAIN EPIP FORM 4214-1 AND 4214-3.

3.9.4.2 FILL A LITER PLASTIC BOTTLE WITH DEMINERALIZED WATER AND MARK THE BOTTLE.

3.9.4.3 TRANSFER 1 ml OF SAMPLE PREPARED IN STEP 3.9.2 INTO THE FILLED ONE LITER BOTTLE. LOG DILUTIONS ON EPIP FORM 4214-1.

3.9.4.4 PLACE LITER BOTTLE IN LEAD CARRYING CONTAINER AND PROCEED TO THE CHLORIDE TITRATION HOOD.

3.9.4.5 INTO A 250 ml BEAKER, POUR 100 ml OF THE LITER BOTTLE. PLACE THE LITER BOTTLE BEHIND THE LEAD BRICK SHIELD IN THE TITRATION HOOD.

3.9.4.6 POUR THE 100 ml INTO THE CHLORIDE CASSEROLE AND PERFORM CHLORIDE TITRATION (IN THE HOOD) AS PER CP808/2808M.

3.9.4.7 LOG RESULTS ON EPIP FORM 4214-3. USE DILUTION FACTORS FROM EPIP FORM 4214-1.

3.9.4.8 DISCARD SOLUTION IN SAMPLE SINK DRAIN (FLUSHING DRAIN WITH A LARGE QUANTITY OF WATER).

3.9.4.9 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.4.10 MAKE TWO COPIES OF THE DATA SHEETS. FILE THE COPIES AND RELAY ORIGINALS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.5 BORON ANALYSIS

3.9.5.1 OBTAIN FORM 4214-1, AND 4214-3

3.9.5.2 SET AND STANDARDIZE (LOW LEVEL STANDARD) THE ICP 5000 FOR BORON ANALYSIS AS PER CP 801/2801A.

3.9.5.3 USING THE SAMPLE PREPARED IN STEP 3.9.4.3, POUR ABOUT 5 ml IN A SMALL PLASTIC BEAKER. PLACE SAMPLE BOTTLE BACK IN HOOD.

3.9.5.4 PLACE SMALL PLASTIC BEAKER BEHIND SHIELD ERECTED BY ICP ASPIRATOR.

3.9.5.5 PERFORM BORON ANALYSIS AS PER CP 801/2801 A.

3.9.5.6 LOG RESULTS ON EPIP FORM 4214-2, USING DILUTION FACTORS FROM EPIP FORM 4214-1.

3.9.5.7 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.5.8 MAKE TWO COPIES OF THE DATA SHEETS. FILE THE COPIES AND RELAY ORIGINALS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.6 GASEOUS ISOTOPIC

3.9.6.1 OBTAIN EPIP FORMS 4214-5 AND 4214-6.

3.9.6.2 REMOVE ONE OF THE TWO 100 ml GAS SAMPLE SYRINGES FROM THE TRANSPORT AND INJECT ITS CONTENTS INTO A STOPPERED 14.4 ml VIAL.

3.9.6.3 WRAP THE VIAL IN SARAN WRAP AND COUNT AS PER CP 801/2801 N. FOR SAMPLE VOLUME, USE THAT WHICH WAS CALCULATED ON EPIP FORM 4214-5.

NOTE: MAINTAIN DEAD TIME LESS THAN 20% BY USING EITHER THE 4 cm OR 10 cm SHELF.

3.9.6.4 SEAL THE EMPTY SYRINGE IN A LABELED PLASTIC BAG AND PLACE IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.6.5 WITH EPIP FORM 4214-5 AND THE COMPUTER PRINT-OUT SHEET, COMPLETE EPIP FORM 4214-6.

3.9.6.6 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.6.7 LABEL 14.4 ml VIAL AND PLACE IN SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.6.8 MAKE TWO COPIES OF THE DATA SHEETS AND COMPUTER PRINT-OUT. FILE THE COPIES AND FORWARD ORIGINALS TO THE MANAGER OF

RADIOLOGICAL ASSESMENT.

3.9.7 GAS COMPOSITION ANALYSIS

3.9.7.1 REMOVE THE LAST 100ul GAS SAMPLE SYRINGE FROM THE TRANSPORT CONTAINER AND PERFORM A HYDROGEN ANALYSIS AS PER CP 801C/2801C.

3.9.7.2 RECORD RESULTS ON BOTTOM OF EPIP FORM 4214-6 (THE SAME FORM AS USED IN STEP 3.9.6).

3.9.7.3 SEAL EMPTY SYRINGE IN A LABELED PLASTIC BAG AND STORE IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.8 IF A BACK-UP SAMPLE IS NOT REQUIRED, PROCEED TO STEP 3.10 SYSTEM RESTORATION.

3.9.9 IF A BACK-UP SAMPLE IS REQUIRED, OBTAIN NEW SYRINGES AND REPEAT:

3.9.9.1 FOR BACK-UP IN-LINE SAMPLE STEP 3.8.3

3.9.9.2 FOR BACK-UP GASEOUS SAMPLE STEP 3.8.4

3.10 SYSTEM RESTORATION

3.10.1 THE SAMPLE SYSTEM AND SAMPLE CHAMBERS SHOULD BE PREPARED FOR THE NEXT SAMPLE BY REMOVING EXISTING CONTAMINATION.

3.10.2 MEETING ALL R.W.P. REQUIREMENTS, PROCEED TO THE COOLANT MIMIC AND OPERATING MODULES.

3.10.3 IF VALVES ON OPERATING MODULE ARE NOT IN THE EXPECTED POSITION - REPOSITION IT (THEM) AS FOLLOWS:

V-1 BY-PASS	V-6 CLOSED	V-12 IN-LINE	V-16 CLOSED
V-2 GRAB	V-7 IN-LINE	V-13 BY-PASS	V-17 CLOSED
V-3 SAMPLE	V-8 BY-PASS	V-15 CLOSED	V-18 HI-FLOW
V-4 CLOSED	V-11 GAS		

3.10.4 OPEN THE SAME VALVE THAT WAS OPENED IN STEP 3.7.2.

3.10.5 START THE FLUSHING PUMP

3.10.6 OPEN V-4, V-6, V-16 AND V-17.

3.10.7 POSITION V-13 TO IN-LINE AND START THE STRIPPING PUMP. A FLOW SHOULD BE EVIDENT ON THE FLOW METER. CONTINUE THIS FLUSH FOR ABOUT THREE MINUTES.

3.10.8 POSITION V-12 AND V-13 TO BY-PASS FOR 30 SECONDS AND THEN POSITION V-8 TO IN-LINE.

3.10.9 STOP THE STRIPPING PUMP AND POSITION V-12 TO IN-LINE. CONTINUE THIS FLUSH FOR ABOUT 3 MINUTES.

3.10.10 POSITION V-7 AND V-8 TO BY-PASS, THEN POSITION V-2 TO BY-PASS.

3.10.11 IN 30 SECONDS, CLOSE V-4, V-6, V-16 AND V-17, THEN POSITION V-1 AND V-2 TO GRAB.

3.10.12 FLUSH FOR 3 MINUTES AND THEN POSITION V-3 TO NORMAL AND FLUSH.

3.10.13 STOP THE FLUSH PUMP AND CLOSE FLUSH PUMP DISCHARGE VALVE.

3.10.14 ON MIMIC PANEL, CLOSE 1-PAS-21 (FSO-9.75J-3) AND CLOSE THE VALVE THAT WAS OPENED IN STEP 3.5.3.

3.10.15 ON OPERATING MODULE POSITION VALVES AS FOLLOWS:

V-1	BY-PASS	V-7	BY-PASS	V-15	CLOSED
V-2	GRAB	V-8	BY-PASS	V-16	CLOSED
V-3	SAMPLE	V-11	LIQUID	V-17	CLOSED
V-4	CLOSED	V-12	BY-PASS	V-18	LO-FLOW
V-6	CLOSED	V-13	BY-PASS		

3.10.16 BACK-OFF NITROGEN REGULATOR (V-19) ALL THE WAY.

3.10.17 <u>CLOSE</u> NITROGEN BOTTLE ISOLATION VALVE AND BACK-OUT ITS REGULATOR.

3.10.18 DE-ENERGIZE MODULE BY DEPRESSING POWER-ON SWITCH.

3.10.19 REPLACE AND LOCK ALL ANTI-TAMPER COVERS.

3.10.20 RETURN TO CHEMISTRY LAB.

3.10.21 CALL SHIFT SUPERVISOR AND INFORM HIM THAT THE REACTOR COOLANT SAMPLING HAS BEEN COMPLETED. REQUEST THAT HE CLOSED 1-PAS-24 (FSO-9-75J-1), 1-PAS-25 (FSO-9-75J-2) AND THE VALVE THAT WAS OPENED IN STEP 3.4.1.

4.0 FIGURES

4.1 Ge(Li) COUNTING SYSTEM – SHELF RATIOS

4.2 VAPOR PRESSURE – VS – TEMPERATURE CURVE

5.0 TABLES

N/A

MILLSTONE NUCLEAR POWER STATION CHEMISTRY DEPARTMENT

Ge(Li) Counting System - Shelf Ratios
1 Liter Bottle

Isotope	4 CM	30 CM	60 CM	93 CM
Cr-51	2.70E-04	3.55E-05	3.94E-06	1.16E-06
Co-58	5.86E-04	7.81E-05	8.71E-06	3.06E-06
Co-60	1.10E-04	1.53E-05	1.72E-06	6.71E-07
Nb-95	2.21E-05	2.77E-06	2.89E-07	9.21E-08
Ce-144	7.49E-05	8.78E-06	8.83E-07	2.99E-07
Total	1.06E-03	1.41E-04	1.55E-05	5.29E-06

$\frac{4\ CM}{30\ CM}$ 7.52

Total 1.06E-03 1.41E-04 1.55E-05 5.29E-06

$\frac{4\ CM}{30\ CM}$ 7.52

$\frac{4\ CM}{60\ CM}$ 68.4

$\frac{4\ CM}{93\ CM}$ 201.00

A one liter sample was counted on the normal 4 CM shelf. The "Well Counter High Shelf" was placed on the Ge(Li) cave floor, centered over the Ge(Li) crystal. The one liter was then counted on the "Indicated" 30 CM, 60 CM, shelf and then on the top of the "High Shelf". The actual distance from the top of the Ge(Li) crystal to the "Indicated" shelf is 4 CM, 12.5 CM, 42.5 CM, and 75.0 CM.

FIGURE 4.1

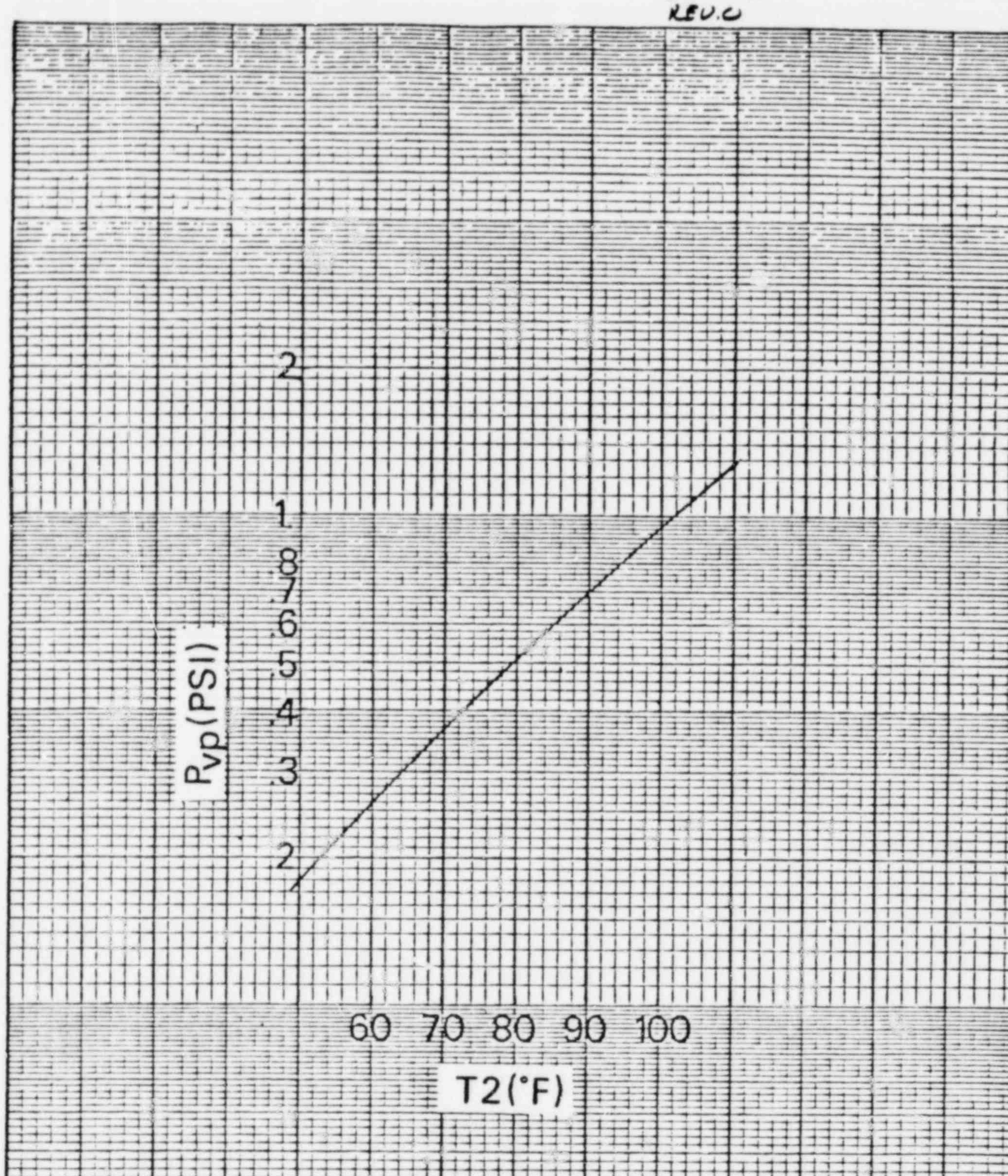

FIGURE 4-2

E J Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4215 Rev. 0

Title Unit-1 Containment Air Post Accident Sampling

Prepared By D. Wilkens

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	John F. Hagley	5-21-82
UNIT #1 ASSIST. CHEM. SUP.	David L. Wilkens	5-21-82
Unit 2 assist Chem Sup	Robert H. Langer	5/21/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. ~~PORC~~/SORC APPROVAL

PORC/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

6-1-82
Effective Date

SF-301
Rev. 5

REV. 0

UNIT #1 CONTAINMENT AIR

POST ACCIDENT SAMPLING

PAGE	EFFECTIVE REVISION
1	0

1.0 OBJECTIVE

TO PROVIDE INSTRUCTIONS FOR SAMPLING CONTAINMENT AIR (AFTER AN INCIDENT WHEN HIGH RADIOACTIVITY LEVELS PRECLUDE NORMAL SAMPLE METHODS) VIA THE POST ACCIDENT SAMPLING SYSTEM.

2.0 DISCUSSION

2.1 IN THE POST ACCIDENT CONDITION IT WILL BE NECESSARY TO MEASURE VARIOUS PARAMETERS OF THE CONTAINMENT AIR TO ASSIST IN ESTIMATING THE EXTENT OF CORE DAMAGE.

2.2 PREPLANNING IS NECESSARY PRIOR TO OBTAINING A SAMPLE. THE MANAGER OF RADIOLOGICAL ASSESMENT AND HEALTH PHYSICS PERSONNEL WILL DETERMINE STAY TIMES, ROUTES, PROTECTIVE CLOTHING, RESPIRATORY PROTECTION, DOSIMETRY AND OTHER HEALTH PHYSICS REQUIREMENTS NEEDED TO KEEP INDIVIDUALS WITHIN ALLOWABLE EXPOSURE LIMITS AND CONTROL THE SPREAD OF RADIOACTIVE MATERIALS.

2.3 A RWP WILL BE WRITTEN FOR THE SPECIFIC SAMPLING TO BE DONE. HEALTH PHYSICS PERSONNEL MAY MONITOR THE SAMPLING AS IT IS PERFORMED BECAUSE INITIATION OF A SAMPLE FLOW WILL CHANGE THE RADIATION CONDITIONS.

3.0 INSTRUCTIONS

3.1 THE MANAGER OF RADIOLOGICAL ASSESMENT SHALL BE THE SOLE ORIGINATOR OF ALL REQUIRED SAMPLES AND SHALL SPECIFY:

3.1.1 TYPE OF SAMPLE REQUIRED

3.1.2 RWP REQUIREMENTS

3.1.3 IF A HEALTH PHYSICS ESCORT IS REQUIRED.

3.2 PRIOR TO LEAVING THE CHEMISTRY LAB TO ACQUIRE THE SAMPLE:

3.2.1 LABEL ALL SAMPLE CONTAINERS

3.2.2 PREPARE THE TRANSPORT WAGON WITH REQUIRED SYRINGES

3.2.3 PERFORM THE CHECK PROGRAM ON COUNTING SYSTEM AS PER CP 801/2801N.

3.2.4 PERFORM A 10 MINUTE BACKGROUND ON GELI SYSTEM SO AS TO ENSURE BACKGROUND IS WITHIN ACCEPTED UNITS. IF BACKGROUND IS TOO HIGH, INFORM THE MANAGER OF RADIOLOGICAL ASSESMENT AND PERSUE THE UTILIZATION OF HEALTH PHYSIC'S COUNTING SYSTEM.

3.2.5 OBTAIN NECESSARY EPIP FORM 4215-1.

3.3 SAMPLING PREREQUISITES

3.3.1 NOTIFY SHIFT SUPERVISOR THAT YOU WILL BE ACTIVATING THE CONTAINMENT AIR POST ACCIDENT SAMPLING SYSTEM AND REQUEST:

3.3.1.1 FOR HIGH DRYWELL SAMPLE

3.3.1.1.1 OPEN FSO-9-75D-1 AND FSO-9-75D-2

3.3.1.2 FOR LOW DRYWELL SAMPLE

3.3.1.2.1 OPEN FSO-9-75B-1 AND FSO-9-75B-2

3.3.1.3 FOR RETURN PATH

3.3.1.3.1 OPEN FSO-9-75C-1 AND FSO-9-75C-2

3.3.2 MEETING ALL RWP REQUIREMENTS, PROCEED TO MODULE AREA (AT THIS TIME, LEAVE TRANSPORT CART AND SYRINGES IN THE CHEMISTRY LAB).

3.3.3 UNLOCK AND REMOVE ANTI-TAMPER COVERS FROM RESPECTIVE MODULES.

3.3.4 ENSURE ELECTRICAL POWER IS AVAILABLE TO THE MODULES (LIGHTS ON).

3.3.5 LINE UP NITROGEN SYSTEM AS FOLLOWS:

~~[illegible]~~

REVISED

3.3.5.1 OPEN 1-PAS-51 AND 1-PAS-52 (MODULE NITROGEN INLET AND OUTLET).

3.3.5.2 OPEN NITROGEN BOTTLE BOTTLE ISOLATION VALVE AND REGULATE PRESSURE TO 400 PSIG.

3.3.5.3 AT OPERATING MODULE, REGULATE V-7 TO OBTAIN 80 PSIG DOWNSTREAM.

3.3.6 AT THE SAMPLE MODULE:

3.3.6.1 OPEN 1-PAS-38 AND 1-PAS-39 (INFLUENT AND EFFLUENT VALVES).

3.3.6.2 OPEN 1-PAS-46 AND 1-PAS-47 (AIR COMPRESSOR INLET AND DISCHARGE VALVES).

3.3.6.3 CHECK HEAT TRACING TEMPERATURE SET AT 290°F.

3.3.6.4 ENSURE MODULE EXHAUST DAMPER IS OPEN.

3.3.7 RETURN TO THE CONTAINMENT AIR OPERATING MODULE AND ENERGIZE THE MODULE BY PRESSING THE POWER ON SWITCH. REZERO THE TIMER. LEAVE THE AREA AND RETURN TO THE CHEMISTRY LAB.

3.4 OBTAINING THE SAMPLE

3.4.1 FROM STEP 3.3.7, ALLOW A 15 MINUTE MODULE WARM-UP PERIOD.

3.4.2 MEETING ALL RWP REQUIREMENTS AND WITH THE TRANSPORT CART AND SYRINGES, PROCEED TO THE CONTAINMENT MIMIC AND OPERATING MODULES.

3.4.3 ON THE OPERATING MODULE POSITION VALVES AS FOLLOWS:

V-1 OPEN, V-2 SAMPLE, V-10 OFF AND V-11 OFF.

3.4.4 ON MIMIC MODULE:

3.4.4.1 OPEN FSO-975L-1 (1-PAS-25).

3.4.4.2 OPEN FSO-975L-2 (1-PAS-41).

3.4.4.3 START AIR COMPRESSOR.

3.4.5 ON OPERATING MODULE

3.4.5.1 POSITION V-11 TO SAMPLE INFLUENT. THE FLOWMETER SHOULD INDICATE THAT FLOW IS INITIATED.

3.4.5.2 AFTER 3 MINUTES, POSITION V-1 TO CLOSE. FLOWMETER INDICATION SHOULD BE SIGNIFICANTLY LESS THAN NOTED ABOVE.

3.4.5.3 AFTER 1 MINUTE, POSITION V-2 TO BY-PASS AND FLUSH. THE SAMPLE IS NOW ISOLATED.

3.4.5.4. SECURE SAMPLE FLOW BY POSITIONING V-11 TO OFF. FLOWMETER SHOULD DROP TO ZERO.

3.4.5.5 INITIATE NITROGEN PURGE BY POSITIONING V-11 TO NITROGEN FLUSH, V-1 TO OPEN AND V-10 TO ON. A HIGH RATE OF FLOW SHOULD BE INDICATED ON THE FLOWMETER.

3.4.5.6 AFTER 3 MINUTES, POSITION V-1 TO CLOSE, THE FLOWMETER INDICATION SHOULD BE LESS THAN NOTED ABOVE.

3.4.5.7 AFTER ANOTHER 3 MINUTES, POSITION V-10 TO OFF, V-11 TO OFF AND V-1 OPEN.

3.4.5.8 AT THIS POINT THE CONTAINMENT AIR SAMPLE IS ISOLATED IN THE SHIELDED SAMPLE CHAMBER AND THE SAMPLE LINES HAVE BEEN PURGED SUCH THAT RADIATION LEVELS ARE REDUCED TO A LEVEL THAT WILL ALLOW ACCESS TO THE SAMPLE MODULE FOR SAMPLE RETRIEVAL.

3.5 SAMPLE RETRIEVAL

3.5.1 WITH TRANSPORT CART AND SYRINGES, PROCEED TO SAMPLE MODULE AREA. PERFORM A RAPID RADIATION SURVEY TO

INSURE RADIATION LEVELS ARE LOW ENOUGH TO ALLOW ACCESS.

3.5.2 CHECK SYRINGE VALVES ARE OPEN (NEEDLE SCREWED UP AGAINST BODY).

3.5.3 OPEN SAMPLE MODULE DOOR.

3.5.4 OPEN V-3 BY LINING UP HANDLE WITH NEEDLE GUIDE.

3.5.5 INSERT SYRINGE NEEDLE INTO NEEDLE GUIDE, PIERCING SEPTUM AND ENGAGING NEEDLE NUT INTO NEEDLE GUIDE SLOT.

3.5.6 DRAW 100 μl [illegible] OF GAS FOR CONTAINMENT HYDROGEN ANALYSIS INTO THE SYRINGE AND LOCK THE SAMPLE IN THE SYRINGE BY TURNING THE SYRINGE TWO TURNS IN THE COUNTER CLOCKWISE DIRECTION.

CAUTION: DO NOT ROTATE SYRINGE MORE THAN TWO TURNS. EXCESSIVE TURNS WILL DISENGAGE NEEDLE FROM SYRINGE.

3.5.7 WITHDRAW SYRINGE FROM NEEDLE GUIDE, CLOSE V-3.

3.5.8 PLACE SYRINGE IN TRANSFER CONTAINER AND CLOSE COVER.

3.5.9 REPEAT STEPS 3.5.4 THROUGH 3.5.8 FOR THE 25 μl OF GAS REQUIRED FOR ISOTOPIC ANALYSIS.

3.5.10 CLOSE AND LATCH SAMPLE MODULE DOOR.

3.5.11 RETURN TO CHEMISTRY LAB WITH TRANSPORT CART AND SYRINGES.

~~3.5.10 ANALYSIS~~

~~3.3.10.1 PERFORM HYDROGEN ANALYSIS AS PER [illegible] USING ONE SYRINGE. RECORD DATA ON EPIP FORM [illegible]~~

~~3.3.10.2 INJECT THE ALIQUOT OF SAMPLE IN THE SECOND SYRINGE INTO A [illegible] STOPPERED VIAL AND [illegible]~~

3.6 ANALYSIS

CAUTION: OPEN TRANSPORT CONTAINER COVER AND MEASURE DOSE RATE OF SYRINGES. IF GREATER THAN 1rem/hour, NOTIFY MANAGER OF RADIOLOGICAL ASSESMENT AND REQUEST INSTRUCTIONS FOR HANDLING. IF LESS THAN 1rem/hour, TREAT AS NORMAL RADIOACTIVE SAMPLE AND MINIMIZE EXPOSURE IN PERFORMING THE REQUIRED ANALYSIS.

3.6.1 PERFORM HYDROGEN ANALYSIS AS PER CP 801C/2801C USING THE 100 μl SYRINGE. RECORD DATA ON EPIP FORM 4215-1.

3.6.2 INJECT THE 25 μl SYRINGE SAMPLE INTO A 14.4 ml STOPPERED VIAL. WRAP VIAL IN SARAN WRAP AND COUNT AS PER CP 801/2801N.

NOTE: MAINTAIN DEAD TIME LESS THAN 20% BY USING EITHER THE 4 cm OR 10 CM SHELF.

3.6.3 USING DATA FROM COMPUTER PRINT OUT, COMPLETE EPIP FORM 4215-1 AND GIVE INFORMATION TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.6.4 PLACE EMPTY SYRINGES IN PLASTIC BAG AND STORE THEM IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

3.6.5 IF A BACK-UP SAMPLE IS NOT REQUIRED, PROCEED TO STEP 3.7. SYSTEM RESTORATION.

3.6.6 IF A BACK-UP SAMPLE IS REQUIRED, OBTAIN NEW SYRINGE AND REPEAT STEP 3.5 SAMPLE RETRIEVAL.

~~AS PER CR BOI/2SOIN, USING DATA FROM COMPUTER PRINT OUT, FILL~~
~~IN EPIP FORM 4215-1. WHEN FORM 4215-1 IS COMPLETE, GIVE~~
~~INFORMATION TO THE MANAGER OF RADIOLOGICAL ASSESSMENT.~~

~~3.3.12 IF A BACK-UP SAMPLE IS NOT REQUIRED, PROCEED TO STEP 3.3.14~~
~~SYSTEM RESTORATION.~~

~~3.3.13 IF A BACK-UP SAMPLE IS REQUIRED, OBTAIN NEW SYRINGES~~
~~AND REPEAT STEPS 3.3.9 THROUGH 3.3.10.~~

3.7 <u>SYSTEM RESTORATION</u>

3.7.1 THE SAMPLE SYSTEM AND SAMPLE CHAMBER SHOULD BE PREPARED FOR THE NEXT SAMPLE BY REMOVING EXISTING CONTAMINATION.

3.7.2 MEETING ALL RWP REQUIREMENTS, PROCEED TO THE CONTAINMENT MIMIC AND OPERATING MODULES.

3.7.3 ON MIMIC PANEL, <u>CLOSE</u> FSO-975L-1 (1-PRS-25).

3.7.4 ON OPERATING MODULE

3.7.4.1 POSITION V-2 TO <u>SAMPLE</u>.

3.7.4.2 INITIATE NITROGEN PURGE BY POSITIONING V-11 TO <u>NITROGEN FLUSH</u>, V-1 TO <u>OPEN</u> AND V-10 TO <u>ON</u>. A HIGH RATE OF FLOW SHOULD BE INDICATED.

3.7.4.3 AFTER 3 MINUTES, POSITION V-1 TO <u>CLOSE</u>, THE FLOWMETER INDICATION SHOULD BE LESS THAN THAT NOTED ABOVE.

3.7.4.4 AFTER ANOTHER 3 MINUTES, POSITION V-10 TO <u>OFF</u>, V-11 TO <u>OFF</u> AND V-1 TO <u>OPEN</u>. THE SYSTEM IS NOW PURGED OF SAMPLE.

3.7.5 ON MIMIC PANEL, SECURE THE AIR COMPRESSOR AND <u>CLOSE</u> FSO-975L-2 (1-PRS-41).

3.7.6 SHUT NITROGEN BOTTLE ISOLATION VALVE.

3.7.8 ON OPERATING MODULE, BACK OFF THE NITROGEN PRESSURE REGULATOR SUCH THAT PRESSURE INDICATES ZERO AND DE-ENERGIZE MODULE BY DEPRESSING <u>POWER-ON</u> SWITCH.

REPLACE AND LOCK ALL ANTI-TAMPER COVERS AND RETURN TO CHEMISTRY LAB.

3.8 CALL THE SHIFT SUPERVISOR AND INFORM HIM THAT CONTAINMENT SAMPLING HAS BEEN COMPLETED. REQUEST THAT HE <u>CLOSE</u> THE VALVES THAT WERE <u>OPENED</u> IN STEP 3.3.1.

4.0 <u>FIGURES</u>

N/A

5.0 <u>TABLES</u>

N/A

[signature]
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4216 Rev. 0

Title Unit-2 Reactor Coolant Post Accident Sampling

Prepared By D. Wilkens

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	[signature]	5-21-82
UNIT #1 ASSIST. CHEM. SUP.	David L. Wilkens	5-21-82
Unit 2 Assist Chem Sup.	Robert H Lange	5-21-82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

[signature]
Station/Service/Unit Superintendent

6-1-82
Effective Date

SF-301
Rev. 5

UNIT #2 REACTOR COOLANT

POST ACCIDENT SAMPLING

PAGE	EFFECTIVE REVISION
1	0

1.0 OBJECTIVE

TO PROVIDE INSTRUCTIONS FOR SAMPLING REACTOR COOLANT AFTER AN INCIDENT WHEN HIGH RADIOACTIVITY LEVELS MAY PRECLUDE THE NORMAL SAMPLE METHODS.

2.0 DISCUSSION

2.1 IN THE POST ACCIDENT CONDITION IT WILL BE NECESSARY TO MEASURE VARIOUS PARAMETERS OF THE REACTOR COOLANT TO ASSIST IN ESTIMATING THE EXTENT OF CORE DAMAGE. THEREFORE, THE PROCEDURE DESCRIBES THE SAMPLING AND ANALYSIS TO BE USED FOR THE FOLLOWING SYSTEMS: REACTOR Coolant ~~RECIRCULATION,~~ SHUTDOWN COOLING AND LOW PRESSURE CORE INJECTION.

2.2 PREPLANNING IS NECESSARY PRIOR TO OBTAINING A SAMPLE. THE MANAGER OF RADIOLOGICAL ASSESSMENT AND HEALTH PHYSICS PERSONNEL WILL DETERMINE STAY TIMES, ROUTES, PROTECTIVE CLOTHING, RESPIRATORY PROTECTION, DOSIMETRY AND OTHER HEALTH PHYSICS REQUIREMENTS NEEDED TO KEEP INDIVIDUALS WITHIN ALLOWABLE EXPOSURE LIMITS AND CONTROL THE SPREAD OF RADIOACTIVE MATERIALS.

2.3 AN RWP WILL BE WRITTEN FOR THE SPECIFIC SAMPLING TO BE DONE HEALTH PHYSICS PERSONNEL MAY MONITOR THE SAMPLING AS IT IS PERFORMED BECAUSE INITIATION OF SAMPLE FLOW WILL CHANGE RADIATION CONDITIONS.

3.0 INSTRUCTIONS

3.1 THE MANAGER OF RADIOLOGICAL ASSESSMENT SHALL BE THE SOLE ORIGINATOR OF ALL REQUIRED SAMPLES AND SHALL SPECIFY:

3.1.1 TYPE OF SAMPLE REQUIRED

3.1.2 R.W.P. REQUIREMENTS

3.1.3 SAMPLE ROUTE SO AS TO MINIMIZE EXPOSURE.

3.1.4 IF A HEALTH PHYSICS ESCORT IS REQUIRED FOR SAMPLE ACQUISITION.

3.2 PRIOR TO LEAVING THE CHEMISTRY LAB TO RETRIEVE THE SAMPLE:

3.2.1 PERFORM THE CHECK PROGRAM ON THE GeLi COUNTING SYSTEM AS PER CP 801/2801 N.

3.2.2 PERFORM A 10 MINUTE BACKGROUND ON GeLi COUNTING SYSTEM SO AS TO ENSURE BACKGROUND IS WITHIN ACCEPTED UNITS. IF BACKGROUND IS TOO HIGH, INFORM THE MANAGER OF RADIOLOGICAL ASSESMENT AND PERSUE THE UTILIZATION OF HEALTH PHYSICS COUNTING SYSTEM.

3.2.3 OBTAIN EPIP FORMS 4214-1, 4214-2, 4214-3, 4214-4, 4214-5 AND EPIP FIGURE 4214-4.1.

3.2.4 ENSURE THAT THE LEAD BRICK SHIELD IS IN TACT IN THE PRIMARY SAMPLE HOOD. FILL A ONE LITER PLASTIC BOTTLE WITH DEMINERALIZE WATER AND PLACE BOTTLE IN THIS SHIELD.

3.2.5 STOPPER A 14.4 ml GAS VIAL.

3.2.6 PREPARE TRANSPORT CART AND CONTAINER FOR SAMPLES

3.2.6.1 OBTAIN THREE 100 μl SYRINGES AND CHECK THEM OPEN. (NEEDLE IS SCREWED UP AGAINST SYRINGE BODY.)

3.2.6.2 PLACE SYRINGES IN CONTAINER

3.2.7 TRANSFER THE CHLORIDE TITRATION BURET TO ONE SIDE OF THE HOT HOOD. FABRICATE A BRICK SHIELD AROUND THE CHLORIDE CASSEROLE 6 INCHES HIGH OR SUCH THAT ANY LIQUID SAMPLE WILL BE SHIELDED FROM THE ANALYST AND OTHER LAB PERSONNEL.

3.2.8 FABRICATE A BRICK SHIELD AROUND A SMALL PLASTIC BEAKER AT THE ICP 5000 SAMPLE ASPIRATOR.

3.2.9 ENSURE THAT THE EXHAUST HOOD ABOVE THE SIGMA 3B GC IS OPERATIONAL.

3.3 SAMPLING PRECAUTIONS

3.3.1 DO NOT EXCEED 165°F AS READ ON TEMPERATURE INDICATOR T-1.

3.3.2 DO NOT EXCEED 2500 PSIG IN SAMPLE SYSTEM.

3.3.3 DO NOT RUN STRIPPING PUMP DRY FOR LONGER THAN 5 MINUTES.

3.3.4 DO NOT OPEN 2S-497 OR 2S-498 EXCEPT DURING FLUSH OPERATIONS OR WHEN SYSTEM PRESSURES ARE 250 PSIG OR LESS AS DAMAGE TO THE pH PROBE MAY OCCUR.

3.3.5 2S-492 AND 2S-496 MUST BE CLOSED AT ALL TIMES EXCEPT WHEN THE SYRINGE IS INSERTED INTO THE SAMPLE CHAMBER.

3.3.6 2S-499 MUST ALWAYS BE IN THE LOW FLOW POSITION WHEN SYSTEM PRESSURE IS GREATER THAN 400 PSIG TO PREVENT HIGH PRESSURE SPIKES DUE TO WATER HAMMER.

3.4 SAMPLING PREREQUISITES

3.4.1 NOTIFY THE SHIFT SUPERVISOR THAT THE REACTOR COOLANT POST ACCIDENT SAMPLING SYSTEM WILL BE ACTIVATED. ~~[illegible]~~

3.4.2 MEETING ALL R.W.P. REQUIREMENTS, PROCEED TO THE SAMPLE MODULE AREA (AT THIS TIME, LEAVE TRANSPORT CART AND SYRINGES IN THE CHEMISTRY LAB).

3.4.3 AT SAMPLE CABINET:

3.4.3.1 CHECK 2-S-492 (V-9) AND 2-S-496 (V-14) CLOSED (HANDLE PARALLEL TO HOUSING).

3.4.3.2 ENSURE 2ml SHIELDED REMOVABLE GRAB SAMPLE IS INSTALLED AND QUICK-CONNECTS ARE PROPERLY ALIGNED.

3.4.3.3 OPEN 2-S-504 (FLUSH WATER SUPPLY).

3.4.3.4 PLACE IN POSITION 1 THE FOLLOWING VALVE:

3.4.3.4.1 2-S-451 IF A REACTOR COOLANT HOT LEG SAMPLE IS TO DRAWN.

3.4.3.4.1 2-S-452 I A LPSI/HPSI SAMPLE IS TO BE DRAWN.

3.4.3.5 PLACE VALVE 2-S-453 IN POSITION 1.

3.4.4 LEAVE SAMPLE CABINET AREA AND PROCEED TO THE OPERATING AND MIMIC MODULE AREA.

3.4.5 UNLOCK AND REMOVE ANTI-TAMPER COVERS.

3.4.6 ON MIMIC PANELS C103C AND C103D, CHECK THE FOLLOWING VALVES CLOSED RC-001, RC-045, 2-S-446, 2-S-448, 2-S-449 AND 2-S-457.

3.4.7 OPEN NITROGEN BOTTLE ISOLATION VALVE AND REGULATE DOWNSTREAM PRESSURE TO 400 PSIG.

3.4.8 FILL DEMINERALIZED WATER FLUSH TANK BY OPENING 2-S-505, WHEN TANK INDICATES FULL CLOSE 2-S-505.

3.4.9 LINE-UP FLUSH SYSTEM AS FOLLOWS:

3.4.9.1 OPEN FLUSH PUMP DISCHARGE VALVE 2S-509 AND REACTOR COOLANT FLUSH VALVE 2-S-503.

3.4.9.2 CHECK CLOSED 2-GAN-237 AND 2-S-507.

3.4.10 ON OPERATING MODULE:

3.4.10.1 PUSH THE POWER-ON SWITCH.

3.4.10.2 REZERO THE TIMER AND REGULATE 2-GAN-260 (V-19) TO OBTAIN 80 PSIG.

3.4.10.3 SET TEMPERATURE SWITCH TO T-1.

3.4.10.4 POSITION VALVES AS FOLLOWS:

2-S-482 (V-1)	BY-PASS	2-S-493 (V-11)	LIQUID
2-S-486 (V-2)	GRAB	2-S-494 (V-12)	BY-PASS
2-S-487 (V-3)	SAMPLE	2-S-495 (V-13)	BY-PASS
2-S-488 (V-4)	CLOSED	2-GAN-259 (V-15)	CLOSED
2-S-489 (V-6)	CLOSED	2-S-497 (V-16)	CLOSED
2-S-490 (V-7)	BY-PASS	2S-498 (V-17)	CLOSED
2-S-491 (V-8)	BY-PASS	2-S-499 (V-18)	LO-FLOW

3.4.11 FILL THE SAMPLE MODULE GAS LOOP AS FOLLOWS:

3.4.11.1 POSITION 2-S-493 (V-11) TO GAS, 2-GAN-259 (V-15) TO OPEN, 2-S-498 (V-17) TO IN-LINE AND 2-S-489 (V-6) TO OPEN.

3.4.11.2 AFTER 30 SECONDS, POSITION 2-S-494 (V-12) AND 2-S-495 (V-13) TO IN-LINE.

3.4.11.3 AFTER ANOTHER 30 SECONDS, POSITION 2-S-494 (V-12) TO BY-PASS AND 2-S-491 (V-8) TO IN-LINE.

3.4.11.4 WAIT 30 SECONDS, THEN POSITION 2-S-490 (V-7) AND 2-S-491 (V-8) TO BY-PASS.

3.4.11.5 WAIT ANOTHER 30 SECONDS, THEN POSITION 2-GAN-259(V-15) TO CLOSE, 2-S-493(V-11) TO LIQUID, 2-S-489(V-6) TO CLOSE AND 2-S-495(V-13) TO BY-PASS.

3.4.11.6 LEAVE MODULE AREA AND RETURN TO THE CHEMISTRY LAB.

3.5 OBTAINING THE REQUIRED SAMPLES

3.5.1 FROM STEP ~~[illegible]~~ 3.4.10.1, ALLOW A MINIMUM OF 15 MINUTES FOR A WARM-UP PERIOD.

3.5.2 MEETING ALL R.W.P. REQUIREMENTS AND WITH EPIP FORM 4214-4, THE TRANSPORT CART, SYRINGES AND (IF REQUIRED) A NEW 2 ml SHIELDED REMOVABLE GRAB SAMPLE, PROCEED TO THE OPERATING AND MIMIC PANEL AREA.

3.5.3 TO INITIATE THE REQUIRED SAMPLE FLOW OPEN:

3.5.3.1 FOR REACTOR COOLANT HOT LEG, RC001 AND RC045.

3.5.3.2 FOR LPSI/HPSI, 2-S-446

3.5.4 FROM OPERATING MODULE, RECORD TOTALIZER READING ON EPIP FORM 4214-4 LINE 1.

CAUTION: DO NOT PERFORM STEP 3.5.5 NOR 3.5.6 UNLESS SPECIFICALLY DIRECTED BY THE MANAGER OF RADIOLOGICAL ASSESMENT TO OBTAIN A PRESSURIZED 2mL GRAB SAMPLE (STEP 3.5.5) OR A DEPRESSURIZED 2mL GRAB SAMPLE (STEP 3.5.6). IF NEITHER OF THE ABOVE ARE REQUESTED, PROCEED TO STEP 3.5.7.

3.5.5 PRESSURIZED 2mL GRAB SAMPLE

3.5.5.1 POSITION ~~[illegible]~~ 2-S-482 AND ~~[illegible]~~ 2-S-486 TO GRAB. ALLOW ABOUT 30 SECONDS FOR FLOW TO STABLIZE.

3.5.5.2 POSITION ~~[illegible]~~ 2-S-486 TO BY-PASS (FLOW RATE SHOULD DROP TO ZERO).

3.5.5.3 POSITION 2-S-487 TO NORMAL AND FLUSH.

3.5.5.4 A PRESSURIZED GRAB SAMPLE HAS BEEN COLLECTED.

PROCEED TO STEP 3.5.7 IN-LINE SAMPLE.

3.5.6 DEPRESSURIZED 2mL GRAB SAMPLE

3.5.6.1 POSITION 2-S-482 AND 2-S-486 TO THE GRAB POSITION. ALLOW ABOUT 30 SECONDS FOR FLOW TO STABLIZE.

3.5.6.2 POSITION 2-S-482 TO BY-PASS AND 2-S-487 TO NORMAL AND FLUS

3.5.6.3 A DEPRESSURIZED GRAB SAMPLE HAS BEEN COLLECTED. PROCEED TO STEP 3.5.7 IN-LINE SAMPLE.

3.5.7 IN-LINE SAMPLE

3.5.7.1 POSITION 2-S-482 TO GRAB, 2-S-486 TO BY-PASS, 2-S-488 TO OPEN AND 2-S-489 TO OPEN. MONITOR FLOW ON THE FLOWMETER.

3.5.7.2 AFTER A 20 SECOND WAIT, POSITION 2-S-490 AND 2-S-491 TO IN-LINE.

3.5.7.3 WAIT 15 SECONDS AND POSITION 2-S-491 TO BY-PASS.

3.5.7.4 START THE STRIPPING PUMP AND RUN FOR 15 SECONDS, THEN SECURE THE STRIPPING PUMP.

3.5.7.5 CLOSE 2-S-486 AND WAIT 10 SECONDS (FLOW SHOULD DROP TO ZERO).

3.5.7.6 CLOSE 2-S-488.

3.5.7.7 A PRESSURIZED SAMPLE OF KNOWN VOLUME IS NOW TRAPPE[D] WITHIN THE BOUNDARIES OF 2-S-482, 2-S-489 AND 2-S-493.

3.5.7.8 ON MIMIC PANEL, CLOSE THE VALVE THAT WAS OPENED IN STEP 3.5.3.

3.6 STRIPPING OF DISSOLVED GASES

3.6.1 NOTE AND RECORD THE PRESSURE ON LINE 2 OF EPIP FORM 4214-4.

3.6.2 POSITION ~~V-12~~ 2-S-494 TO IN-LINE AND ~~V-11~~ 2-S-493 TO GAS. ALLOW ENOUGH TIME FOR THE LIQUID LOOP TO DEPRESSURIZE AND DISSIPATE RELEASED GAS TO THE GAS LOOP.

3.6.3 POSITION ~~V-12~~ 2-S-494 AND ~~V-7~~ 2-S-490 TO BY-PASS.

3.6.4 START THE STRIPPING PUMP AND ALLOW IT TO RUN FOR ONE MINUTE THEN STOP THE PUMP.

3.6.5 WHEN PRESSURE, AS READ ON THE DIGITAL READOUT, STABLIZES (ABOUT 15 SECONDS) POSITION ~~V-7~~, ~~V-8~~, ~~V-12~~ ~~AND~~ ~~V-13~~ 2-S-490, 2-S-491, 2-S-494 AND 2-S-495 TO IN-LINE

3.6.6 RESTART THE STRIPPING PUMP. ALLOW IT TO RUN FOR ONE MINUTE THEN STOP THE PUMP AND ALLOW PRESSURE TO STABLIZE REPEAT THIS STEP TWO MORE TIMES.

3.6.7 POSITION ~~V-7~~, ~~V-8~~, ~~V-12~~ AND ~~V-13~~ 2-S-490, 2-S-491, 2-S-494 2-S-495 TO BY-PASS AND ~~V-11~~ 2-S-493 TO LIQU

3.6.8 NOTE AND RECORD THE PRESSURE ON LINE 3 OF EPIP FORM 4214-4

3.6.9 NOTE AND RECORD TEMPERATURE T-2 ON LINE 4 OF EPIP FORM 4214-

3.6.10 PROCEED TO STEP 3.7. DO NOT PERFORM CALCULATIONS AT THIS TIME

3.7 FLUSHING SAMPLE SYSTEM PRIOR TO SAMPLE RETRIEVAL

3.7.1 IF VALVES ARE NOT IN THE FOLLOWING POSITIONS, REPOSITION THEM.

2-S-482 ~~V-1~~	BY-PASS	2-S-490 ~~V-7~~	BY-PASS	2-GAN-259 ~~V-15~~	CLOSED
2-S-486 ~~V-2~~	GRAB	2-S-491 ~~V-8~~	BY-PASS	2-S-497 ~~V-16~~	CLOSED
2-S-487 ~~V-3~~	NORMAL	2-S-493 ~~V-11~~	LIQUID	2-S-498 ~~V-17~~	CLOSED
2-S-488 ~~V-4~~	CLOSED	2-S-494 ~~V-12~~	BY-PASS	2-S-499 ~~V-18~~	LO-FLOW
2-S-489 ~~V-6~~	CLOSED	2-S-495 ~~V-13~~	BY-PASS		

3.7.2 OPEN THE FOLLOWING VALVE:

3.7.2.1 IF REACTOR COOLANT HOT LEG SAMPLE - 2-S-449

3.7.2.2 IF LPSI/HPSI SAMPLE - 2-S-446

2-S-488, 2-S-497 2-S-498

3.7.3 OPEN ~~V-4~~, ~~V-16~~ AND ~~V-17~~. START THE FLUSHING PUMP. ~~..~~ ~~A~~ FLOW SHOULD BE EVIDENT ON FLOWMETER.

3.7.4 MONITOR AND RECORD pH ON LINE 6 OF EPIP FORM 4214-4.

2-S-499
3.7.5 START THE STRIPPING PUMP AND POSITION ~~V-18~~ TO HI-FLOW.

3.7.6 CONTINUE FLUSHING FOR 5 MINUTES. DURING THE FLUSH, CYCLE VALVES
2-S-488, 2-S-497 2-S-498
~~V-4~~, ~~V-16~~ AND ~~V-17~~ AT LEAST 3 TIMES TO ENSURE ALL LIQUID IS FLUSHED FROM UNDER THE VALVE SEATS. MONITOR FLOW AND RADIATION LEVELS TO ASSESS FLUSH EFFECTIVENESS.

3.7.7 REPOSITION VALVES AS FOLLOWS:
2-S-489 2-S-497 2-S-498
~~V-6~~ TO OPEN ~~V-16~~ TO CLOSED ~~V-17~~ TO CLOSED

3.7.8 CONTINUE THE FLUSH FOR ANOTHER 2 MINUTES. DURING THIS TIME, CYCLE
2-S-489
~~V-6~~ AT LEAST 3 TIMES.

2-S-493
3.7.9 POSITION ~~V-11~~ TO GAS AND FLUSH FOR TWO MINUTES THEN STOP THE
2-S-489
STRIPPING PUMP AND CLOSE ~~V-6~~.

2-S-486 2-S-488
3.7.10 POSITION ~~V-2~~ TO BY-PASS THEN ~~V-4~~ TO CLOSED.

2-S-482 2-S-486
3.7.11 AFTER ONE MINUTE, POSITION ~~V-1~~ AND ~~V-2~~ TO GRAB.

3.7.12 FLUSH FOR ONE MINUTE IN THIS LINE-UP THEN SECURE THE FLUSHING PUMP AND CLOSE THE VALVE OPENED IN STEP 3.7.2.

3.8 SAMPLE RETRIEVAL

3.8.1 WITH TRANSPORT CART, SYRINGES AND 2ml SHIELDED REMOVABLE GRAB SAMPLE (IF REQUIRED) PROCEED TO SAMPLE MODULE AREA. PERFORM A RAPID RADIATION SURVEY TO INSURE RADIATION LEVELS ARE LOW ENOUGH TO ALLOW ACCESS.

NOTE: IF A 2ml SAMPLE WAS NOT REQUESTED BY THE MANAGER OF RADIOLOGICAL ASSESMENT PROCEED TO STEP 3.8.3.

3.8.2 RETRIEVE THE 2ml GRAB SAMPLE AS FOLLOWS:

3.8.2.1 OPEN THE LOWER SAMPLE MODULE ACCESS DOOR.

3.8.2.2 GRAB THE UNLATCHING KNOB AND PULL THE GRAB SAMPLE TRAY ASSEMBLY FORWARD, OUTSIDE THE MODULE.

3.8.2.3 DISCONNECT THE FLEXIBLE HOSES FROM THE GRAB SAMPLE VALVE OPERATOR.

3.8.2.4 LIFT THE GRAB SAMPLE CHAMBER FROM THE TRAY AND PLACE IT IN THE TRANSFER CONTAINER. PLACE THE LID ON THE CONTAINER.

3.8.2.5 PLACE THE NEW GRAB SAMPLE CHAMBER ON THE SLIDE TRAY. CHECK THAT THE SAMPLE CHAMBER IS LOCATED SO THAT THE QUICK CONNECT COLLARS ARE PROPERLY POSITIONED IN THE YOKE AND THE GRAB SAMPLE CHAMBER IS PRESSED FIRMLY DOWN ONTO SLIDE TRAY.

3.8.2.6 CONNECT THE FLEXIBLE HOSES TO THE GRAB SAMPLE CHAMBER AIR OPERATOR. ENSURE THE BLUE COLORED QUICK-CONNECTS ARE MATED.

3.8.2.7 PUSH THE SLIDE TRAY WITH GRAB SAMPLE CHAMBER BACK INTO THE CABINET UNTIL THE LIQUID QUICK-CONNECTS LATCH.

3.8.2.8 CLOSE THE ACCESS DOOR, IF NO OTHER SAMPLE RETRIEVAL IS REQUIRED PROCEED TO STEP 3.8.5, OTHERWISE PROCEED TO STEP 3.8.

3.8.3 RETRIEVE IN-LINE SAMPLE AS FOLLOWS:

3.8.3.1 OPEN THE LOWER ACCESS DOOR.

3.8.3.2 GENTLY INSERT THE LIQUID SAMPLE SYRINGE INTO THE BRASS NEEDLE GUIDE, BOTTOMING THE NEEDLE ON THE SEPTUM.

3.8.3.3 OPEN ~~V-9~~ 2-S-492 BY GENTLY PULLING THE VALVE HANDLE OUT TO ITS STOP.

3.8.3.4 COMPLETE INSERTION OF THE SYRINGE NEEDLE INTO THE BRASS NEEDLE GUIDE UNTIL THE SYRINGE NEEDLE NUT MATES INTO THE NEEDLE GUIDE SLOT.

3.8.3.5 WITHDRAW 100μl OF SAMPLE, THEN LOCK THE SAMPLE IN THE SYRINGE BY UNSCREWING THE SYRINGE BODY TWO TURNS.

3.8.3.6 WITHDRAW THE SYRINGE CAREFULLY FROM NEEDLE GUIDE AND CLOSE ~~V-9~~ 2-S-492 BY GENTLY PUSHING THE VALVE HANDLE ONTO ITS STOP (HANDLE IS PARALLEL TO CHAMBER).

3.8.3.7 CLOSE ACCESS DOOR AND PLACE SYRINGE IN CONTAINER.

3.8.3.8 IF NO OTHER SAMPLE IS REQUIRED PROCEED TO STEP 3.8.5.

3.8.4 RETRIEVE GASEOUS SAMPLE AS FOLLOWS:

3.8.4.1 OPEN THE UPPER SAMPLE MODULE ACCESS DOOR.

3.8.4.2 GENTLY INSERT GAS SAMPLE SYRINGE INTO THE BRASS NEEDLE GUIDE, BOTTOMING THE NEEDLE ON THE SEPTUM.

3.8.4.3 OPEN ~~V-14~~ 2-S-496 BY GENTLY PULLING THE VALVE HANDLE OUT TO ITS STOP.

3.8.4.4 COMPLETE INSERTION OF THE SYRINGE NEEDLE INTO BRASS NEEDLE GUIDE UNTIL THE SYRINGE NEEDLE NUT MATES INTO THE BRASS NEEDLE GUIDE SLOT.

3.8.4.5 WITHDRAW 100μl OF GAS SAMPLE, THEN LOCK THE SAMPLE IN THE SYRINGE BY UNSCREWING THE SYRINGE BODY TWO TURNS IN THE COUNTER CLOCKWISE DIRECTION

3.8.4.6 WITHDRAW THE SYRINGE CAREFULLY FROM THE BRASS NEEDLE GUIDE. PLACE THE SYRINGE IN THE TRANSPORT CONTAINER.

3.8.4.7 WITH THE LAST EMPTY SYRINGE, PERFORM STEPS 3.8.4.4, 3.8.4.5 AND 3.8.4.6.

3.8.4.8 CLOSE ~~4-4~~ 2-S-496 BY GENTLY PUSHING THE VALVE HANDLE ONTO ITS STOP. CLOSE THE SAMPLE MODULE ACCESS DOOR.

3.8.5 RETURN TO THE CHEMISTRY LAB WITH THE TRANSPORT CART AND SAMPLE

3.9 ANALYSIS

3.9.1 IF DRAWN, PLACE THE 2ml SHIELDED GRAB SAMPLE IN THE SOURCE LOCKER FOR LATER TRANSPORT.

CAUTION: OPEN TRANSPORT CONTAINER COVER AND MEASURE DOSE RATE OF SYRINGES. IF GREATER THAN 1REM/HOUR, NOTIFY THE MANAGER OF RADIOLOGICAL ASSESMENT AND REQUEST INSTRUCTIONS FOR HANDLING. IF LESS THAN 1REM/HOUR, TREAT AS A NORMAL RADIOACTIVE SAMPLE AND MINIMIZE EXPOSURES IN PERFORMING THE REQUIRED ANALYSIS.

3.9.2 REMOVE THE 100μl LIQUID SAMPLE SYRINGE FROM TRANSPORT CONTAINER AND INJECT ITS CONTENTS INTO THE LITER BOTTLE THAT WAS PREPARED IN STEP 3.2.4.

3.9.3 ISOTOPIC ANALYSIS

3.9.3.1 OBTAIN EPIP FORM 4214-1, 4214-2 AND FORM 4.1.

3.9.3.2 FILL A 1 LITER PLASTIC BOTTLE WITH DEMINERALIZED WATER AND MARK BOTTLE.

3.9.3.3 TRANSFER 1 ml OF SAMPLE PREPARED IN STEP 3.9.2 INTO THE FILLED ONE LITER BOTTLE, BAG AND COUNT THE SAMPLE AS PER CP 801/2801 N, USING A SAMPLE VOLUME OF 1 ml.

3.9.3.4 IF SAMPLE DEAD TIME IS GREATER THAN 20% USE AN APPROPRIATE SHELF HEIGHT TO REDUCE DEAD TIME BELOW 20%. USING FIGURE 4.1, DETERMINE PROPER SHELF RATIO AND RECORD ON EPIP 4214-2

3.9.3.5 LOG DILUTION FACTORS (EPIP FORM 4214-1) ON EPIP FORM 4214-2.

3.9.3.6 USING THE COMPUTER PRINT-OUT SHEET, CALCULATE THE ACTUAL COOLANT ACTIVITY FOR EACH ISOTOPE AS DESCRIBED ON EPIP FORM 4214-2

3.9.3.7 REPORT COMPLETED FORM 4214-2 RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESSMENT. ATTACH ALL SHEETS AND FILE FOR FUTURE REFERENCE.

3.9.3.8 PLACE THE ANALYZED LITER IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

NOTE: IF THE MANAGER OF RADIOLOGICAL ASSESMENT REQUESTS DATA SHEETS, MAKE TWO COPIES PRIOR TO RELEASING THEM. FILE THE COPIES.

3.9.4 CHLORIDE ANALYSIS

3.9.4.1 OBTAIN EPIP FORM 4214-1 AND 4214-3.

3.9.4.2 FILL A LITER PLASTIC BOTTLE WITH DEMINERALIZED WATER AND MARK THE BOTTLE.

3.9.4.3 TRANSFER 1 ml OF SAMPLE PREPARED IN STEP 3.9.2 INTO THE FILLED ONE LITER BOTTLE. LOG DILUTIONS ON EPIP FORM 4214-1.

3.9.4.4 PLACE LITER BOTTLE IN LEAD CARRYING CONTAINER AND PROCEED TO THE CHLORIDE TITRATION HOOD.

3.9.4.5 INTO A 250 ml BEAKER, POUR 100 ml OF THE LITER BOTTLE. PLACE THE LITER BOTTLE BEHIND THE LEAD BRICK SHIELD IN THE TITRATION HOOD.

3.9.4.6 POUR THE 100 ml INTO THE CHLORIDE CASSEROLE AND PERFORM CHLORIDE TITRATION (IN THE HOOD) AS PER CP808/2808M.

3.9.4.7 LOG RESULTS ON EPIP FORM 4214-3. USE DILUTION FACTORS FROM EPIP. FORM 4214-1.

3.9.4.8 DISCARD SOLUTION IN SAMPLE SINK DRAIN (FLUSHING DRAIN WITH A LARGE QUANTITY OF WATER).

3.9.4.9 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.4.10 MAKE TWO COPIES OF THE DATA SHEETS. FILE THE COPIES AND RELAY ORIGINALS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.5 BORON ANALYSIS

3.9.5.1 OBTAIN FORM 4214-1, AND 4214-3

3.9.5.2 SET AND STANDARDIZE (LOW LEVEL STANDARD) THE ICP 5000 FOR BORON ANALYSIS AS PER CP 801/2801M.

3.9.5.3 USING THE SAMPLE PREPARED IN STEP 3.9.4.3, POUR ABOUT 5ml IN A SMALL PLASTIC BEAKER. PLACE SAMPLE BOTTLE BACK IN HOOD.

3.9.5.4 PLACE SMALL PLASTIC BEAKER BEHIND SHIELD ERECTED BY ICP ASPIRATOR.

3.9.5.5 PERFORM BORON ANALYSIS AS PER CP 801/2801 A.

3.9.5.6 LOG RESULTS ON EPIP FORM 4214-2, USING DILUTION FACTORS FROM EPIP FORM 4214-1.

3.9.5.7 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.5.8 MAKE TWO COPIES OF THE DATA SHEETS. FILE THE COPIES AND RELAY ORIGINALS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.6 GASEOUS ISOTOPIC

3.9.6.1 OBTAIN EPIP FORMS 4214-5 AND 4214-6.

3.9.6.2 REMOVE ONE OF THE TWO 100 μl GAS SAMPLE SYRINGES FROM THE TRANSPORT AND INJECT ITS CONTENTS INTO A STOPPERED 14.4 ml VIAL.

3.9.6.3 WRAP THE VIAL IN SARAN WRAP AND COUNT AS PER CP 801/2801 N. FOR SAMPLE VOLUME, USE THAT WHICH WAS CALCULATED ON EPIP FORM 4214-5.

NOTE: MAINTAIN DEAD TIME LESS THAN 20% BY USING EITHER THE 4 cm OR 10 cm SHELF.

3.9.6.4 SEAL THE EMPTY SYRINGE IN A LABELED PLASTIC BAG AND PLACE IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.6.5 WITH EPIP FORM 4214-5 AND THE COMPUTER PRINT-OUT SHEET, COMPLETE EPIP FORM 4214-6.

3.9.6.6 REPORT RESULTS TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.9.6.7 LABEL 14.4 ml VIAL AND PLACE IN SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.6.8 MAKE TWO COPIES OF THE DATA SHEETS AND COMPUTER PRINT-OUT. FILE THE COPIES AND FORWARD ORIGINALS TO THE MANAGER OF

RADIOLOGICAL ASSESSMENT,

3.9.7 GAS COMPOSITION ANALYSIS

3.9.7.1 REMOVE THE LAST 100 μl GAS SAMPLE SYRINGE FROM THE TRANSPORT CONTAINER AND PERFORM A HYDROGEN ANALYSIS AS PER CP 801C/2801C.

3.9.7.2 RECORD RESULTS ON BOTTOM OF EPIP FORM 4214-6 (THE SAME FORM AS USED IN STEP 3.9.6).

3.9.7.3 SEAL EMPTY SYRINGE IN A LABELED PLASTIC BAG AND STORE IN THE SOURCE LOCKER FOR FUTURE DISPOSAL.

3.9.8 IF A BACK-UP SAMPLE IS NOT REQUIRED, PROCEED TO STEP 3.10 SYSTEM RESTORATION.

3.9.9 IF A BACK-UP SAMPLE IS REQUIRED, OBTAIN NEW SYRINGES AND REPEAT:

3.9.9.1 FOR BACK-UP IN-LINE SAMPLE STEP 3.8.3

3.9.9.2 FOR BACK-UP GASEOUS SAMPLE STEP 3.8.4

3.10 SYSTEM RESTORATION

3.10.1 THE SAMPLE SYSTEM AND SAMPLE CHAMBERS SHOULD BE PREPARED FOR THE NEXT SAMPLE BY REMOVING EXISTING CONTAMINATION.

3.10.2 MEETING ALL R.W.P REQUIREMENTS, PROCEED TO THE COOLANT MIMIC AND OPERATING MODULES.

3.10.3 IF VALVES ON OPERATING MODULE ARE NOT IN THE EXPECTED POSITION - REPOSITION IT (THEM) AS FOLLOWS:

2-S-482 ~~V-1~~ BY-PASS	2-S-489 ~~V-6~~ CLOSED	2-S-494 ~~V-12~~ IN-LINE	2-S-497 ~~V-16~~ CLOSED
2-S-486 ~~V-2~~ GRAB	2-S-490 ~~V-7~~ IN-LINE	2-S-495 ~~V-13~~ BY-PASS	2-S-498 ~~V-17~~ CLOSED
2-S-487 ~~V-5~~ SAMPLE	2-S-491 ~~V-8~~ BY-PASS	2-GAN-359 ~~V-15~~ CLOSED	2-S-499 ~~V-18~~ H_2-FLOW
2-S-488 ~~V-4~~ CLOSED	2-S-493 ~~V-11~~ GAS		

3.10.4 OPEN THE SAME VALVE THAT WAS OPENED IN STEP 3.7.2.

3.10.5 START THE FLUSHING PUMP

3.10.6 OPEN ~~V-4~~ 2-S-488, ~~V-6~~ 2-S-489, ~~V-16~~ 2-S-497 AND ~~V-17~~ 2-S-498.

3.10.7 POSITION ~~V-13~~ 2-S-495 TO IN-LINE AND START THE STRIPPING PUMP. A FLOW SHOULD BE EVIDENT ON THE FLOW METER. CONTINUE THIS FLUSH FOR ABOUT THREE MINUTES.

3.10.8 POSITION ~~V-12~~ 2-S-494 AND ~~V-13~~ 2-S-495 TO BY-PASS FOR 30 SECONDS AND THEN POSITION ~~V-8~~ 2-S-491 TO IN-LINE.

3.10.9 STOP THE STRIPPING PUMP AND POSITION ~~V-12~~ 2-S-494 TO IN-LINE. CONTINUE THIS FLUSH FOR ABOUT 3 MINUTES.

3.10.10 POSITION ~~V-7~~ 2-S-490 AND ~~V-8~~ 2-S-491 TO BY-PASS, THEN POSITION ~~V-2~~ 2-S-486 TO BY-PASS.

3.10.11 IN 30 SECONDS, CLOSE ~~V-4~~ 2-S-488, ~~V-6~~ 2-S-489, ~~V-16~~ 2-S-497 AND ~~V-17~~ 2-S-498, THEN POSITION ~~V-1~~ 2-S-482 AND ~~V-2~~ 2-S-486 TO GRAB.

3.10.12 FLUSH FOR 3 MINUTES AND THEN POSITION ~~V-3~~ 2-S-487 TO NORMAL AND FLUSH.

3.10.13 STOP THE FLUSH PUMP AND CLOSE FLUSH PUMP DISCHARGE VALVE

3.10.14 ON MIMIC PANEL, CLOSE ~~[illegible]~~

~~CLOSE~~ THE VALVE THAT WAS OPENED IN STEP 3.5.3 AND STEP 3.10

3.10.15 ON OPERATING MODULE POSITION VALVES AS FOLLOWS:

~~V-1~~ 2-S-482	BY-PASS	~~V-7~~ 2-S-490	BY-PASS	~~V-15~~ 2-GAN-259	CLOSED
~~V-2~~ 2-S-486	GRAB	~~V-8~~ 2-S-491	BY-PASS	~~V-16~~ 2-S-497	CLOSED
~~V-3~~ 2-S-487	SAMPLE	~~V-11~~ 2-S-493	LIQUID	~~V-17~~ 2-S-498	CLOSED
~~V-4~~ 2-S-488	CLOSED	~~V-12~~ 2-S-494	BY-PASS	~~V-18~~ 2-S-499	LO-FLOW
~~V-6~~ 2-S-489	CLOSED	~~V-13~~ 2-S-495	BY-PASS		

REV.0 2416

2-GAN-260

3.10.16 BACK-OFF NITROGEN REGULATOR (~~HIGH~~) ALL THE WAY.

3.10.17 CLOSE NITROGEN BOTTLE ISOLATION VALVE AND BACK-OUT ITS REGULATOR.

3.10.18 DE-ENERGIZE MODULE BY DEPRESSING POWER-ON SWITCH.

3.10.19 REPLACE AND LOCK ALL ANTI-TAMPER COVERS.

3.10.20 RETURN TO CHEMISTRY LAB.

3.10.21 CALL SHIFT SUPERVISOR AND INFORM HIM THAT THE REACTOR COOLANT SAMPLING HAS BEEN COMPLETED. ~~REQUESTS THAT HE CLOSED 1-HAS-24 (FSO-9-15J-1), 1-HAS-85 (FSO-9-15J-2) AND THE VALVE THAT WAS OPENED IN STEP 3.4.1~~

4.0 FIGURES

4.1 Ge(Li) COUNTING SYSTEM - SHELF RATIOS

4.2 VAPOR PRESSURE - VS - TEMPERATURE CURVE

5.0 TABLES

N/A

MILLSTONE NUCLEAR POWER STATION CHEMISTRY DEPARTMENT

Ge(Li) Counting System - Shelf Ratios
1 Liter Bottle

Isotope	4 CM	30 CM	60 CM	93 CM
Cr-51	2.70E-04	3.55E-05	3.94E-06	1.16E-06
Co-58	5.86E-04	7.81E-05	8.71E-06	3.06E-06
Co-60	1.10E-04	1.53E-05	1.72E-06	6.71E-07
Nb-95	2.21E-05	2.77E-06	2.89E-07	9.21E-08
Ce-144	7.49E-05	8.78E-06	8.83E-07	2.99E-07
Total	1.06E-03	1.41E-04	1.55E-05	5.29E-06

$\frac{4\ CM}{30\ CM}$ 7.52

Total	1.06E-03	1.41E-04	1.55E-05	5.29E-06

$\frac{4\ CM}{30\ CM}$ 7.52

$\frac{4\ CM}{60\ CM}$ 68.4

$\frac{4\ CM}{93\ CM}$ 201.00

A one liter sample was counted on the normal 4 CM shelf. The "Well Counter High Shelf" was placed on the Ge(Li) cave floor, centered over the Ge(Li) crystal. The one liter was then counted on the "Indicated" 30 CM, 60 CM, shelf and then on the top of the "High Shelf". The actual distance from the top of the Ge(Li) crystal to the "Indicated" shelf is 4 CM, 12.5 CM, 42.5 CM, and 75.0 CM.

FIGURE 4.1

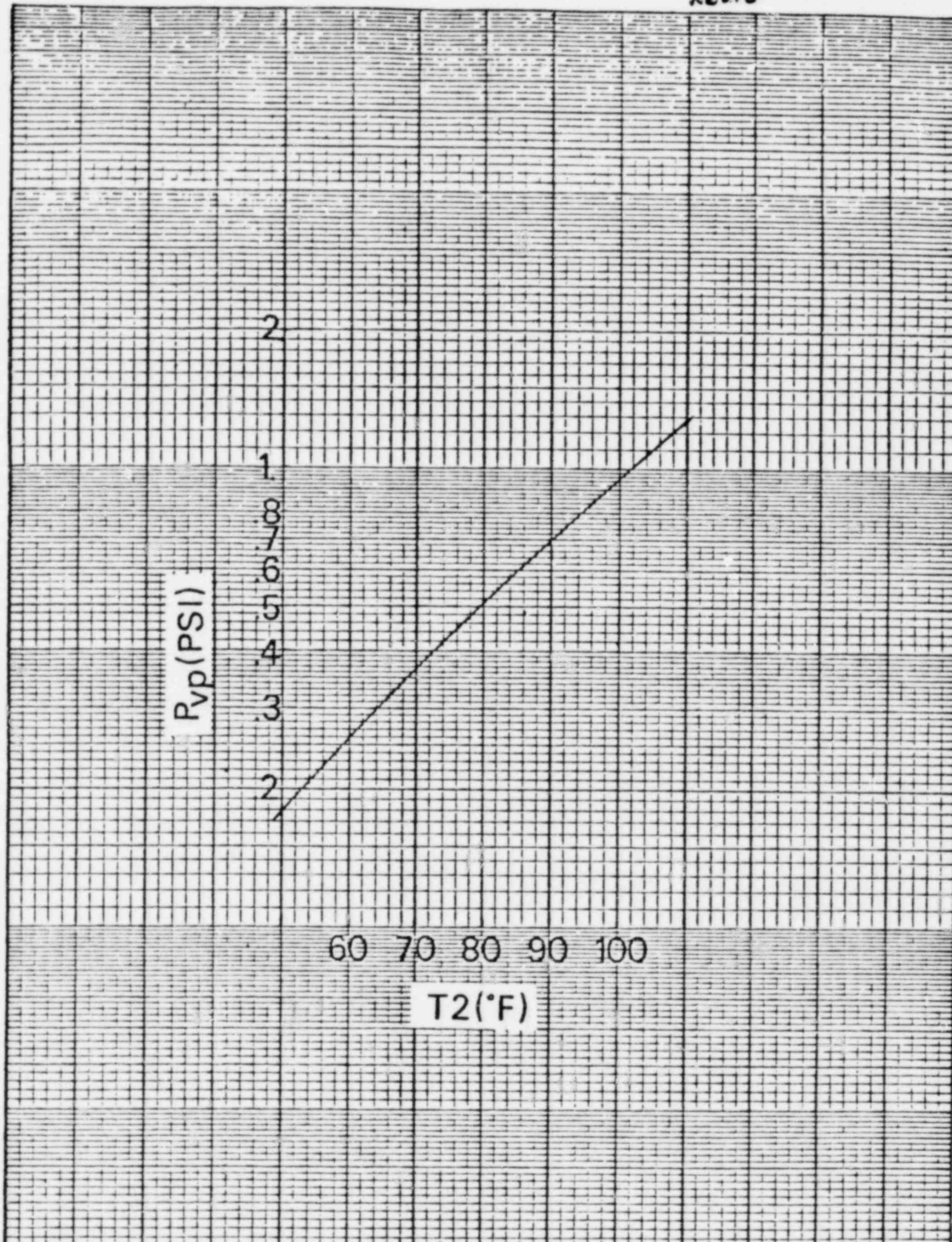

FIGURE 4-2

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4217 Rev. 0

Title Unit-2 Containment Air Post Accident Sampling

Prepared By D. Wilkens

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	John F. Hafey	5-21-82
UNIT #1 ASSIST. CHEM. SUP.	David L. Wilkens	5-21-82
Unit 2 Asst. Chem. Sup.	Robert H. Langer	5-21-82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes)
YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes)
YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E.J. Mroczka
Station/Service/Unit Superintendent

6-1-82
Effective Date

SF-301
Rev. 5

UNIT #2 CONTAINMENT AIR
POST ACCIDENT SAMPLING

PAGE	EFFECTIVE REVISION
1	0

(2)

1.0 Objective

To provide instructions for sampling the containment atmosphere after an accident when high radioactivity levels preclude normal sample methods.

2.0 Discussion

2.1 In the post accident condition it will be necessary to measure various parameters of the containment air to assist in estimating the extent of core damage.

2.2 Preplanning is necessary prior to obtaining a sample. The Manager of Radiological Assessment and Health Physics personnel will determine stay times, routes, protective clothing, respiratory protection, dosimetry and other Health Physics requirements needed to keep individuals within allowable exposure limits and control the spread of radioactive materials.

2.3 An R.W.P. will be written for the specific sampling to be performed. Health Physics will monitor the sampling as it is performed because initiation of sample flow will change radiation conditions.

3.0 Instructions

3.1 The Manager of Radiological Assessment shall be the sole originator of all required samples and shall specify:

3.1.1 Type of sample required

3.1.2 RWP requirements

3.1.3 Sample route to minimize exposure

3.1.4 If a Health Pysics escort is required for sample acquisition.

3.2 PRIOR TO LEAVING THE CHEMISTRY TO ACQUIRE THE SAMPLE:

3.2.1 LABEL ALL SAMPLE CONTAINERS

3.2.2 PREPARE THE TRANSPORT WAGON WITH REQUIRED SYRINGES.

3.2.3 PERFORM THE CHECK PROGRAM ON THE COUNTING SYSTEM AS PER CP 801/2801 N.

3.2.4 PERFORM A 10 MINUTE BACKGROUND ON GeLi SYSTEM SO AS TO ENSURE BACKGROUND IS WITHIN ACCEPTED UNITS. IF BACKGROUND IS TOO HIGH, NOTIFY THE MANAGER OF RADIOLOGICAL ASSESMENT AND PERSUE THE UTILIZATION OF HEALTH PHYSIC'S COUNTING SYSTEM.

3.2.5 OBTAIN NECESSARY EPIP FORM 4217-1.

~~3.4 All sample containers will be properly prepare prior to entry into the sample area.~~

~~3.5 Obtain EPIP forms 4202-3 and 4202-5~~

3.3 SAMPLING PREREQUISITES

3.3.1 NOTIFY SHIFT SUPERVISOR THAT YOU WILL BE ACTIVATING THE CONTAINMENT AIR POST ACCIDENT SAMPLING SYSTEM AND REQUEST THAT THEY START A HYDROGEN ANALYZER SYSTEM.

3.3.2 MEETING ALL RWP REQUIREMENTS, PROCEED TO THE MODULE AREA (AT THIS TIME, LEAVE TRANSPORT CART AND SYRINGES IN CHEMISTRY LAB).

3.3.3 AT THE SAMPLE MODULE:

3.3.3.1 CHECK AUXILARY BUILDING VENTILATION SYSTEM IS OPERATING AND CHECK OPEN MODULE VENTILATION DAMPER.

3.3.3.2 OPEN MODULE DOOR. AND CHECK CLOSED 2-S-502 (HANDLE IS PERPENDICULAR TO NEEDLE GUIDE).

3.3.3.3 PERFORM THE FOLLOWING VALVE LINE-UP:

2-S-484 POSITION #1

2-S-461 OPEN

2-S-462 OPEN

2-S-463 OPEN

2-S-464 OPEN

3.3.4 AT THE OPERATING MODULE:

3.3.4.1 UNLOCK AND OPEN ANTI-TAMPER COVER.

3.3.4.2 OPEN FRONT PANEL AND CHECK FOLLOWING VALVES:

2-GAN-246 CLOSED 2-GAN-248 OPEN

2-GAN-247 CLOSED

3.3.4.3 CLOSE FRONT PANEL AND CHECK 2-GAN-249 (REGULATOR) ALL THE WAY OUT.

3.3.4.4 OPEN NITROGEN BOTTLE ISOLATION VALVE AND REGULATE DOWNSTREAM PRESSURE TO 80 PSIG.

3.3.4.5 RESET TIMER TO ZERO

3.3.4.6 ENERGIZE MODULE BY DEPRESSING THE POWER-ON SWITCH. LEAVE THE AREA AND RETURN TO THE CHEMISTRY LAB.

3.4 OBTAINING THE SAMPLE

3.4.1 FROM STEP 3.3.4.6, ALLOW A 15 MINUTE MODULE WARM-UP PERIOD.

3.4.2 MEETING ALL RWP REQUIREMENTS AND WITH TRANSPORT CART AND SYRINGES, PROCEED TO OPERATING MODULE.

3.4.3 PERFORM THE FOLLOWING VALVE LINE-UP:

2-S-500 (V-1) OPEN	2-GAN-252 (V-10) OFF
2-S-501 (V-2) SAMPLE	2-GAN-234 (V-11) OFF

3.4.3 INITIATE SAMPLE FLOW BY POSITIONING 2-GAN-234 (V-11) TO SAMPLE. THE FLOWMETER SHOULD INDICATE A FLOW. IF A FLOW IS NOT INDICATED, CALL SHIFT SUPERVISOR FOR OPERATIONAL VERIFICATION OF A HYDROGEN ANALYZER SYSTEM.

3.4.4 AFTER 3 MINUTES, POSITION 2-S-500 (V-1) TO CLOSE. FLOWMETER SHOULD INDICATE LESS THAN NOTED ABOVE.

3.4.5 AFTER ONE MINUTE, POSITION 2-S-501 (V-2) TO BY-PASS AND FLUSH. THE SAMPLE IS NOW ISOLATED.

3.4.6 SECURE SAMPLE FLOW BY POSITIONING 2-GAN-234 (V-11) TO OFF.

3.4.7 INITIATE NITROGEN PURGE BY POSITIONING 2-GAN-234 (V-11) TO NITROGEN FLUSH, 2-S-500 (V-1) TO OPEN, 2-GAN-252 (V-10) TO ON AND REGULATING 2-GAN-231 TO 10 PSIG DOWNSTREAM. A FLOW SHOULD BE INDICATED.

3.4.8 AFTER 3 MINUTES, POSITION 2-S-500 (V-1) TO CLOSE. THE FLOWMETER SHOULD BE LESS THAN NOTED ABOVE.

3.4.9 AFTER ANOTHER 3 MINUTES, POSITION 2-GAN-252 (V-10) TO OFF, 2-GAN-234 (V-11) TO OFF, AND 2-S-500 (V-1) TO OPEN.

3.4.10 AT THIS POINT THE CONTAINMENT AIR SAMPLE IS ISOLATED IN THE SHIELDED SAMPLE CHAMBER AND THE SAMPLE LINES HAVE BEEN PURGED SUCH THAT RADIATION LEVELS ARE REDUCED TO A LEVEL THAT WILL ALLOW ACCESS TO THE SAMPLE MODULE FOR SAMPLE RETRIEVAL.

3.5 SAMPLE RETRIEVAL

3.5.1 WITH TRANSPORT AND SYRINGES, PROCEED TO THE SAMPLE MODULE AREA. PERFORM A RAPID RADIATION SURVEY TO INSURE RADIATION LEVELS ARE LOW ENOUGH TO ALLOW ACCESS.

3.5.2 CHECK SYRINGE VALVES ARE OPEN (NEEDLE SCREWED UP AGAINST BODY).

3.5.3 OPEN SAMPLE MODULE DOOR.

3.5.4 OPEN 2-S-502 (V-3) BY LINING UP HANDLE WITH NEEDLE GUIDE.

3.5.5 INSERT SYRINGE NEEDLE INTO NEEDLE GUIDE, PIERCING SEPTUM AND ENGAGING NEEDLE NUT INTO NEEDLE GUIDE SLOT.

3.5.6 DRAW 100 ml OF GAS FOR CONTAINMENT HYROGEN ANALYSIS INTO THE SYRINGE AND LOCK THE SAMPLE IN THE SYRINGE BY TURNING THE SYRINGE TWO TURNS IN THE COUNTER CLOCKWISE DIRECTION.

CAUTION! DO NOT ROTATE SYRINGE MORE THAN TWO TURNS. EXCESSIVE TURNS WILL DISENGAGE NEEDLE FROM SYRINGE.

3.5.7 WITHDRAW SYRINGE FROM NEEDLE GUIDE, CLOSE 2-S-502 (V-3).

3.5.8 PLACE SYRINGE IN TRANSFER CONTAINER AND CLOSE COVER.

3.5.9 REPEAT STEPS 3.5.4 THROUGH 3.5.8 FOR THE 25μl OF GAS REQUIRED FOR ISOTOPIC ANALYSIS.

3.5.10 CLOSE AND LATCH SAMPLE MODULE DOOR.

3.5.11 RETURN TO CHEMISTRY LAB WITH TRANSPORT CART AND SYRINGES.

3.6 ANALYSIS

CAUTION: OPEN TRANSPORT CONTAINER COVER AND MEASURE DOSE RATE C SYRINGES. IF GREATER THAN 1 rem/hour, NOTIFY MANAGER OF RADIOLOGICAL ASSESMENT AND REQUEST INSTRUCTIONS FOR HANDLING. IF LESS THAN 1 rem/hour, TREAT AS NORMAL RADIOACTIVE SAMPLE AND MINIMIZE EXPOSURE IN PERFORMING THE REQUIRED ANALYSIS.

3.6.1 PERFORM HYDROGEN ANALYSIS AS PER CP 801C/2801C USING THE 100 μl SYRINGE. RECORD DATA ON EPIP FORM 4215-1.

3.6.2 INJECT THE 25 μl SYRINGE SAMPLE INTO A 14.4 ml STOPPERED VIAL. WRAP VIAL IN SARAN WRAP AND COUNT AS PER CP 801/2801N.

NOTE: MAINTAIN DEAD TIME LESS THAN 20% BY USING EITHER THE 4 cm OR 10 cm SHELF.

3.6.3 USING DATA FROM COMPUTER PRINT OUT, COMPLETE EPIP FORM 4215-1 AND GIVE INFORMATION TO THE MANAGER OF RADIOLOGICAL ASSESMENT.

3.6.4 PLACE EMPTY SYRINGES IN PLASTIC BAG AND STORE THEM IN THE SOURCE LOCKER FOR FUTURE DEPOSAL.

3.6.5 IF A BACK-UP SAMPLE IS NOT REQUIRED, PROCEED TO STEP 3.7, SYSTEM RESTORATION.

3.6.6 IF A BACK-UP SAMPLE IS REQUIRED, OBTAIN NEW SYRINGE AND REPEAT STEP 3.5 SAMPLE RETRIEVAL.

3.7 SYSTEM RESTORATION

3.7.1 THE SAMPLING SYSTEM AND SAMPLE CHAMBER SHOULD BE PREPARED FOR THE NEXT SAMPLE BY REMOVING EXISTING CONTAMINATION.

3.7.2 MEETING ALL RWP REQUIREMENTS, PROCEED TO OPERATING MODULE.

3.7.3 ON OPERATING MODULE:

3.7.3.1 POSITION 2-S-501 (V-2) TO SAMPLE.

3.7.3.2 INITIATE NITROGEN PURGE BY POSITIONING 2-GAN-234 (V-11) TO NITROGEN FLUSH, 2-S-500 (V-1) TO OPEN AND 2-GAN-252 (V-10) TO ON. A HIGH FLOW RATE SHOULD BE INDICATED.

3.7.3.3 AFTER 3 MINUTES, POSITION 2-S-500 (V-1) TO CLOSE, THE FLOWMETER INDICATION SHOULD BE LESS THAN THAT NOTED ABOVE.

3.7.3.4 AFTER ANOTHER 3 MINUTES, POSITION 2-GAN-252 (V-10) TO OFF, 2-GAN-234 (V-11) TO OFF AND 2-S-500 (V-1) TO OPEN, THE SYSTEM IS NOW PURGED OF SAMPLE.

3.7.4 SHUT NITROGEN BOTTLE ISOLATION VALVE AND BACK OFF THE NITROGEN REGULATING VALVE.

3.7.5 DE-ENERGIZE THE OPERATING MODULE BY DEPRESSING THE POWER-ON SWITCH.

3.7.6 CLOSE MODULE DOOR AND LOCK.

3.7.7 PROCEED TO SAMPLE MODULE AND CLOSE THE FOLLOWING VALVES: 2-S-461, 2-S-462, 2-S-463 AND 2-S-464. RETURN TO CHEMISTRY LAB.

3.7.8 CALL THE SHIFT SUPERVISOR AND INFORM HIM THAT CONTAINMENT SAMPLING HAS BEEN COMPLETED.

4.0 FIGURES

N/A

5.0 TABLES

N/A

4000 SERIES

EMERGENCY PLAN IMPLEMENTING FORMS

NUMBER	TITLE	REV.	EFF. DATE
4101-1	Unusual Event Checklist Shift Supervisor/Designee	0	7/15/81
4101-2	Unusual Event Checklist Shift Technical Advisor/SSSA	1	9/15/81
4101-3	Unusual Event Checklist Duty Officer	0	7/15/81
4102-1	Alert Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4102-2	Alert Emergency Shift Technical Advisor/SSSA	1	9/15/81
4102-3	Alert Emergency Duty Officer/Manager of TSC	0	7/15/81
4102-4	Alert Emergency Director of Station Emergency Operations	1	2/19/82
4102-5	Alert Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4102-6	Alert Emergency Manager of Public Information	0	7/15/81
4102-7	Alert Emergency Manager of External Communication	1	9/15/81
4102-8	Alert Emergency Manager of Security	1	1/6/82
4102-9	Alert Emergency Manager of On-Site Resources	2	10/26/81
4102-10	Alert Emergency Manager of Engineering Support	0	7/15/81
4103-1	Site Area Emergency Shift Supervisor/Manager of Control Room OPS	2	4/13/82
4103-2	Site Area Emergency Shift Technical Advisor/SSSA	1	9/15/81

4103-3	Site Emergency Duty Officer/Manager of TSC	0	7/15/81
4103-4	Site Area Emergency Director of Station Emergency Operations	1	2/19/82
4103-5	Site Area Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4103-6	Site Area Emergency Manager of Public Information	0	7/15/81
4103-7	Site Area Emergency Manager of External Communication	1	9/15/81
4103-8	Site Area Emergency Manager of Security	1	1/6/82
4103-9	Site Emergency Manager of On-Site Resources	2	10/26/81
4103-10	Site Area Emergency Manager of Engineering Support	0	7/15/81
4104-1	General Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4104-2	General Emergency Shift Technical Advisor/SSSA	1	9/15/81
4104-3	General Emergency Duty Officer/Manager of TSC	0	7/15/81
4104-4	General Emergency Director of Station Emergency Operations	1	2/19/82
4104-5	General Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4104-6	General Emergency Manager of Public Information	0	7/15/81
4104-7	General Emergency Manager of External Communication	1	9/15/81

4104-8	General Emergency Manager of Security	1	1/6/82
4104-9	General Emergency Manager of On-Site Resources	2	10/26/81
4104-10	General Emergency Manager of Engineering Support	0	7/15/81
4201-1	Worksheet #1 Noble Gas Release Rate	1	4/13/82
4201-2	Worksheet #2 Iodine-131 Release Rate	0	7/15/81
4201-3	Worksheet #3 Meteorological Data	1	12/8/81
4201-4	Worksheet #4 Noble Gas Dose	0	7/15/81
4201-5	Worksheet #5 Thyroid Dose	0	7/15/81
4201-6	Worksheet #6 Doses Vs. Distance	2	1/5/82
4201-7	Dose Calculation Data Sheet	0	7/15/81
4201-8	Air Sample Activity Concentrations Worksheet	0	7/15/81
4201-9	Radiation Dose Rate Worksheet	0	7/15/81
4202-1	Millstone Post Accident Sampling Data Sheet	0	12/8/81
4202-2	Post Accident Sample Data Sheet Stack/Vent Particulate and/or Charcoal Release	0	3/1/82
4202-3	Post Accident Sample Data Sheet Drywell/Containment Particulate and/or Charcoal Activity	0	3/1/82
4202-4	Post Accident Sample Data Sheet Stack/Vent Gaseous Release	0	3/1/82
4202-5	Post Accident Sample Data Sheet Drywell/ Containment Gaseous Activity	0	3/1/82
4202-6	Post Accident Sampling Reactor Coolant Isotopic Worksheet	0	3/1/82
4202-7	Post Accident Sampling Reactor Coolant Chemical Analysis	0	3/1/82

4203-1	EMT #1 Worksheet	1	12/8/81
4204-1	EMT #2 Worksheet	0	7/15/81
4205-1	EMT #3 Data Sheet	0	7/15/81
4205-2	Air Sample Work Sheet	0	7/15/81
4206-1	Offsite EMT Data Sheet	0	7/15/81
4206-2	Air Sample Work Sheet	0	7/15/81
4208-1	First Aid Kits	0	7/15/81
4208-2	Basket & Stretchers	0	7/15/81
4208-3	Personnel Contamination Form	0	7/15/81
4209-1	Emergency Re-Entry Checklist	0	7/15/81
4212-1	Worksheet #1 MP-1 Drywell Curie Level Estimation	0	2/19/82
4212-2	Worksheet #2 MP-2 Containment Curie Level Estimation	0	2/19/82
4214-1	Millstone Post Accident Sampling Data Sheet	0	6/1/82
4214-2	Post Accident Sampling - Reactor Coolant Isotopic Worksheet	0	6/1/82
4214-3	Post Accident Sampling - Reactor Coolant Chemical Analysis	0	6/1/82
4214-4	Determination of Total Dissolved Gas	0	6/1/82
4214-5	Post Accident Sampling - Calculation of Gas Sample Volume	0	6/1/82
4214-6	Post Accident Sample Data Sheet Reactor Coolant Gaseous Activity	0	6/1/82
4215-1	Unit #1 Containment Gaseous Activity Post Accident Sample Data Sheet	0	6/1/82
4217-1	Unit #2 Containment Gaseous Activity Post Accident Sample Data Sheet	0	6/1/82

4601-1	Page/Siren System Evacuation Alarm Test	0	7/15/81
4602-1	Telephone Communications Test	1	2/10/82
4603-1	Emergency Operations Facility Radiological Kits	1	4/13/82
4603-2	Emergency Operations Facility Access Road - Inventory List	2	4/13/82
4603-3	Unit Control Rooms Emergency Equipment	2	4/13/82
4603-4	Unit 1 Technical Support Center Radiological Equipment Checklist	1	12/21/81
4603-5	CPF Assembly Area - Radiological Kit	2	4/13/82
4603-6	First Aid Emergency Rescue Kits and Emergency Dosimetry	1	12/21/81
4603-7	Ambulance Kit Inventory	0	7/15/81
4603-8	Emegency Equipment Inventory List	1	4/13/82
4603-9	Acid Spill Kits	1	12/21/81
4605-1	Emergency Operations Facility Ventilation System Filter Test	0	7/15/81
4606-1	EOFEDG Operability Test	0	7/15/81
4608-1	E.O.F. Air Lock OP Test	0	7/15/81
4609-1	E.O.F. Fire Detection Test	0	7/15/81
4610-1	Unit 1/Unit 2 Data Sheet	3	11/26/81
4610-2	Unit 2 Data Sheet	Cancelled 9/1/81 (SORC 81-38)	
4611-1	PA Speaker Inspection Form	0	7/15/81
4612-1	Tri-Town Radio Test-Unit 1 Control Room	0	7/15/81
4612-2	Tri-Town Radio Test-EOF	0	7/15/81
4612-3	State Police Radio Test	0	7/15/81

4612-4	Waterford Police Radio Test	0	7/15/81
4613-1	Radiopage - Daily Test Log Sheet	1	11/24/81

APPROVED *E J Mroczka* DATE *6-1-82* SORC MTG *82-21*

MILLSTONE POST ACCIDENT SAMPLING DATA SHEET

DATE ________ TIME ________ SAMPLE ____________________ PERFORMED BY ____________

	A	B	C
1st DILUTION	ml original sample ________	volume diluted to ________	dilution factor ________
2nd DILUTION	ml 1st dilution sample ________	volume diluted to ________	dilution factor ________
3rd DILUTION	ml 2nd dilution sample ________	volume diluted to ________	dilution factor ________

DILUTION FACTOR CALCULATION: $\frac{B}{A} = C$

FORM EPIP 4214-1
REV. 0

APPROVED E J Morpha (signature) DATE 6-1-82 - SORC MTG 82-21

POST ACCIDENT SAMPLING

REACTOR COOLANT ISOTOPIC WORKSHEET

UNIT # ______

Sample Date ____________ Sample Time __________ Technician ______________

Coolant Activity = Printout Activity x Shelf Ratio x 1st.Dilution Factor x 2nd.Dilution Factor

Isotope	Printout Activity	Shelf Ratio	1st.Dilution Factor	2nd.Dilution Factor	Coolant Activity

APPROVED E J Morzyka - DATE 6-1-82 SORC MTG 82-21

POST ACCIDENT SAMPLING

REACTOR COOLANT CHEMICAL ANALYSIS

UNIT #___

Sample Date___________ Sample Time___________ Technician_____________

Total Dilution Factor = 1st Dilution Factor X 2nd Dilution Factor

_______________ = _______________ X _______________

Note: When 2nd Dilution Factor is not used, it's value = 1

Coolant Boron ppm = Total Dilution Factor X Boron Analysis ppm

_______________ = _______________ X _______________

Coolant Chloride ppm = Total Dilution Factor X Chloride Analysis ppm

_______________ = _______________ X _______________

pH (as Read) _______________

EPIP FORM 4214-3
REV. 0

APPROVED *EJ Mroczka* DATE *6-1-82* SORC MTG *82-21*

MILLSTONE NUCLEAR POWER STATION

DETERMINATION OF TOTAL DISSOLVED GAS

UNIT # ____ SAMPLE LOCATION ____________________ DATE/TIME ______________

DATA

1. Totalizer meter reading — Qi ____________ Gals
2. Initial pressure in gas loop — Pi ____________ PSIG
3. Final pressure in gas loop — Pf ____________ PSIG
4. Temperature — T2 ____________ °F
5. Totalizer meter reading — Qf ____________ GALS
6. pH — pH ____________

CALCULATIONS

7. Correct initial pressure reading as follows:
   Pi x .98 = Pic — Pic ____________ PSIG
8. Convert T2 to Rankine as follows:
   T2 + 460 =TR — TR ____________ °R
9. Determine vapor pressure by using the curve on Figure 4-2 and temperature T2 — Pvp ____________ PSI
10. Determine partial pressure of the gas
    Pf - Pic - Pvp = Pp — Pp ____________ PSI
11. Calculate total dissolved gas (TDG)
    $cc/kg = 2.927 \times 10^4 \times Pp/TR + (1.36)(Pp)$ — TDG ____________ cc/kg

Data Recorded by	Calculations by	Checked by
______________	______________	______________
Date/Time	Date/Time	Date/Time
______________	______________	______________

FORM EPIP 4214-4
REV. 0

APPROVED *E J Mroczka* DATE *6-1-82* SORC MTG *82-21*

POST ACCIDENT SAMPLING

CALCULATION OF GAS SAMPLE VOLUME

DETERMINATION OF SAMPLE VOLUME

DATA

1. From EPIP 4214-4, line 3 — Pf ________ PSIG
2. From EPIP 4214-4, line 8 — TR ________ ^{o}R
3. From EPIP 4214-4, line 10 — Pp ________ PSI

CALCULATION

4. Percentage of reactor coolant gas in the removed volume(Vs)

$$\% = \frac{Pp}{Pf + 14.7} \times 100$$

RAD GAS ________ %

5. Pressure correction factor

$$Pcf = \frac{Pf + 14.7}{14.7}$$

Pcf ________

6. Temperature correction factor

$$Tcf = \frac{492}{TR}$$

Tcf ________

7. Volume of reactor coolant gas (Vrg) @ STP

Vrg = Vs x Pcf x Tcf x % RAD GAS

Vrg ________

NOTE

Vs is the 100ul sample that was drawn into the syringe.

Vrg is the sample volume that will be entered when performing the isotopic analysis.

FORM EPIP 4214-5
REV. 0

APPROVED EJ Mroczka DATE 6-1-82 SORC MTG 82-21

MILLSTONE NUCLEAR POWER STATION

POST ACCIDENT SAMPLE DATA SHEET

REACTOR COOLANT GASEOUS ACTIVITY

UNIT #____ LOCATION ____________________ INITIALS __________

DATE ______________ TIME ____________

SAMPLE VOLUME (as calculated per EPIP 4214-5) = ________________

ISOTOPES	UCi/CC
TOTAL ACTIVITY	

GAS COMPOSITION RESULTS

DATE/TIME OF SAMPLE __________________ LOCATION__________

% HYDROGEN ________ % OXYGEN __________ % NITROGEN ________

EPIP FORM 4214-6

REV. 0

FORM APPROVED [illegible] DATE 6-1-82 SORC MTG. 82-21

MILLSTONE NUCLEAR POWER STATION

UNIT #1 CONTAINMENT GASEOUS ACTIVITY

POST ACCIDENT SAMPLE DATA SHEET

DATE ________ TIME ________ LOCATION ____________ INITIALS __________

SAMPLE VOLUME = ml injected into 14.4 ml vial = __________ ml

ISOTOPES	UCi/CC
TOTAL ACTIVITY	

GAS COMPOSITION RESULTS

DATE/TIME OF SAMPLE ________________ LOCATION__________

% HYDROGEN ________ % OXYGEN __________ % NITROGEN ________

FORM EPIP 4215 - 1

REV. 0

FORM APPROVED E J Mroczka DATE 6-1-82 SORC MTG. 82-21

MILLSTONE NUCLEAR POWER STATION

UNIT #2 CONTAINMENT GASEOUS ACTIVITY

POST ACCIDENT SAMPLE DATA SHEET

DATE ____________ TIME ____________ INITIALS ____________

SAMPLE VOLUME = ml injected into 14.4 ml vial = ____________ ml

ISOTOPES	UCi/CC
TOTAL ACTIVITY	

GAS COMPOSITION RESULTS

DATE/TIME OF SAMPLE ____________ LOCATION ____________

% HYDROGEN ________ % OXYGEN ________ % NITROGEN ________

FORM EPIP 4217 - 1

REV. 0

4000 SERIES

EMERGENCY PLAN IMPLEMENTING PROCEDURES

NUMBER	TITLE	REV.	EFF. DATE
4101	Unusual Event Actions	1	9/15/81
4102	Alert	6	6/8/82
4103	Site Area Emergency	6	6/8/82
4104	General Emergency	6	6/8/82
4201	Radiological Dose Assessment	2	12/21/81
4202	Post Accident Sampling	2	3/1/82
4203	EMT #1-In Plant Radiological Sampling and Monitoring	2	6/8/82
4204	EMT #2-Protective Actions for Onsite Personnel	3	6/8/82
4205	EMT #3-Site Boundary Radiological Sampling/Monitoring	1	9/15/81
4206	EMT #4, #5 - Offsite Radiological Sampling and Monitoring	2	12/8/81
4207	Radiological Sampling During An Emergency	0	7/15/81
4208	Aid to Affected Personnel	0	7/15/81
4209	Emergency Operations Re-Entry	0	7/15/81
4210	Emergency Recovery	0	7/15/81
4211	On Call Procedure	2	6/8/82
4212	Drywell/Containment Curie Level Estimation	0	2/19/82
4213	Radiation Protection During Emergencies	0	3/1/82
4214	Unit 1 Reactor Coolant Post Accident Sampling	0	6/1/82
4215	Unit 1 Containment Air Post Accident Sampling	0	6/1/82
4216	Unit 2 Reactor Coolant Post Accident Sampling	0	6/1/82

4217	Unit 2 Containment Air Post Accident Sampling	0	6/1/82
4218	Use of Potassium Iodide (KI) Tablets As A Thyroid Blocking Agent	0	6/8/82
4301	Communications - Radiopaging & Callback Recorder Operations	2	12/8/81
4302	Emergency Operations Facility Ventilation System	0	7/15/81
4303	Emergency Operations Facility Emergency Diesel Generator	0	7/15/81
4304	Emergency Response Center and Facilities	4	6/8/82
4305A	Meteorological Tower EOF Computer Terminal Operation	0	2/24/82
4305B	EOF TSO Computer Terminal Operation	0	3/15/82
4306	E.O.F.Fire Detection System	0	7/15/81
4307	Unit 1/Unit 2 Control Room Closed Circuit Television (CCTV) System Operation	0	3/15/82
4501	Radioactive Materials Transport Accident	1	6/8/82
4502	Toxic Material Release	1	6/8/82
4503	Hazardous Waste and Toxic Substance Spill Incident	2	4/23/82
4504	Personnel Emergency	2	1/22/82
4505	Atmospheres Immediately Hazardous to Life	0	7/15/81
4506	Loss of Licensed Non-Exempt Radioactive Sources	0	1/6/82
4601	Page/Siren System Evacuation Alarm Tests	1	6/8/82
4602	Communications Telephone Test	3	6/8/82

4603	Emergency Radiological Equipment Maintenance and Inspection	1	3/18/82
4604	Emergency Call List Surveillance	0	7/15/81
4605	Emergency Operations Facility Ventilation System Filter Testing Annual	0	7/15/81
4606	EOF Emergency Diesel Generator Operability Test	0	7/15/81
4608	EOF Air Lock Operability Test	0	7/15/81
4609	EOF Fire Detection System Test	0	7/15/81
4610	Communications-Radiopaging and Callback Recorder Monthly Test	3	11/26/81
4611	Station PA Speaker Inspection	0	7/15/81
4612	Waterford, State and Tri Town Radio Test	1	10/13/81
4613	Communications-Radiopaging Daily Test	1	9/15/81

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4102 Rev. 6

Title ALERT

Prepared By W. Buch

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	[signature]	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) (If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact) (If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

ALERT

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1. OBJECTIVE

To provide a procedure which delineates actions to be taken when events are in process or have occurred which involve actual or potential substantial degradation of the level of safety of a unit.

2. DISCUSSION

This procedure is used for an ALERT emergency (State Class Charlie-One). An incident has been classified as an ALERT emergency using procedure OP 501 or OP 2501.

3. IMMEDIATE ACTION

3.1 Shift Supervisor/Designee of Affected Unit - Upon initiation of an ALERT emergency will: (Refer to checklist form EPIP 4102-1 and log all actions).

3.1.1 Sound the station evacuation siren for one minute. Repeat as necessary.

3.1.2 Announce that an ALERT emergency exists and the unit status over the P.A. System.

3.1.3 Carry out applicable Unit operational and/or emergency procedures.

3.1.4 Contact the Duty Officer.

3.1.5 Contact both Shift Technical Advisors for accident assessment and communications assistance.

3.1.6 Notify Security at the Central Alarm Station (yellow intercom - Dial , or Ext. , or the Secondary Alarm Station (yellow intercom Dial or Ext.) of the nature and location of the emergency.

3.1.7 Direct the Shift Supervisor of the non-affected unit to notify by telephone the on-call Director and Managers. Direct the SS of the non-affected Unit to assist the STA/SSSA in notifying and calling in EMTs and the NNECO emergency organization managers and directors who are not on call and any necessary personnel per ACP-1.07. (Until relieved by the Manager of On-Site Resources). (See SF-120)

3.1.8 Direct the Shift Supervisor of the non affected unit to check time sheet for the affected unit operations. Verify through affected units SS/SCO that all operations personnel of the affected unit are safe. Notify Security at Ext. of the results, including the names of personnel on-duty from both units.

3.1.9 Dispatch an EMT team comprised of the on shift Health Physics Technician and a PEO from the non-affected unit to survey the area around the unit (if necessary). Use the EMT #1 kit provided for this purpose located in the Control Room.

3.1.10 Escalate to a more severe class or de-escalate if necessary.

3.2 Other Operations Shift Personnel

3.2.1 Operations personnel on both units not immediately involved in the emergency report to their respective Immediate Response Operations Support Center in the Operation Assistant's Office (OSC/OAO).

3.3 Shift Technical Advisor/SSSA

Refer to checklist form EPIP 4102-2 and log all actions.

3.3.1 Both STA's report to Control Room immediately.

3.3.2 The STA of the affected unit provide assessment assistance to the Shift Supervisor (SS).

3.3.3 The non-affected unit STA/SSSA provide communications assistance to the S.S. and initiate the telephone recorder system, radiopager and provide "hot line" notification to the NRC in accordance with ACP 1.07, SF-112 and SF-130. The NRC must be notified within 1 hour of the occurrence of the incident. The radiopager system must be initiated for notification within 15 minutes of classification of the incident.

NOTE: In the refueling or cold shutdown operating modes when the STA function is not required, a designated management representative will fulfill the requirement of 3.3.2 and 3.3.3 above.

3.4 Duty Officer of the Affected Unit

3.4.1 Notify the Superintendent of the affected unit if available.

3.4.2 Report to the Control Room/TSC.

3.5 Managers and Director

3.5.1 The on-call Managers and Director, upon receiving a radiopage of a Charlie-One Classification, call one of the three telephone recorders listed in SF-121 and leave a message that they received the radiopage and will be reporting to their designated location.

Director of Station Emergency Operations - Emergency Operations Facility

Mgr. of Control Room Operations - Respective Control Room

Mgr. of Radiological Consequence Assessment - Emergency Operations Facility

Mgr. of Technical Support - Respective Technical Support Center

Mgr. of External Communications - Emergency Operations Facility

Mgr. of Security - On-Site Operation Support Center/On-Site Resource Center Area at the CPF.

Mgr. On-site Resources - On-Site Resources area at the CPF if onsite. The On-Site Resources Center at the EOF if reporting from off of the site.

Mgr. of Engineering Support - Emergency Operations Facility

Mgr. of Public Information - Emergency Operations Facility

NOTE: Personnel reporting to the EOF should enter through the north door (decontamination area) and perform a whole body frisk prior to entering the EOF general area. Activate EOF if necessary in accordance with EPIP 4304. Protective clothing is available in the EOF to allow activation of the EOF by personnel who may be contaminated. If time permits, contaminated personnel should enter through the decontamination area entrance and ensure they are clean prior to entering the EOF operations area.

3.6 Duty Health Physics Technician(s)
(Record all data)

3.6.1 Report to the Control Room.

3.6.2 Perform on-site survey, if necessary. (EMT #1)

3.6.3 Copy survey results and give the Shift Supervisor a copy.

3.6.4 Report to Manager of Radiological Consequence Assessment at the Station Emergency Operations Facility with original survey data.

3.7 On-site Personnel

3.7.1 ACTION BY NNECO "E" BADGE PERSONNEL

3.7.1.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-Site Resources Center at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF assembly area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.1.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.1.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.1.4 Emergency Organization personnel report to their assigned areas.

3.7.1.5 The Director shall establish the route for essential personnel to get to the Emergency Operations Facility from the Site, the Condensate Polishing Facility Resources Center/Operational Support Areas, or Northwest Assembly Area.

<u>NOTE</u>: Some options available to the director are:

a. Personal vehicles
b. Company vehicles
c. Security vehicles
d. Stone & Webster vehicles
e. Local Bus Companies
f. Local Cab Companies

g. Walk - Through PAP/AAP or through CPF and Unit 3 Site.

3.7.1.6 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.2 <u>ACTION BY "C" BADGE NNECO CONSTRUCTION PERSONNEL</u>

3.7.2.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-Site Operational Support Center Condensate Polishing Facility/Warehouse 5.

Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.2.2 If outside the protected area, report to the Northwest Assembly Area

3.7.2.3 The Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency Operations Facility from the Condensate Polishing Facility Resource Center/Operational Support areas or Northwest assembly area.

3.7.2.4 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.3 <u>ACTION BY "V" BADGE PERSONNEL</u>

3.7.3.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to On-Site Operational Support Center at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.3.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.3.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.3.4 THe Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency

Operations Facility from the Condensate Polishing Facility Resource Center/Operation Support areas or Northwest assembly area.

3.7.3.5 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.4 Personnel Reporting to Site (Called-In)

3.7.4.1 Called in personnel report to the Emergency Operations Facility.

3.7.5 Unit 3 Construction Personnel

3.7.5.1 When the evacuation signal is given all Stone & Webster and subcontractor personnel, regardless of location of change buildings or daily parking areas, immediately cease work, secure all tools, equipment, and proceed directly to the Brass Alleys. They came through when entering the Site.

3.7.5.2 All manual personnel, after checking out with the Timekeeping Department, will immediately proceed to the Northwest manual parking area, assemble by craft and receive further instructions from craft supervisors.

3.7.5.3 General Foremen and Foremen conduct an accountability check for all personnel under their control at the Assembly Area assigned. Members of the Timekeeping Department will contact the appropriate

General Formen/Forman to determine the last known location of these personnel which time keeping cannot account for.

3.7.5.4 All non-manual personnel check out through Stone & Webster Security and immediately assemble at the Northwest non-manual parking lot and await further instructions.

3.7.5.5 Assemble and await Millstone monitoring personnel who will conduct personnel surveys and arrange for off-site release of all personnel.

3.7.6 Non-Badged Personnel Outside Protected Areas

3.7.6.1 Report to the Northwest Assembly Area.

3.7.7 Station Nurse

3.7.7.1 Report to the On-Site Resources Center (RC/CPF).

3.7.8 EMT's

3.7.8.1 Report to the Emergency Operations Facility.

3.7.9 Millstone Telephone Operator - Notify the Control Rooms that the switchboard will be in night service. Report to the Emergency Operations Facility. Man the Millstone switchboards at the EOF.

3.7.10 On Call Electricians

3.7.10.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operations Support Center at the Operation Assistant's Office (OSC/OAO).

3.7.10.2 On call electrician not onsite (ie.- running errand to Niantic) should report to the EOF.

3.7.11 On Call Mechanics

3.7.11.1 When the evacution alarm is initially sounded, if onsite report to the Immediate

Response Operation Support Center at the Operation Assistant's Office (OSC/OAO).

3.7.11.2 On call mechanic not onsite (ie.-running errand to Niantic) should report to the EOF.

3.7.12 <u>ON Call I&C Technician</u>

3.7.12.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Responce Operation Support Center at the Operation Assistant's Office (OSC/OAO).

3.7.12.2 On call I&C Technician not onsite (ie-running errand to Niantic) should report to the EOF.

3.7.13 <u>ON Call Chemistry Technician</u>

3.7.13.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Responce Operation Support Center at the Operation Assistant's Office (OSC/OAO).

3.7.13.2 On call Chemistry Technician not onsite (ie - running errand to Niantic) should report to the EOF.

3.7.14 <u>On Call Operator</u>

3.7.14.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Responce Operation Support Center at the Operation Assistant's Office (OSC/OAO).

3.7.14.2 On call Operator not onsite (i.e.-running errand to Niantic) should report to the EOF.

3.8 <u>Security Personnel</u>

3.8.1 Secure all posts except CAS, SAS, CPF AAP, AAP, PAP Man doors 144, 200, 101, and 201.

3.8.2 Except for the door posts secure each of the remaining security posts if its local area monitor alarms or if the local dose rate meter exceeds 100 mr/hr. For the door posts, monitor dosimeters and secure the post if the accumulated dose during the emergency exceeds 100 mr.

3.8.3 All security personnel not on post report to CPF On-Site Resources Center Area.

3.8.4 Man northwest door of the CPF (Warehouse 5) to allow personnel to enter from outside.

3.9 Other Unit Shift Supervisor/Designee

(Log all actions)

3.9.1 Provide an EMT member to the affected unit.

3.9.2 Monitor essential unit parameters, such as area radiation monitors and airborne radioactivity levels.

3.9.3 Secure ventilation, as required, to avoid pulling in airborne contaminants from the affected unit.

3.9.4 Notify respective unit Duty Officer in absence of higher supervision of significant problems associated with the unit.

4. SUBSEQUENT ACTION

4.1 Shift Supervisor/Designee of Affected Unit

(Refer to Form EPIP 4102-1 and log all actions)

4.1.1 Continue to assess the condition of the unit.

4.1.2 Transfer responsibilities as Director of Station Emergency Operations to the on-call Director upon his arrival at the EOF.

4.1.3 Assume position of Manager of Control Room Operations and request any required support from the Manager of Technical Support or the Director of Station Emergency Operations.

4.1.4 Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take appropriate corrective actions.

4.1.5 Upon being notified by the Director of Station Emergency Operations announce over P.A. System to terminate the Alert Emergency.

4.2 Other Personnel

4.2.1 Operations personnel located in the respective Immediate Responce Operations Support Center await direction from the respective Manager of Control Room Operations.

4.2.2 Station personnel in the On-Site Resources Center and On-Site Operational Support Center await direction from the Manager of On-Site Resources.

4.3 Shift Technical Advisor/SSSA

(Log all actions)

4.3.1 Continue to provide assessment to the Shift Supervisor. (Affected Unit STA)

4.3.2 The non-affected Unit STA/SSSA (or designated management representative) maintain continuous channel communications with the NRC until relieved by the Manager of External Communications.

4.4 Duty Officer of Affected Unit

(Log all actions)

4.4.1 Upon arrival at the Station, assume the position of Manager of Technical Support.

4.4.2 Verify initial determination of the incident class made by the Shift Supervisor. Make recommendations to the Shift Supervisor on changing the emergency classification and/or the State Class Code, if necessary.

4.4.3 If arriving before the on-call Director of SEO has taken charge, relieve the Shift Supervisor of administrative control of the station. The Shift Supervisor remains as Director of SEO until relieved by the on-call Director.

4.5 Director of Station Emergency Operations (SEO)

(Log All Actions, Refer to Checklist Form EPIP 4102-4)

4.5.1 Upon arrival at the EOF, establish communications with other managers in the EOF, the Manager Of Onsite Resources (in the CPF Area) and the Manager of Technical Suppport (in the TSC). Contact the control room to ascertain the event's status.

4.5.2 When sufficent information has been gathered, brief the EOF Managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.

4.5.3 When satisfied that the EOF is properly activated, notify the Shift Supervisor of the affected unit that you have assumed the function of Director of Site Emergency Operations. Notify the Duty Officer that you have assumed administrative control of the station.

NOTE: When present, the Station Superintendent may relieve the designated Director of Station Emergency Operations.

4.5.4 Initate use of the logbook and tape recorder and record data and communications including time occurrences.

4.5.5 Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).

4.5.6 Contact Manager of On-Site Resources and request person be provided to perform the logging function.

4.5.7 For any Manager position not manned as determined in Step 6.5.4, have Manager of On-Site Resources contact designated on call Manager or qualified replacement.

4.5.7.1 Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of Radiological Consequence Assessment has not arrived. (Team #3 should be dispatched to take samples in the downwind direction.)

4.5.8 Coordinate site emergency actions to: (if possible)

4.5.8.1 Stop or minimize the source of the problem.

4.5.8.2 Contain the results of the problem.

4.5.8.3 Evaluate the results of the problem.

4.5.8.4 Clean up the results of the problem and restore the Station to a normal condition.

4.5.9 During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an hourly basis, and as necessary (include meteorological assessments and dose estimates of any actual releases).

4.5.9.1 Director of Corporate Emergency Operations

4.5.9.2 Manager of External Communications

4.5.9.3 Manager of Public Information

4.5.10 Consider requesting outside assistance of the following groups using the Manager of External Communications:

4.5.10.1 Waterford Police - use RED hot line

4.5.10.2 Waterford Fire and Ambulance Department - use RED hot line

4.5.10.3 State Police - use BLUE hot line

4.5.10.4 Radiation Management Corporation -

4.5.10.5 Lawrence and Memorial Hospital Ext.

4.5.10.6 U. S. Coast Guard

4.5.10.7 ANI/MAELU (NELPIA) - (for financial assistence).

4.5.10.8 Refer also to SF-109

4.5.11 Coordinate and direct outside assistance groups arriving on site.

4.5.12 At least hourly and as necessary, ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.

4.5.12.1 Appropriate outside groups, agencies, and public officials - using radiopage & telephone recorders.

4.5.12.2 NRC resident inspector

4.5.12.3 NRC - use WHITE hot line

4.5.12.4 U. S. Coast Guard -

4.5.12.5 AMTRAK - Chief Train Dispatcher (Boston)

4.5.12.6 Lawrence and Memorial Hospital (Emergency Room Charge Nurse) Ext.

4.5.12.7 Radiation Management Corporation

4.5.12.8 INPO Support Functions
Ref: INPO functions listed in SF-109, Agency Call List

4.5.13 Based on calculated and field measurements of offsite releases, recommend protective actions to the State in accordance with Station Form SF-106.

4.5.14 Verify that all personnel in the protected area have been accounted for as per Step 4.12.3. Initiate search and rescue parties, as necessary, to located missing personnel.

4.5.15 Based on existing and potential conditions and results, consider either reducing, or maintaining the ALERT emergency classification using the EAL's contained in OP 501 and OP 2501, Incident Assessment and Classification.

4.5.16 During the course of the incident, refer to the 4200 series procedures as appropriate.

4.5.17 Authorize exposures to emergency workers in excess of administrative limits as necessary. Emergency sampling should not be performed if it results in workers exceeding administrative limits.

4.5.18 Designate evacuation routes if site evacuation becomes necessary.

4.5.19 Consult with the NRC, State and Corporate representatives on a periodic basis.

4.5.20 Resolve questions concerning unit operating license requirements with NRC representatives.

4.5.21 After incident and unit conditions have been stabilized to allow the terminating of the Alert confirm with Director of Corporate Emergency Operations and notify all emergency site managers to secure posts and return to normal operation. In addition have the Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.

4.5.22 Complete the Plant Incident Report in accordance with ACP 10.01.

4.6 Manager of Control Room Operations - Affected Unit

(Log all actions, refer to Form EPIP 4102-1)

4.6.1 Continue to perform the actions specified in Section 4.1.

4.6.2 Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.

4.6.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.7 Manager of Control Room Operations - Non-Affected Unit

(Log all actions)

4.7.1 Continue to monitor essential unit parameters and operate the unit in a safe manner taking into consideration the possible affects of the affected unit on his unit's continued safe operation.

4.7.2 Provide periodic information on status of his unit to Director of Station Emergency Operations.

4.7.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.8 <u>Manager of Radiological Consequence Assessment</u>

(Log all actions - Refer to Checklist, Form EPIP 4102-5)

4.8.1 Establish communications with the Director of Station Emergency Operations. Turn on portable security radio, determine channel being used, and monitor communications.

4.8.2 Collect and evaluate radiological data from the duty Health Physics Technician (on site Team #1).

4.8.3 Request Manager of On-Site Resources to provide appropriate number of EMTS for on-site and off-site monitoring (App. 10 EMTS).

4.8.4 Contact the affected unit Control Room and request data of actual and potential radioactive release data including meteorological data.

4.8.5 Provide individual to distribute dosimetry as necessary.

4.8.6 Using available H.P. Technicians, initiate operation of the PING air monitors in the Emergency Response Centers.

4.8.6.1 Unit 1 Control Room

4.8.6.2 Unit 2 Control Room

4.8.6.3 Unit 1 Technical Support Center

4.8.6.4 Unit 2 Technical Support Center

4.8.6.5 Emergency Operations Facility

4.8.6.6 CPF Resources Operational Support Center Areas.

4.8.7 Using available qualified EMTs determine radiation dose rate and I^{131} levels (EPIP 4207) in the following areas. (Survey downwind areas first)

4.8.7.1 Resources and Operational Support Center Areas.

4.8.7.2 Operations Support Center in the Operation Assistants Office.

4.8.7.3 Unit 1 Control Room

4.8.7.4 Unit 2 Control Room

4.8.7.5 Technical Support Center (Unit 1)

4.8.7.6 Technical Support Center (Unit 2)

4.8.7.7 CAS

4.8.7.8 SAS

4.8.7.9 PAP

4.8.7.10 AAP

4.8.7.11 Emergency Operations Facility

Consider evacuating any area with radiation dose rates greater than 10 mr/hr or I-131 levels greater than 10 X MPC (10 MPC = 9 X 10^{-8} uc/cc) but evacuate or take protective measures in time to avoid anyone receiving greater than 500 mr whole body or 500 I^{131} MPC hours.

(Recommend moving the Emergency Operations Facility and equipment to the Corporate EOC (N101) in Berlin if such levels exist).

4.8.8 Inform Director of Station Emergency Operations and dispatch On-Site Team 3 in accordance with EPIP 4205 to collect samples from the Site Boundary.

4.8.9 Inform Director of Station Emergency Operations and dispatch On-Site Team #2 in accordance with EPIP 4204 to the Northwest Assembly Area. Consider sending a second EMT #2 Team to the On-Site Resources Area at the CPF. A spare EMT #2 kit is located there.

4.8.10 Initiate control of food and water supplies on-site as necessary.

4.8.11 Determine the magnitude of actual or potential releases using EPIP 4201 and the projected dose to the thyroid and whole body.

4.8.12 Periodically inform Director of Station Emergency Operations of the results of radiological surveys and of any projections or problems. Request additional assistance from the offsite assistance companies as necessary.

4.8.13 Based on radiological results, consider sending out offsite teams #4 and #5 and recommending escalating to a more severe class or reducing the emergency class. Arrange for additional field measurement surveys, if necessary.

4.8.14 Prior to allowing any personnel to leave the assembly areas ensure Health Physics team is established to survey the personnel for contamination. Collect dosimetry if personnel are leaving site.

4.8.15 Direct and coordinate with the Director of Station Emergency Operations the radiological support for emergency re-entry operations and/or search and rescue.

4.9 Manager of Technical Support

(Log all actions refer to checklist Form EPIP 4102-7)

4.9.1 Establish communications with the respective Control Room and the Corporate Manager of Technical Support.

4.9.2 Determine need for additional expertise and request Manager of On-Site Resources to provide such personnel.

4.9.3 Monitor and analyze unit condition and status and provide operational guidance to the Manager of Control Room Operations.

4.9.4 Develop any required abnormal operating and emergency procedures for the respective unit.

4.9.5 Provide the Director of Station Emergency Operations with an independent analysis of the status of the respective unit.

4.10 Manager of External Communications

(Log all communications refer to checklist Form EPIP 4102-7)

4.10.1 Establish communications with all Managers and the Director of Station Emergency Operations.

4.10.2 Establish communications with the state EOC

4.10.3 Establish communications with Corporate Manager of External Communications using the hot line phone.

4.10.4 Request Manager of On-Site Resources to provide at least 4 people for telephone communications (if necessary).

4.10.5 Relieve STA/SSSA of NRC WHITE hot-line continuous communication requirement and assume control of the radiopager system.

4.10.6 Verify that all the required initial calls have been made and determine the content of those calls.

4.10.7 As directed by the Director of Station Emergency Operations provide periodic update information to the following:

4.10.7.1 All Managers - use intercom

4.10.7.2 Outside groups, agencies, and local officials use telephone recorders & radiopage.

4.10.7.3 Corporate EOC - YELLOW hot line

4.10.7.4 NRC - Use WHITE hot line

4.10.8 Request off-site assistance in accordance with Step 4.5.9 as directed by the Director of Station Emergency Operations.

4.10.9 Inform selective organizations in accordance with Step 4.5.10 as directed by the Director of Station Emergency Operations.

4.10.10 If necessary, request Manager of On-Site Resources to provide person to monitor radio and television broadcasts and to apprise Director of Station Emergency Operations of news.

4.11 <u>Manager of Security</u>

(Log all actions, refer to Form EPIP 4102-8)

4.11.1 Establish communications with Manager of On-Site Resources

4.11.2 Account for all personnel located within the Protected Area by the following procedure.

4.11.2.1 Determine which badges are at the AAP, CPF AAP, and the PAP.

4.11.2.2 Determine which badges have been accounted for at the CPF AAP.

4.11.2.3 From Steps 4.11.2.1 and 4.11.2.2, determine which personnel (including security personnel) are still within the protected area.

4.11.2.4 Using radio, telephone or other means, assist the Manager of On-Site Resources in determining the location of all personnel in the protected area.

4.11.3 Verify that all posts within the Protected Area except CAS, SAS, AAP, CPF AAP, PAP and doors 144, 200, 101 and 201 have been secured and that guards have reported to the CPF assembly area.

4.11.4 Verify implementation of Procedure SEP-1231.

4.11.5 Based on radiological survey results of Step 4.8.5 or by local radiation alarms, ensure that security personnel secure such posts and report to the CPF Assembly Area.

4.11.6 Inform Director of Station Emergency Operations of any posts secured due to radiological reasons.

4.11.7 Dispatch security officer(s) in a vehicle to the warehouses 3 and 4, office trailers, Refuel Outage Building, Beach and fishing areas and Environmental Lab to evacuate personnel.

4.11.8 Provide security around the Emergency Operations Facility and any other areas specified by the Director of Station Emergency Operations.

4.12 <u>Manager of OnSite Resources</u>

(Log all actions, refer to Form EPIP 4102-9)

4.12.1 Establish communications with Director of Station Emergency Operations.

4.12.2 Relieve non-affected unit Shift Supervisor of calling in personnel and continue to call in EMT's and necessary personnel as per ACP-1.07. (SF-120)

4.12.3 As per Section 4.11.2, provide the completed personnel accountability list to the Director of Station Emergency Operations.

4.12.4 Establish the On-Site Resources Area at the CPF and/or EOF. Verify that personnel are assembled in accordance with the marked areas in the CPF assembly area.

4.12.5 Fulfill the requests of the Director and Manager for any support personnel.

4.12.6 Receive estimate of the time period of the incident from the Director of Station Emergency Operations, and if necessary, prepare shift schedule for all Managers, Director and support personnel for 24 hour coverage for Director of Station Emergency Operations use.

4.12.7 Use guard force personnel to administer any required first aid.

4.12.8 Provide for transportation services as necessary to include vehicles for the EMT's, buses for personnel to be relocated, and transporation of radiological samples.

4.12.9 Provide for commissary services, as necessary.

4.12.10 Provide qualified personnel for search and rescue teams.

4.12.11 Administer petty cash, expense accounts and payroll matters as needed.

4.12.12 Call in the telephone operator to man the Millstone or Emergency Operations Facility telephone consoles, if necessary.

4.12.13 Provide for the transfer of the NOTEPAD terminal to the EOF from the Nuclear Plant Records Facility.

4.12.14 Transfer on-site Resources to the EOF.

4.13 Manager of Engineering Support

(Log all actions, refer to Form EPIP 4102-10)

4.13.1 Establish communications with the Director of Station Emergency Operations.

4.13.2 Using EPIP 4304, verify that the EOF has been activated.

4.13.3 Request selected personnel from the Manager of On-Site Resources to support any site related tasks required by the Director of Station Emergency Operations.

4.13.4 Retrieve any records requested by any of the Managers or the Director of Station Emergency Operations.

4.14 Manager of Public Information

(Log all actions/refer to Form EPIP 4102-6)

4.14.1 Establish communications with the Manager of External Communications.

4.14.2 Establish communications with the Corporate Representative at the State Armory.

4.14.3 Prepare periodic updates and information briefing with Manager of External Communications. This information will be transmitted to the Corporate EOC for review and transmission to the Corporate Representative at the State Armory.

4.14.4 Provide initial non technical notification requirements of concern to federal/state, local officials and corporate management.

4.14.5 Maintain communications with the Station Emergency Organization Managers and Director providing and obtaining periodic updated information as necessary.

4.14.6 Monitor TV and radio broadcasts as necessary for rumor control.

4.14.7 Translate technical information for non technical people.

5. FIGURES

None

WB:jms

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4103 Rev. 6

Title SITE AREA EMERGENCY

Prepared By W. Buch

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	[signature]	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

[signature: E J Mroczka]
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

SITE AREA EMERGENCY

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1. OBJECTIVE

To provide a procedure which delineates actions to be taken when events are in process or have occurred which involve actual or likely major failure of unit functions needed for the protection of the public.

2. DISCUSSION

This procedure is used for a Site Area Emergency (State Class Charlie-two). An incident has been classified as a Site Area Emergency using OP 501 or OP 2501.

3. IMMEDIATE ACTION

3.1 Shift Supervisor/Designee of Affected Unit - Upon initiation of a Site Emergency will: (Refer to chekclist form EPIP 4103-1 and log all actions)

3.1.1 Sound the station evacuation siren for one minute. Repeat as necessary.

3.1.2 Announce that a site area emergency exists and the unit status over the P.A. System.

3.1.3 Carry out applicable unit operational and/or emergency procedures.

3.1.4 Contact the Duty Officer

3.1.5 Contact both Shift Technical Advisors for accident assessment and communications assistance.

3.1.6 Notify Security at the Central Alarm Station (yellow intercom - Dial or Ext. or the Secondary Alarm Station (yellow intercom - Dial or Ext. of the nature and location of the emergency.

3.1.7 Direct the Shift Supervisor of the non-affected unit to notify by telephone the on-call Directors and Managers.

Direct the SS of the non-affected unit to assist the STA/SSSA in notifying and calling in EMT's and the NNECO emergency organization manager and directors who are not on call and any necessary personnel per ACP 1.07. (Until relieved by the Manager of On-Site Resources). (See Station Form 120)

3.1.8 Dispatch an EMT team comprised of the on shift Health Physics Technician and a PEO from the non-affected unit to survey the area around the unit (if necessary). Use the EMT Team #1 kit provided for this purpose located in the Control Room.

3.1.9 Escalate to a more severe class, or de-escalate if necessary.

3.2 <u>Other Operations Shift Personnel</u>

3.2.1 Operations personnel on both units not immediately involved in the emergency report to their respective Immediate Response Operations Support Center in the Operation Assistant's Office.

3.3 <u>Shift Technical Advisor/SSSA</u>

Refer to checklist form EPIP 4103-2 and log all actions)

3.3.1 Both STA's report to Control Room immediately.

3.3.2 The STA of the affected unit provides assessment assistance to the Shift Supervisor(S.S.).

3.3.3 The non-affected unit STA/SSSA provide communications assistance to the S.S. initiate the telephone recorder system, radiopager and provide "hot line" notification to the NRC in accordance with ACP 1.07, SF-112 and SF-130. The NRC must be notified within 1 hour of the occurrence of the incident. The radiopager system must be initiated for notification within 15 minutes of classification of the incident.

NOTE: In the refueling or cold shutdown operating modes when the STA function is <u>not</u> required, a designated management representative will fulfill the requirement of 3.3.2 and 3.3.3 above.

3.4 <u>Duty Officer of the Affected Unit</u>

(Refer to Form EPIP 4103-3 and log all actions)

3.4.1 Notify the superintendent of the affected unit if available.

3.4.2 Report to the Control Room/TSC.

3.5 Managers and Director

3.5.1 The on-call Managers and Directors, upon receiving a radiopage of a Charlie-Two classification will call one of the three telephone recorders listed in SF-121 and leave a message that they received the radiopage and are coming into the station to report to their designated location.

Director of Station Emergency Operations - Emergency Operations Facility

Mgr. of Control Room Operations - Respective Control Room

Mgr. of Public Information - Emergency Operations Facility

Mgr. of Radiological Consequence Assessment - Emergency Operations Facility

Mgr. of Technical Support - Respective Technical Support Center

Mgr. of External Communications - Emergency Operations Facility

Mgr. of Security - On Site Operational Support Center/On-Site Resource Center and at the CPF.

Mgr. On-site Resources - If Off-Site Report to the Emergency Operations Facility (If onsite, report to the Resource Center in the CPF.

Mgr. of Engineering Support - Emergency Operations Facility

NOTE: Personnel reporting to the EOF should enter through the north door (decontamination area) and perform a whole body frisk prior to entering the EOF general area. Activate EOF if necessary in accordance with EPIP 4304. Protective clothing is available in the EOF to allow activation of the EOF by personnel who may be contaminated. If time permits, contaminated personnel should enter through the decontamination area entrance and ensure they are clean prior to entering the EOF operations area.

3.6 Duty Health Physics Technician(s)

(Record all data)

3.6.1 Report to the Control Room.

3.6.2 Perform on-site survey, if necessary. (EMT #1)

3.6.3 Copy survey results and give the Shift Supervisor a copy.

3.6.4 Report to the Manager of Radiological Consequence Assessment at the Emergency Operations Facility with original survey data.

3.7 On-site Personnel

3.7.1 ACTION BY NNECO "E" BADGE PERSONNEL

3.7.1.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-Site Resources Center at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing should report to the designated area on the east side of the CPF assembly area. These individuals should minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.1.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.1.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.1.4 Emergency Organization personnel should report to their assigned areas.

3.7.1.5 The Director shall establish the route for essential personnel to get to the Emergency Operations Facility from the Site, the Condensate Polishing Facility Resources/Operational Support Areas, or Northwest Assembly Area.

<u>NOTE</u>: Some options available to the Director are:

a. Personal vehicles
b. Company vechicles
c. Security vehicles
d. Stone & Webster vehicles
e. Local Bus Companies
f. Local Cab Companies
g. Walk - through PAP/AAP or through CPF and Unit 3 Site.

3.7.1.6 The Director shall establish the best route available for pesonnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.2 <u>ACTION BY "C" BADGE NNECO CONSTRUCTION PERSONNEL</u>

3.7.2.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-Site Operational Support Center at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.2.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.2.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.2.4 The Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency

Operations Facility from the Condensate Polishing Facility Resource/Operational Support Areas or Northwest Assembly Area.

3.7.2.5 The Director shall establish the best route available for pesonnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.3 <u>ACTION BY "V" BADGE PERSONNEL</u>

3.7.3.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-Site Operational Support Center Area for visitors at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.3.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.3.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.3.4 The Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency Operations Facility from the Condensate Polishing Facility Resource/Operational Support Areas or Northwest Assembly Area.

3.7.3.5 The Director shall establish the best route available for pesonnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.4 <u>Personnel Reporting to Site (Called-In)</u>

3.7.4.1 Called in personnel report to the Emergency Operations Facility.

3.7.5 <u>Unit 3 Construction Personnel</u>

3.7.5.1 When the evacuation signal is given all Stone & Webster and subcontractor personnel, regardless of location of change buildings or daily parking areas, immediately cease work, secure all tools, equipment, and proceed directly to the Brass Alleys. They came through when entering the site.

3.7.5.2 All manual personnel, after checking out with the Timekeeping Department, will immediately proceed to the Northwest Manual Parking Area where they will assemble by craft and receive further instructions from craft supervisors.

3.7.5.3 General Foremen and Foremen conduct an accountability check for all personnel under their control at the Assembly area assigned Assembly Area. Members of the Timekeeping Department will contact the appropriate General Forman/Formen to determine the last known location of those personnel which Timekeeping cannot account for.

3.7.5.4 All non-manual personnel check out through Stone & Webster Security and immediately assemble at the Northwest Assembly Area and await further instructions.

3.7.5.5 Assemble and await Millstone monitoring personnel who will conduct personnel surveys and arrange for off-site release of all personnel.

3.7.6 <u>Non-Badged Personnel Outside Protected Areas</u>

3.7.6.1 Report to the Northwest Assembly Area.

3.7.7 <u>Station Nurse</u>

3.7.7.1 Report to the On-Site Resources Center (RC/CPF)

3.7.8 <u>EMT's</u>

3.7.8.1 Report to the Emergency Operations Facility.

3.7.9 <u>Millstone Telephone Operator</u>

Notify the Control Rooms that the switchboard will be in night service. Report to the Emergency Operations Facility. Man the Millstone switchboards at the EOF.

3.7.10 <u>On Call Electricians</u>

3.7.10.1 When the evaluation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistants' Office.

3.7.10.2 On call electricians not onsite (i.e. running errand to Niantic) should report to the EOF.

3.7.11 <u>On Call Mechnics</u>

3.7.11.1 When the evacuation alarm is initailly sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistants' Office.

3.7.11.2 On call mechanics not onsite (i.e.-running errand to Niantic) should report to the EOF.

3.7.12 <u>On Call I&C Technician</u>

3.7.12.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistants' Office.

3.7.12.2 On call I&C technician not onsite (i.e.-running errand to Niantic) should report to the EOF.

3.7.13 <u>On Call Chemistry Technician</u>

3.7.13.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.13.2 On call Chemistry Technician not onsite (i.e. - running errand to Niantic) should report to the EOF.

3.7.14 <u>On Call Operator</u>

3.7.14.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.14.2 On call Operator not onsite (i.e.-running errand to Niantic) should report to the EOF.

3.8 Security Personnel

3.8.1 Secure all posts except CAS, SAS, CPF AAP, AAP, PAP Man doors 144, 200, 101, and 201.

3.8.2 Except for the door posts secure each of the remaining security posts if its local area monitor alarms or if the local dose rate meter exceeds 100 mr/hr. For the door posts, monitor dosimeters and secure the post if the accumulated dose during the emergency exceeds 100 mr.

3.8.3 All security personnel not on post report to the CPF On-Site Resources Center Area.

3.8.4 Man northwest door of the CPF (Warehouse 5) to allow personnel to enter from outside.

3.9 Other Unit Shift Supervisor/Designee

(Log all actions)

3.9.1 Provide an EMT member to the affected unit.

3.9.2 Monitor essential unit parameters, such as area radiation monitors and airborne radioactive levels.

3.9.3 Secure ventilation, as required, to avoid pulling in airborne contaminants from the affected unit.

3.9.4 Notify resp[illegible] unit Duty Officer in absence of higher supervision of significant problems associated with the unit.

4. SUBSEQUENT ACTION

4.1 Shift Supervisor/Designee of Affected Unit

(Refer to Form EPIP 4103-1 and log all actions)

4.1.1 Continue to assess the condition of the unit.

4.1.2 Transfer responsibities as the Director of Station Emergency Operation to the on-call director upon his arrival at the EOF.

4.1.3 Assume position of Manager of Control Room Operations and request any required support from the Manager of Technical Support or the Director of Station Emergency Operations.

4.1.4 Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take appropriate corrective actions.

4.1.5 Upon being notified by the Director of Station Emergency Operations announce over P.A. System to terminate the Site Emergency.

4.2 Other Personnel

4.2.1 Operations personnel located in the respective Immediate Response Operations Support Center await direction from the respective Manager of Control Room Operations.

4.2.2 Station personnel in the On-Site Resources Center and On-Site Operational Support Center await direction from the Manager of On-Site Resources.

4.3 Shift Technical Advisor/SSSA

(Log all actions)

4.3.1 Continue to provide assessment to the Shift Supervisor. (Affected Unit STA)

4.3.2 The non-affected Unit STA/SSSA (or designated management representative) maintain continuous channel communications with the NRC until relieved by the Manager of External Communications.

4.4 Duty Officer of Affected Unit

(Log all actions)

4.4.1 Upon arrival at the Station, assume the position of Manager of Technical Support.

4.4.2 Verify initial determination of the incident class made by the Shift Supervisor. Make recommendations to the Shift Supervisor on changing the emergency classification and/or State Class Code, if necessary.

4.4.3 If arriving before the on-call Director of SEO has taken charge, relieve the Shift Supervisor of administrative control of the station. The Shift

Supervisor remains the Director of SEO until relieved by the on-call director.

4.5 Director of Station Emergency Operations (SEO) (Log all actions - Refer to Checklist Form EPIP 4103-4)

4.5.1 Upon arrival at the EOF, establish communications with other managers in the EOF, the Manager Of Onsite Resourses (in the CPF area) and the Manager Of Technical Support (in the TSC). Contact the control room to acertain the events' status.

4.5.2 When sufficent information has been gathered, brief the EOF managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.

4.5.3 When satisfied that the EOF is properly activated, notify the shift supervisor of the affected unit that you have assumed the function of Directer Of Site Emergency Operations. Notify the Duty Officer that you have assumed administrative control of the Station.

NOTE: When present, the Station Superintendent may relieve the designated Direction of Station Emergency Operations.

4.5.4 Initiate use of the logbook and tape recorder and record data and communications including time of occurrences.

4.5.5 Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).

4.5.6 Contact Manager of On-Site Resources and request person be provided to perform the logging function.

4.5.7 For any Manager position not manned as determined in Step 4.5.4, have Manager of On-Site Resources contact designated on call Manager or qualified replacement.

4.5.7.1 Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of

Radiological consequence Assessment has not arrived. (Team 3 should be dispatched in the downwind direction)

4.5.8 Coordinate site emergency actions to: (if possible)

4.5.8.1 Stop or minimize the source of the problem.

4.5.8.2 Contain the results of the problem.

4.5.8.3 Evaluate the results of the problem.

4.5.8.4 Clean up the results of the problem and restore the Station to a normal condition.

4.5.9 During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an hourly basis and , as necessary (include meteorological assessments and dose estimates of any actual releases).

4.5.9.1 Director of Corporate Emergency Operations

4.5.9.2 Manager of External Communications

4.5.9.3 Manager of Public Information

4.5.10 Consider requesting outside assistance of the following groups using the Manager of External Communications:

4.5.10.1 Waterford Police - use RED hot line

4.5.10.2 Waterford Fire and Ambulance Department - use RED hot line

4.5.10.3 State Police - use BLUE hot line

4.5.10.4 Radiation Management Corporation -

4.5.10.5 Lawrence and Memorial Hospital Ext.

4.5.10.6 U. S. Coast Guard -

4.5.10.7 ANI/MAELU (NELPIA) ((for financial assistance)

4.5.10.8 Refer also to SF-109, Agency Call List.

4.5.10.9 INPO Support functions
Ref: INPO functions listed in SF-109, Agency Call List.

4.5.11 Coordinate and direct outside assistance groups arriving on site.

4.5.12 At least hourly and as necessary, ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.

4.5.12.1 Appropriate outside groups, agencies, and public officials - using radiopage & telephone recorders.

4.5.12.2 NRC resident inspector

4.5.12.3 NRC - use WHITE hot line

4.5.12.4 U. S. Coast Guard -

4.5.12.5 AMTRAK - Chief Train Dispatcher (Boston)

4.5.12.6 Lawrence and Memorial Hospital - (Emergency Room Charge Nurse) Ext

4.5.12.7 Radiation Management Corporation

4.5.12.8 INPO Support Functions (See SF-109)

4.5.13 Based on calculated and field measurments of offsite releases, recommend protective actions to the State in accordance with Station Form 106.

4.5.14 Verify that all personnel in the protected area have been accounted for as per Step 4.12.3. Initiate search and rescue parties, as necessary, to located missing personnel.

4.5.15 Based on existing and potential conditions and results, consider either reducing, or maintaining the Site Area emergency classification using the EAL's contained in OP 501 and OP 2501, Incident Assessment and Classification.

4.5.16 During the course of the incident, refer to the 4200 series procedures as appropriate.

4.5.17 Authorize exposures to emergency workers in excess of administrative limits as necessary. Emergency sampling should not be performed if it results in workers exceeding administrative limits.

4.5.18 Designate evacuation routes if site evacuation becomes necessary.

4.5.19 Consult with the NRC State and corporate representatives on a periodic basis.

4.5.20 Resolve questions concerning unit operating license requirements with NRC representatives.

4.5.21 After incident and unit conditions have been stabilized to allow the terminating of the Site Emergency, confirm with Director of Corporate Emergency Operations and notify all emergency site managers to secure posts and return to normal operation. In addition have the Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.

4.5.22 Complete the Plant Incident Report in accordance with ACP 10.01.

4.6 <u>Manager of Control Room Operations - Affected Unit</u>

(Log all actions, refer to Form EPIP 4103-1)

4.6.1 Continue to perform the actions specified in Section 4.1.

4.6.2 Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.

4.6.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.7 <u>Manager of Control Room Operations - Non-Affected Unit</u>

(Log all actions)

4.7.1 Continue to monitor essential unit parameters and operate the unit in a safe manner taking into consideration the possible affects of the affected unit on his unit's continued safe operation.

4.7.2 Provide periodic information on status of his unit to Director of Station Emergency Operations.

4.7.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.8 <u>Manager of Radiological Consequence Assessment</u>

(Log all actions - Refer to Checklist, Form EPIP 4103-5)

4.8.1 Establish communications with the Director of Station Emergency Operations. Turn on portable security radio, determine channel being used, and monitor communications.

4.8.2 Collect and evaluate radiological data from the duty Health Physics Technician (on site Team #1).

4.8.3 Request Manager of On-Site Resources to provide appropriate number of EMTS for on-site and off-site monitoring (App. 10 EMTS).

4.8.4 Contact the affected unit Control Room and request data of actual and potential radioactive release data including meteorological data.

4.8.5 Provide individual to distribute dosimetry as necessary.

4.8.6 Using available H.P. Technicians, initiate operation of the PING air monitors in the Emergency Response Centers.

4.8.6.1 Unit 1 Control Room

4.8.6.2 Unit 2 Control Room

4.8.6.3 Unit 1 Technical Support Center

4.8.6.4 Unit 2 Technical Support Center

4.8.6.5 Emergency Operations Facility

4.8.6.6 CPF Resources and Operational Support Center Areas.

4.8.7 Using available qualified EMT's determine radiation dose rate and I^{131} levels (EPIP 4207) in the following areas. (Survey downwind areas first)

4.8.7.1 CPF Resources and Operational Support Center Areas.

4.8.7.2 Operations Support Center in the Operations Assistant's Office.

4.8.7.3 Unit 1 Control Room

4.8.7.4 Unit 2 Control Room

4.8.7.5 Technical Support Center (Unit 1)

4.8.7.6 Technical Support Center (Unit 2)

4.8.7.7 CAS

4.8.7.8 SAS

4.8.7.9 PAP

4.8.7.10 AAP

4.8.7.11 Emergency Operations Facility

Consider evacuating any area with radiation dose rates greater than 10 mr/hr or I^{131} levels greater than 10 X MPC (10 MPC = 9 X 10^{-8} uc/cc) but evacuate or take protective measures in time to avoid anyone receiving greater than 500 mr whole body or 500 I^{131} MPC hours.

(Recommend moving the Emergency Operations Facility and equipment to the Corporate EOC (N101) in Berlin. (If such levels exist)

4.8.8 Inform Director of Station Emergency Operations and dispatch On-Site Team 3 in accordance with EPIP 4205 to collect samples from the Site Boundary.

4.8.9 Inform Director of Site Emergency Operations and dispatch On-Site Team #2 in accordance with EPIP 4204 to the Northwest Assembly Area. Consider sending a second EMT #2 Team to the On-Site Resources Area at the CPF. EMT #2 kit is located there.

4.8.10 Initiate control of food and water supplies on-site as necessary.

4.8.11 Inform Director of Site Emergency Operation and dispatch off-site teams 4 and 5 to survey downwind areas specified by the manager in accordance with EPIP 4206.

4.8.12 Determine the magnitude of actual or potential releases using EPIP 4201 and the projected dose to the thyroid and whole body. Correlate results to protective action guidelines on SF-106 and relay applicable incident class to the Director of Site Emergency Operations for transmittal of the State and Waterford Police the NRC and the Director of NUSCo Emergency Operations using hot lines.

4.8.13 Periodically inform Director of Station Emergency Operations of the results of radiological surveys and of any projections or problems. Request additional assistance from the offsite assistance companies as necessary.

4.8.14 Based on radiological results, consider recommending escalating to a more severe class or reducing the emergency class.

4.8.15 If I^{131} levels are greater than 1×10^{-5} uc/cc for one hour, recommend to Manager of Site Emergency Operations the issuance potassium iodide pills to the personnel.

4.8.16 Prior to allowing any personnel to leave the assembly areas ensure Health Physics team is established to survey the personnel for contamination. Collect dosimetry if personnel are leaving site.

4.8.17 Direct and coordinate with the Director of Station Emergency Operations the radiological support for emergency re-entry operations and/or search and rescue.

4.9 Manager of Technical Support

(Log all actions, refer to checklist Form EPIP 4103-3)

4.9.1 Establish communications with the respective Control Room and the Corporate Manager of Technical Support.

4.9.2 Determine need for additional expertise and request Manager of On-Site Resources to provide such personnel.

4.9.3 Monitor and analyze unit condition and status and provide operational guidance to the Manager of Control Room Operations.

4.9.4 Develop any required abnormal operating and emergency procedures for the respective unit.

4.9.5 Provide the Director of Station Emergency Operations with an independent analysis of the status of the respective unit.

4.10 Manager of External Communications

(Log all communications, refer to checklist Form EPIP 4103-7)

4.10.1 Establish communications with all Station Managers and the Director of Station Emergency Operations.

4.10.2 Establish communications with the state EOC.

4.10.3 Establish communications with Corporate Manager of External Communications using YELLOW hot line phone.

4.10.4 Request Manager of On-Site Resources to provide at least 4 people for telephone communications (if necessary).

4.10.5 Relieve STA/SSSA of NRC WHITE hot-line continuous communication requirement and assume control of the radiopager system.

4.10.6 Verify that all the required initial calls have been made and determine the content of those calls.

4.10.7 As directed by the Director of Station Emergency Operations provide periodic update information to the following:

4.10.7.1 All Site Managers - use intercom

4.10.7.2 Outside groups, agencies, and local officials use radiopage and telephone recorders.

4.10.7.3 Corporate EOC - YELLOW hot line

4.10.7.4 NRC - use WHITE hot line

4.10.8 Request off-site assistance in accordance with Step 4.5.9 as directed by the Director of Site Emergency Operations.

4.10.9 Inform selective organizations in accordance with Step 4.5.10 as directed by the Director of Station Emergency Operations.

4.10.10 If necessary, request Manager of On-Site Resources to provide person to monitor radio and television broadcasts and to apprise Director of Station Emergency Operations of news.

4.11 <u>Manager of Security</u>

(Log all actions, refer to Form EPIP 4103-8)

4.11.1 Establish communications with Manager of On-Site Resources

4.11.2 Account for all personnel located within the Protected Area by the following procedure.

4.11.2.1 Determine which badges are missing at the AAP, CPF AAP, and the PAP.

4.11.2.2 Determine which badges have been deposited at the CPF AAP.

4.11.2.3 From Steps 4.11.2.1 and 4.11.2.2, determine which personnel (including security personnel) are still within the protected area.

4.11.2.4 Using radio, telephone or other means, assist the Manager of On-Site Resources in determining the location of all personnel in the protected area.

4.11.3 Verify that all posts within the Protected Area except CAS, SAS, AAP, CPF AAP, PAP and doors 144, 200, 101 and 201 have been secured and that guards have reported to the CPF assembly area.

4.11.4 Verify implementation of Procedure SEP-1231.

4.11.5 Based on radiological survey results of Step 4.8.5 or by local radiation alarms, ensure that security personnel secure such posts and report to the On-Site Resources Center.

4.11.6 Inform Director of Site Emergency Operations of any posts secured due to radiological reasons to determine if Coast Guard should be contacted to monitor the adjacent waterways.

4.11.7 Dispatch security officer(s) in a vehicle to the warehouses 3 and 4, office trailers, Refuel Outage Building, Beach and fishing areas, and Environmental Lab to evacuate personnel.

4.11.8 Provide security around the Site Emergency Operations Facility and any other area specified by the Director of Site Emergency Operations.

4.12 <u>Manager of OnSite Resources</u>

(Log all actions, refer to Form EPIP 4103-9)

4.12.1 Establish communications with Director of Site Emergency Operations.

4.12.2 Relieve non-affected unit Shift Supervisor of calling in personnel and continue to call in EMT's and necessary personnel as per ACP-1.07. (SF-120)

4.12.3 As per Section 4.11.2, provide the completed personnel accountability list to the Director of Station Emergency Operations.

4.12.4. Establish the On-Site Resources Area at the CPF and/or EOF. Verify that personnel are assembled in accordance with the marked areas in the CPF assembly area.

4.12.5 Fulfill the requests of the Director and Manager for any support personnel.

4.12.6 Receive estimate of the time period of the incident from the Director of Station Emergency Operations, and if necessary, prepare shift schedule for all

Managers, Director and support personnel for 24 hour coverage for Director of Station Emergency Operations use.

4.12.7 Use guard force personnel to administer any required first aid.

4.12.8 Provide for transportation services as necessary to include vehicles for the EMT's, buses for personnel to be relocated, and transporation of radiological samples. (SF-135)

4.12.9 Provide for commissary services, as necessary. (SF-135)

4.12.10 Provide for housing, as necessary. (SF-135)

4.12.11 Provide qualified personnel for search and rescue teams.

4.12.12 Administer petty cash, expense accounts and payroll matters as needed.

4.12.13 Call in the telephone operator to man the Millstone Emergency Operations Facility telephone consoles, if necessary.

4.12.14 Provide for the transfer of the NOTEPAD terminal to the EOF from the Nuclear Plant Records Facility.

4.12.15 Transfer Onsite Resources to EOF.

4.13 <u>Manager of Site Engineering Support</u>

(Log all actions, refer to Form EPIP 4103-10)

4.13.1 Establish communications with the Director of Station Emergency Operations.

4.13.2 Using EPIP 4304, verify that the EOF has been activated.

4.13.3 Request selected personnel from the Manager of On-Site Resources to support any site related tasks required by the Director of Station Emergency Operations.

4.13.4 Retrieve any records requested by any of the Managers or the Director of Station Emergency Operations.

4.14 Manager of Public Information (Log all actions/refer to Form EPIP 4102-6)

4.14.1 Establish communications with the Manager of External Communications.

4.14.2 Establish communications with the Corporate Representative at the Media Center.

4.14.3 Prepare periodic updates and information briefing with Manager of External Communications. This information will be transmitted to the Corporate EOC for review and transmission to the Corporate Representative at the Media Center.

4.14.4 Provide initial non technical notification information requirements of concern to federal/state, local officials and corporate management.

4.14.5 Maintain communications with the Station Emergency Organization Managers and Director providing and obtaining periodic updated information as necessary.

4.14.6 Monitor TV and radio broadcasts as necessary for rumor control.

4.14.7 Translate technical information for non technical people.

5. FIGURES

None

AB:jms

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4104 Rev. 6

Title GENERAL EMERGENCY

Prepared By A. G. Cheatham

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AG Cheatham	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

GENERAL EMERGENCY

Page No.	Effective Revision
1-25	6

1. OBJECTIVE

To provide a procedure which delineates actions to be taken when events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.

2. DISCUSSION

This procedure is used for a General Emergency (State class ALPHA or BRAVO). An incident has been classified as a General Emergency using OP 501 or OP 2501.

3. IMMEDIATE ACTION

3.1 Shift Supervisor/Designee of Affected Unit - Upon initiation of a General Emergency will: (Refer to checklist form EPIP 4104-1 and log all actions)

3.1.1 Sound the station evacuation siren for one minute. Repeat as necessary.

3.1.2 Announce that a general emergency exists and the Unit status over the P.A. System.

3.1.3 Carry out applicable Unit operational and/or emergency procedures.

3.1.4 Contact the Duty Officer.

3.1.5 Contact both Shift Technical Advisors for accident assessment and communications assistance.

3.1.6 Notify Security at the Central Alarm Station (yellow intercom - Dial or Ext. , or the the Secondary Alarm Station (yellow intercom - Dial , or Ext. ,f the nature and location of the emergency.

3.1.7 Direct the Shift Supervisor of the non-affected Unit to notify by telephone the on-call Directors and Managers. Direct the S.S. of the non-affected Unit to assist the STA/SSSA in notifying and calling in EMT's and the NNECO emergency organization manager and directors who are not on call and any necessary personnel per ACP 1.07. (Until relieved by the Manager of On-Site Resources). (See Station Form 120)

3.1.8 Direct the Shift Supervisor of the non-affected unit to check time sheet for the affected unit operations. Verify through affected unit SS/SCO that all operations personnel of the affected unit are safe. Notify Security at Ext. of the results, including the names of personel on-duty from both units.

3.1.9 Dispatch an EMT team comprised of the on shift Health Physics Technician and a PEO from the non-affected unit to survey the area around the unit (if necessary. Use the EMT #1 kit provided for this purpose located in the Control Room.

3.1.10 Consider de-escalating the emergency class.

3.2 Other Operations Shift Personnel

3.2.1 Operations personnel on both units not immediately involved in the emergency report to their respective Immediate Response Operations Support Center in the Operation Assistant's Office.

3.3 Shift Technical Advisor/SSSA

Refer to checklist form EPIP 4104-2 and log all actions)

3.3.1 Both STA's report to Control Room immediately.

3.3.2 The STA of the affected unit provides assessment assistance to the Shift Supervisor (SS).

3.3.3 The non-affected unit STA/SSSA provide communications assistance to the S.S. and initiate the telephone recorder system, radiopager and provide "hot line" notification to the NRC in accordance with ACP 1.07, SF-112 and SF-130. The NRC must be notified within 1 hour of the occurrence of the incident. The radiopager system must be initiated for notification within 15 minutes of classification of the incident.

<u>NOTE</u>: In the refueling or cold shutdown operating modes when the STA function is <u>not</u> required, a designated management representative will fulfill the requirement of 3.3.2 and 3.3.3 above.

3.4 <u>Duty Officer of the Affected Unit</u>

(Refer to Form EPIP 4104-3 and log all actions)

3.4.1 Notify the superintendent of the affected unit if available.

3.4.2 Report to the Control Room/TSC.

3.5 <u>Managers and Director</u>

3.5.1 The on-call Managers and Directors, upon receiving a radiopage of a Bravo or Alpha Classification will call one of the three telephone recorders listed in SF-121 and leave a message that they received the radiopage and will be reporting to their designated location.

Director of Station Emergency Operations - Emergency Operations Facility

Mgr. of Control Room Operations - Respective Control Room

Mgr. of Public Information - Emergency Operations Facility

Mgr. of Radiological Consequence Assessment - Emergency Operations Facility

Mgr. of Technical Support - Respective Technical Support Center

Mgr. of External Communications - Emergency Operations Facility

Mgr. of Security - On-site Operational Support Center/On-site Resource Center areas in the CPF.

Mgr. On-site Resources - If Off-Site report to the Emergency Operations Facility (If onsite, report to the CPF Resources Area.

Mgr. of Engineering Support - Emergency Operations Facility

NOTE: Personnel reporting to the EOF should enter through the north door (decontamination area) and perform a whole body frisk prior to entering the EOF general area. Activate EOF if necessary in accordance with EPIP 4304. Protective clothing is available in the EOF to allow activation of the EOF by personnel who may be contaminated. If time permits, contaminated personnel should enter through the decontamination area entrance and ensure they are clean prior to entering the EOF operations area.

3.6 Duty Health Physics Technician(s)

(Record all data)

3.6.1 Report to the Control Room.

3.6.2 Perform on-site survey, if necessary. (EMT #1)

3.6.3 Copy survey results and give the Shift Supervisor a copy.

3.6.4 Report to the Manager of Radiological Consequence Assessment at the Emergency Operations Facility with original survey data.

3.7 On-site Personnel

3.7.1 ACTION BY NNECO "E" BADGE PERSONNEL

3.7.1.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-site Resources Center at the Condensate Polishing Facility/Warehouse 5. Personnel who are contaminated and those wearing protective clothing should report to the designated area on the east side of the CPF assembly area. These individuals should minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.1.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.1.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.1.4 Emergency Organization personnel should report to their assigned areas.

3.7.1.5 The Director shall establish the route for essential personnel to get to the Emergency Operations Facility from the Condensate Polishing Facility Resources/Operational Support Areas or Northwest Assembly Area.

<u>NOTE</u>: Some options available to the Director are:

a. Personnel vehicles

b. Company vehicles

c. Security vehicles

d. Stone & Webster vehicles

e. Local Bus Companies

f. Local Cap Companies

g. Walk - through PAP/AAP or through CPF and Unit 3 Site.

3.7.1.6 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.2 <u>ACTION BY "C" BADGE NNECO CONSTRUCTION PERSONNEL</u>

3.7.2.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the CPF Assembly Area for crafts (Condensate Polishing Facility/Warehouse 5). Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.2.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.2.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.2.4 The Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency Operations Facility from the Condensate Polishing Facility Resources Center/Operational Support areas or Northwest Assembly Area.

3.7.2.5 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.3 ACTION BY "V" BADGE PERSONNEL

3.7.3.1 If inside the protected area or inside the Condensate Polishing Facility/Warehouse 5, report to the On-site Operational Support Center Area for visitors (Condensate Polishing Facility/Warehouse 5). Personnel who are contaminated and those wearing protective clothing report to the designated area on the east side of the CPF Assembly Area. Minimize contact with other personnel until monitored and/or decontaminated by Health Physics. If necessary, contaminated personnel will be provided with clean paper suits and transported to the EOF for decontamination.

3.7.3.2 Personnel evacuating the protected area should turn in their security badge at the access point and maintain their TLD and pocket ion chamber until instructed to turn them in to Health Physics or Security personnel.

3.7.3.3 If outside the protected area, report to the Northwest Assembly Area.

3.7.3.4 The Director shall establish the route for essential personnel to get to either personal vehicles or company provided vehicles for transport to the Emergency Operations Facility from the Condensate Polishing Facility Resources Center/Operational Support areas or Northwest Assembly Area.

3.7.3.5 The Director shall establish the best route available for personnel who are not essential to exit the site. If personal vehicles are not accessible, arrangements can be made with local bus companies to transport personnel to an offsite location where arrangements for transportation home can be made.

3.7.4 Personnel Reporting to Site (Called-In)

3.7.4.1 Called in personnel report to the Emergency Operations Facility.

3.7.5 Unit 3 Construction Personnel

3.7.5.1 When the evacuation signal is given all Stone & Webster and subcontractor personnel, regardless of location of change buildings or daily parking areas, immediately cease work, secure all tools, equipment, and proceed directly to the brass alleys they came through when entering the site.

3.7.5.2 All manual personnel, after checking out with the Timekeeping Department, will immediately proceed to the Northwest Manual

Parking Area where they will assemble by craft and receive further instructions from craft supervisors.

3.7.5.3 General Foremen and Foremen conduct an accountability check for all personnel under their control at the Assembly Area Assigned. Members of the Timekeeping Department will contact the appropriate General/Foreman to determine the last know location of those personnel which timekeeping cannot account for.

3.7.5.4 All non-manual personnel will check out through Stone & Webster Timekeeping window they entered the area and immediately assemble at the non-manual and Parking lot and await further instructions.

3.7.5.5 Assemble and await Millstone monitoring personnel who will conduct personnel surveys and arrange for off-site release of all personnel.

3.7.6 <u>Non-Badged Personnel Outside Protected Areas</u>

3.7.6.1 Report to the Northwest Assembly Area.

3.7.7 <u>Station Nurse</u>

3.7.7.1 Report to the On-site Resources Center (RC/CPF)

3.7.8 <u>EMT's</u>

3.7.8.1 Report to the Emergency Operations Facility.

3.7.9 <u>Millstone Telephone Operator</u>

Notify the Control Room that the switchboard will be in night service. Report to the Emergency Operations Facility. Man the Millstone switchboards at the EOF.

3.7.10 <u>On Call Electricians</u>

3.7.10.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate

Response Operation Support Center at the Operation Assistant's Office.

3.7.10.2 On call electricians not onsite (ie-running errand to Niantic) should report to the EOF.

3.7.11 On Call Mechanics

3.7.11.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.11.2 On call mechanics not onsite (ie-running errand to Niantic) should report to the EOF.

3.7.12 On Call I&C Technician

3.7.12.1 When the evacuation alarm is initially sounded, if onsite resport to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.12.2 On Call I&C technician not onsite (ie-running errand to Niantic) should report to the EOF.

3.7.13 On Call Chemistry Technician

3.7.13.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.13.2 On call Chemistry Technician not onsite (ie-running errand to Niantic) should report to the EOF.

3.7.14 On Call Operator

3.7.14.1 When the evacuation alarm is initially sounded, if onsite report to the Immediate Response Operation Support Center at the Operation Assistant's Office.

3.7.14.2 On call Operator not onsite (i.e.-running errand to Niantic) should report to the EOF.

3.8 Security Personnel

3.8.1 Secure all posts except CAS, SAS, CPF AAP, AAP, PAP Man doors 144, 200, 101, and 201.

3.8.2 Except for the door posts secure each of the remaining security posts if its local area monitor alarms or if the local dose rate meter exceeds 100 mr/hr. For the door posts, monitor dosimeters and secure post if the accumulated dose during the emergency exceeds 100 mr.

3.8.3 All security personnel not on post report to the CPF On-site Resources Center Area.

3.8.4 Man northwest door of the CPF (Warehouse 5) to allow personnel to enter from outside.

3.9 Other Unit Shift Supervisor/Designee

(Log all actions)

3.9.1 Provide an EMT member to the affected unit.

3.9.2 Monitor essential unit parameters, such as area radiation monitors and airborne radioactive levels.

3.9.3 Secure ventilation, as required, to avoid pulling in airborne contaminants from the affected unit.

3.9.4 Notify respective unit Duty Officer in absence of higher supervision of significant problems associated with the unit.

4. SUBSEQUENT ACTION

4.1 Shift Supervisor/Designee of Affected Unit

(Refer to Form EPIP 4104-1 and log all actions)

4.1.1 Continue to assess the condition of the unit.

4.1.2 Transfer responsibilities as the Director of Station Emergency Operations to the on-call Director upon his arrival at the EOF.

4.1.3 Assume position of Manager of Control Room Operations and request any required support from the Manager of Technical Support or the Director of Station Emergency Operations.

4.1.4 Keep Director of Station Emergency Operations informed as to the status of the unit. Continuously monitor operating conditions, reassess and take corrective actions as necessary.

4.1.5 Upon being notified by the Director of Station Emergency Operations announce over P.A. System to terminate the General Emergency.

4.2 <u>Other Personnel</u>

4.2.1 Operation personnel located in the respective Immediate Response Operations Support Center await direction from the respective Manager of Control Room Operations.

4.2.2 Station personnel in the On-Site Resources Center and On-Site Operational Support Center await direction from the Manager of On-Site Resources.

4.3 <u>Shift Technical Advisor/SSSA</u>

(Refer to Form EPIP 4104-2 and log all actions)

4.3.1 Continue to provide assessment to the Shift Supervisor. (Affected Unit STA)

4.3.2 The non-affected Unit STA/SSSA (or designated management representative) maintain continuous channel communications with the NRC until relieved by the Manager of External Communications.

4.4 <u>Duty Officer of Affected Unit</u>

(Log all actions, Refer to checklist Form EPIP 4104-3)

4.4.1 Upon arrival at the Station, assume the position of Manager of Technical Support.

4.4.2 Verify initial determination of the incident class made by the Shift Supervisor. Make recommendations to the Shift Supervisor on changing the emergency classification and/or State class code, if necessary.

4.4.3 If arriving before the on-call Director of SEO has taken charge, relieve the Shift Supervisor of administrative control of the Station. The Shift Supervisor remains the Director of SEO until relieved by the on-call Director.

4.5 Director of Site Emergency Operations (SEO) Log All Actions (Refer to Checklist Form EPIP 4104-4)

4.5.1 Upon arrival at the EOF, establish communications with other managers in the EOF, the Manager Of Onsite Resources (in the CPF Area) and the Manager Of Technical Support (in the TSC). Contact the Control Room to ascertain the event's status.

4.5.2 When sufficient information has been gathered, brief the EOF managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.

4.5.3 When satisfied that the EOF is properly activated, notify the Shift Supervisor of the affected unit that you have assumed the function of Director of Site Emergency Operations. Notify the Duty Officer that you have assumed administrative control of the station.

NOTE: When present, the Station Superintendent may relieve the designated Director of Station Emergency Operations.

4.5.4 Initiate use of the logbook and tape recorder and record data and communications including time of occurrences.

4.5.5 Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).

4.5.6 Contact Manager of On-Site Resources and request person be provided to perform the logging function.

4.5.7 For any Manager position not manned as determined in Step 4.5.4, have Manager of On-Site Resources contact designated on call Manager or qualified replacement.

4.5.7.1 Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of Radiological Consequence Assessment has not arrived. (Team 3 should be dispatched in the downwind direction.)

4.5.8 Coordinate site emergency actions to: (if possible)

4.5.8.1 Stop or minimize the source of the problem.

4.5.8.2 Contain the results of the problem.

4.5.8.3 Evaluate the results of the problem.

4.5.8.4 Clean up the results of the problem and restore the Station to a normal condition.

4.5.9 During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an <u>hourly</u> basis, and as necessary (include meteorological assessments and dose estimates of any actual releases).

4.5.9.1 Director of Corporate Emergency Operations

4.5.9.2 Manager of External Communications

4.5.9.3 Manager of Public Information

4.5.10 Consider requesting outside assistance of the following groups using the Manager of External Communications:

4.5.10.1 Waterford Police - use RED hot line

4.5.10.2 Waterford Fire and Ambulance Department - use RED hot line

4.5.10.3 State Police - use BLUE hot line

4.5.10.4 Radiation Management Corporation -

4.5.10.5 Lawrence and Memorial Hospital - Ext.

4.5.10.6 U. S. Coast Guard -

4.5.10.7 Amtrak - Chief Train Dispatcher (Boston)

4.5.10.8 INPO support functions

4.5.10.9 ANI/MAELU (NELPIA) (For Financial Assistance)

4.5.10.10 Refer also to SF-109, Agency Call List.

4.5.11 Coordinate and direct outside assistance groups arriving on site.

4.5.12 At least hourly and as necessary, ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.

4.5.12.1 Appropriate outside groups, agencies and public officials - using radiopage and telephone recorders.

4.5.12.2 NRC resident inspector

4.5.12.3 NRC - use WHITE hot line

4.5.12.4 U. S. Coast Guard -

4.5.12.5 AMTRAK - Chief Train Dispatcher (Boston)

4.5.12.6 Lawrence and Memorial Hospital · (Emergency Room Charge Nurse) Ext

4.5.12.7 Radiation Management Corporation

4.5.12.8 INPO Support Functions
Ref: INPO functions listed in SF-109, Agency Call List

4.5.13 Based on calculated and field measurements of offsite releases, recommend protective actions to the State in accordance with Station Form 106.

4.5.14 Verify that all personnel in the protected area have been accounted for as per Step 4.12.3. Initiate search and rescue parties, as necessary, to located missing personnel.

4.5.15 Based on existing and potential conditions and results, consider either reducing, or maintaining the emergency classification using the EML's contained in OP 501 and OP 2501, Incident Assessment and Classification.

4.5.16 During the course of the incident, refer to the 4200 series procedures as appropriate.

4.5.17 Authorize exposures to emergency workers in excess of administrative limits as necessary. Emergency sampling should not be performed if it results in workers exceeding administrative limits.

4.5.18 Designate evacuation routes if site evacuation becomes necessary.

4.5.19 Consult with the NRC, State and Corporate representatives on a periodic basis.

4.5.20 Resolve questions concerning unit operating license requirements with NRC representatives.

4.5.21 After incident and unit conditions have been stabilized to allow the terminating of the General Emergency, confirm with Director of Corporate Emergency Operations and notify all emergency site managers to secure posts and return to normal operation. In addition, have the Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.

4.5.22 Complete the Plant Incident Report in accordance with ACP 10.01.

4.6 Manager of Control Room Operations - Affected Unit

(Log all actions, refer to Form EPIP 4104-1)

4.6.1 Continue to perform the actions specified in Section 4.1.

4.6.2 Provide information and recommendations on accident recovery to the Director of Station Emergency Operations.

4.6.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.7 Manager of Control Room Operations - Non-Affected Unit

(Log all actions)

4.7.1 Continue to monitor essential unit parameters and operate the unit in a safe manner taking into consideration the possible affects of the affected unit on his unit's continued safe operation.

4.7.2 Provide periodic information on status of his unit to Director of Station Emergency Operations.

4.7.3 Consider overriding certain security doors to allow expedient resolution of any unit problem.

4.8 Manager of Radiological Consequence Assessment

(Log all actions - Refer to Checklist, Form EPIP 4104-5)

4.8.1 Establish communications with the Director of Station Emergency Operations. Turn on portable security radio, determine channel being used, and monitor communications.

4.8.2 Collect and evaluate radiological data from the duty Health Physics Technician (on site Team #1).

4.8.3 Request Manager of On-Site Resources to provide appropriate number of EMTS for on-site and off-site monitoring (App. 10 EMTS).

4.8.4 Contact the affected unit Control Room and request data of actual and potential radioactive release data including meteorological data.

4.8.5 Provide individual to distribute dosimetry as necessary.

4.8.6 Using available H.P. Technicians, initiate operation of the PING air monitors in the Emergency Response Centers.

4.8.6.1 Unit 1 Control Room

4.8.6.2 Unit 2 Control Room

4.8.6.3 Unit 1 Technical Support Center

4.8.6.4 Unit 2 Technical Support Center

4.8.6.5 Emergency Operations Facility

4.8.6.6 CPF Resources and Operational Support Center Areas

4.8.7 Using available qualified EMT's determine radiation dose rate and I^{131} levels (EPIP 4207) in the following areas. (Survey downwind areas first)

4.8.7.1 Operations Support Center in the Operations Assistants' Office.

4.8.7.2 CPF Resources and Operational Support Center Areas.

4.8.7.3 Unit 1 Control Room

4.8.7.4 Unit 2 Control Room

4.8.7.5 Technical Support Center (Unit 1)

4.8.7.6 Technical Support Center (Unit 2)

4.8.7.7 CAS

4.8.7.8 SAS

4.8.7.9 PAP

4.8.7.10 AAP

4.8.7.11 Emergency Operations Facility

Consider evacuating any area with radiation dose rates greater than 10 mr/hr or I^{131} levels greater than 10 X MPC (10 MPC = 9 X 10^{-8} uc/cc) but evacuate or take protective measures in time to avoid anyone receiving greater than 500 mr whole body or 500 I^{131} MPC hours.

(Recommend moving the Emergency Operations Facility and equipment to the Corporate EOC (N101) Berlin.

4.8.8 Inform Director of Site Emergency Operations and dispatch On-Site Team 3 in accordance with EPIP 4205 to collect samples from the Site Boundary.

4.8.9 Inform Director of Site Emergency Operations and dispatch On-Site Team #2 in accordance with EPIP 4204 to the Northwest Assembly Area. Consider sending a second EMT #2 Team to the On-site Resources area at the CPF. A spare EMT #2 kit is located there.

4.8.10 Initiate control of food and water supplies on-site as necessary.

4.8.11 Inform Director of Site Emergency Operation and dispatch off-site teams 4 and 5 to survey downwind areas specified by the manager in accordance with EPIP 4206.

4.8.12 Determine the magnitude of actual or potential releases using EPIP 4201 and the projected dose to the thyroid and whole body. Correlate results to protective action guidelines on SF-106 and relay applicable incident class to the Director of Site Emergency Operations for transmittal of the State and Waterford Police the NRC and the Director of NUSCo Emergency Operations using hot lines.

4.8.13 Periodically inform Director of Station Emergency Operations of the results of radiological surveys and of any projections or problems. Request additional assistance from the offsite assistance companies as necessary.

4.8.14 Based on radiological results, consider recommending reduction or maintenance of the existing emergency classification.

4.8.15 If I^{131} levels are greater than 1×10^{-5} uc/cc for one hour, recommend to Manager of Site Emergency Operations the issuance potassium iodide pills to the personnel.

4.8.16 Prior to allowing any personnel to leave the assembly areas ensure Health Physics team is established to survey the personnel for contamination. Collect dosimetry if personnel are leaving site.

4.8.17 Direct and coordinate with the Director of Station Emergency Operations the radiological support for emergency re-entry operations and/or search and rescue.

4.9 Manager of Technical Support

(Log all actions refer to checklist Form EPIP 4104-3)

4.9.1 Establish communications with the respective Control Room and the Corporate Manager of Technical Support.

4.9.2 Determine need for additional expertise and request Manager of On-Site Resources to provide such personnel.

4.9.3 Monitor and analyze unit condition and status and provide operational guidance to the Manager of Control Room Operations.

4.9.4 Develop any required abnormal operating and emergency procedures for the respective unit.

4.9.5 Provide the Director of Station Emergency Operations with an independent analysis of the status of the respective unit.

4.10 Manager of External Communications

(Log all communications refer to checklist Form EPIP 4104-7)

4.10.1 Establish communications with all Managers and the Director of Site Emergency Operations.

4.10.2 Establish communications with the state EOC

4.10.3 Establish communications with Corporate Manager of External Communications using the hot line phone.

4.10.4 Request Manager of On-Site Resources to provide at least 4 people for telephone communications (if necessary).

4.10.5 Relieve STA/SSSA of NRC WHITE hot-line continuous communication requirement and assume control of the radiopager system.

4.10.6 Verify that all the required initial calls have been made and determine the content of those calls.

4.10.7 As directed by the Director of Station Emergency Operations provide periodic update information to the following:

4.10.7.1 All Site Managers - use intercom

4.10.7.2 Outside groups, agencies, and local officials use telephone recorders & radiopage.

4.10.7.3 Corporate EOC - YELLOW hot line

4.10.7.4 NRC - use WHITE hot line

4.10.8 Request off-site assistance in accordance with Step 4.5.9 as directed by the Director of Site Emergency Operations.

4.10.9 Inform selective organizations in accordance with Step 4.5.10 as directed by the Director of Station Emergency Operations.

4.10.10 If necessary, request Manager of On-Site Resources to provide person to monitor radio and television broadcasts and to apprise Director of Station Emergency Operations of news.

4.11 Manager of Security

(Log all actions, refer to Form EPIP 4104-8)

4.11.1 Establish communications with Manager of On-Site Resources

4.11.2 Account for all personnel located within the Protected Area by the following procedure.

4.11.2.1 Determine which badges are at the AAP, CPF AAP, and the PAP.

4.11.2.2 Determine which badges have been accounted for at the CPF AAP.

4.11.2.3 From Steps 4.11.2.1 and 4.11.2.2, determine which personnel (including security personnel) are still within the protected area.

4.11.2.4 Using radio, telephone or other means, assist the Manager of On-Site Resources in determining the location of all personnel in the protected area.

4.11.3 Verify that all posts within the Protected Area except CAS, SAS, AAP, CPF AAP, PAP and doors 144, 200, 101 and 201 have been secured and that guards have reported to the CPF assembly area.

4.11.4 Verify implementation of Procedure SEP-1231.

4.11.5 Based on radiological survey results of Step 4.8.5 or by local radiation alarms, ensure that security personnel secure such posts and report to the On-Site Resources Center.

4.11.6 Inform Director of Site Emergency Operations of any posts secured due to radiological reasons to determine if Coast Guard should be contacted to monitor the adjacent waterways.

4.11.7 Dispatch security officer(s) in a vehicle to the warehouses 3 and 4, office trailers, Refuel Outage Building, Beach and fishing areas, and Environmental Lab to evacuate personnel.

4.11.8 Provide security around the Site Emergency Operations Center and any other areas specified by the Director of Site Emergency Operations.

4.12 Manager of Onsite Resources

(Log all actions, refer to Form EPIP 4104-9)

4.12.1 Establish communications with Director of Site Emergency Operations.

4.12.2 Relieve non-affective unit Shift Supervisor of calling in personnel and continue to call in EMT's and necessary personnel as per ACP-1.07. (SF-120)

4.12.3 As per Section 4.11.2, provide the completed personnel accountability list to the Director of Station Emergency Operations.

4.12.4 Establish the CPF On-Site Resources at the CPF and/or EOF. Verify that personnel are assembled in accordance with the marked areas in the CPF Assembly Area.

4.12.5 Fulfill the requests of the Director and Manager for any support personnel.

4.12.6 Receive estimate of the time period of the incident from the Director of Station Emergency Operations, and if necessary, prepare shift schedule for all Managers, Director and support personnel for 24 hour coverage for Director of Station Emergency Operations use.

4.12.7 Use guard force personnel to administer any required first aid.

4.12.8 Provide for transportation services as necessary include vehicles for the EMT's, buses for personnel to be relocated, and transporation of radiological samples.

4.12.9 Provide for commissary services, as necessary.

4.12.10 Provide qualified personnel for search and rescue teams.

4.12.11 Administer petty cash, expense accounts and payroll matters as needed.

4.12.12 Call in the telephone operator to man the Millstone or Emergency Operations Facility telephone consoles, if necessary.

4.12.13 Provide for the transfer of the NOTEPAD terminal to the EOF from the Nuclear Plant Records Facility.

4.12.14 Transfer Onsite Resources to EOF.

4.13 Manager of Site Engineering Support

(Log all actions, refer to Form EPIP 4104-10)

4.13.1 Establish communications with the Director of Station Emergency Operations.

4.13.2 Using EPIP 4304, verify that the EOF has been activated.

4.13.3 Request selected personnel from the Manager of On-Site Resources to support any site related tasks required by the Director of Station Emergency Operations.

4.13.4 Retrieve any records requested by any of the Managers or the Director of Station Emergency Operations.

4.14 Manager of Public Information

(Refer to checklist Form EPIP 4104-6)

4.14.1 Establish communications with the Manager of External Communications.

4.14.2 Establish communications with the Corporate Representative at the State Armory.

4.14.3 Prepare periodic updates and information briefing with Manager of External Communications. This information will be transmitted to the Corporate EOC for review and transmission to the Corporate Representative at the State Armory.

4.14.4 Provide initial non technical notification requirements of concern to federal/state, local officials and corporate management.

4.14.5 Maintain communications with the Station Emergency Organization Managers and Director providing and obtaining periodic updated information as necessary.

4.14.6 Monitor TV and radio broadcasts as necessary for rumor control.

4.14.7 Translate technical information for non technical people.

5. FIGURES

None

WB:bjo

APPROVAL: E. J. Mroczka
Station Superintendent

DATE: 6-18-80

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4203 Rev. 2

Title EMT #1-IN PLANT RADIOLOGICAL SAMPLING AND MONITORING

Prepared By J.E. Laine

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	[signature]	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [✓]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the dates below:

[signature]	5-25-82	6-8-82
Station Superintendent/Unit Superintendent	Approved Date	Effective Date

SF-301
Rev. 3

EMT #1-IN PLANT RADIOLOGICAL SAMPLING AND MONITORING

Page No.	Eff. Rev.
1 - 12	2

1. OBJECTIVE

To detail the actions of the Health Physics technicians reporting to the control room during Alert, Site Area Emergency or General Emergency.

2. DISCUSSION

2.1 Shift Supervisor of the Affected Unit

2.1.1 On back shifts and weekends, he will initially assume administrative control as the Director of Station Emergency Operations (Director of SEO). He will assign the on shift Health Physics (HP) Technician to either Emergency Monitoring Team (EMT) #1, a search team or a rescue team.

2.1.2 During normal working hours, he will be the Manager of Control Room Operations. He will assign the HP Technician(s) reporting to the control room to EMT #1.

2.2 Onshift Health Physics Technician(s)

2.2.1 The onshift Health Physics Technician(s) will provide at least one member for EMT#1 and will help comprise additional search, rescue or survey teams as required.

2.3 Dose Rate Instrumentation

2.3.1 The EMT #1 Kit contains an RO-2A dose rate meter with a range of 0-50R/hr or equivalent. Available for use in the emergency locker is one Teletector (0-1000R/hr) or equivalent.

2.4 If administrative exposure limits are likely to be exceeded, the Emergency Monitoring Team should not be dispatched until the Manager of Radiological Consequence Assessment and the Director have arrived on-site and have reviewed the need for sampling. Refer to EPIP 4209 for Emergency Operations Re-entry.

3. INSTRUCTIONS

3.1 On Shift Health Physics Technician(s)

3.1.1 When notified that an Alert, Site Area Emergency or General Emergency has been declared, the assigned individuals should report to the Manager of Control Room Operations (normal hours) of Director of SEO (backshift) in the affected control room for assignment.

3.1.2 If assigned to a search or rescue team, perform actions detailed in EPIP 4208.

3.1.3 If assigned to EMT #1, perform actions detailed in section 3.2 of this procedure.

3.2 EMT #1

3.2.1 Obtain EMT Kit #1 from the emergency equipment cabinet in the control room. Enter the time of day and the date on Line 1 of Form EPIP 4203-1 (EMT #1 Worksheet) team number (EMT #1) and the names of the team members on Line 2 and 3 of Form EPIP 4203-1 (EMT #1 Worksheet).

3.2.2 Re-zero the low and high range dosimeters in the kit and attach one low range dosimeter, one high range dosimeter and a TLD to the upper front portion of your clothing.

3.2.3 If the control room PING is not in operation, initiate an iodine and particulate air sample in the control room using the air sampler from the emergency equipment cabinet. Perform the air sample in accordance with EPIP 4207 "Radiological Sampling During an Emergency". Record the time sample started on Line 8 of Form EPIP 4203-1.

3.2.4 Check the batteries in each of the portable instruments in the kit in accordance with EPIP 4207. If all battery checks are satisfactory, indicate this on Line 4 of Form EPIP 4203-1, EMT #1 Worksheet and proceed to the next step. If any instruments indicate weak or dead batteries, install fresh batteries as described in EPIP 4207. If any meter still does not respond properly to the battery check, obtain another meter.

3.2.5 Perform a functional check of all the radiation detection instruments in your kit in accordance with EPIP 4207. If all functional checks are satisfactory, indicate this on Line 5 of Form EPIP 4203-1 EMT #1 Worksheet and proceed to the next step. If any meter fails to respond properly, obtain another meter and repeat steps 3.2.4 and 3.2.5.

3.2.6 Take waist level dose rate readings with both beta window open and beta window closed in the Control Room and record the results on line 6 of Form EPIP 4203-1 EMT #1 Worksheet. Notify the Manager of Control Room Operations of this reading.

3.2.7 Perform a functional check of the two way radio in your kit as follows:

3.2.7.1 Turn the radio on.

3.2./.2 Ensure that a battery is installed on the bottom of the radio and an antenna is installed on the top.

3.2.7.3 Select channel 1. Communicate on this channel at all times unless otherwise directed by the EOF.

3.2.7.4 Turn the "SQUELCH" knob counter clockwise until static is heard. Turn the knob clockwise until the static just stops.

3.2.7.5 Press the "push-to-talk" button on the side of the radio and request a radio check from Security.

3.2.7.6 Based on the results of this radio check, make any necessary adjustments to your volume and/or squelch knobs.

3.2.7.7 Remove a spare battery from the multi-unit charger in the EOF locker and put it into your EMT kit.

3.2.7.8 Turn radio off until your team is sent into the field. Indicate radio operability on Line 7 of Form EPIP 4203-1, EMT #1 Worksheet.

3.2.7.9 If any difficulty is experienced with the radio, notify the Manager of Control Room Operations for resolution.

3.3.8 If airborne activity and/or contamination is suspected outside the radiological control areas, don protective clothing and respiratory protection as necessary.

3.3.9 Obtain instructions, smears, survey forms and pens from the kit. Inform the Manager of Control Room Operations that you are prepared to be dispatched.

3.3.10 When released by the Manager of Control Room Operations, proceed along the route established by the Manager of Control Room Operations or Manager of Radiological Consequence Assessment.

3.3.11 As you proceed take radiation readings and smears along the established route. Record radiation readings and smear locations on station radiological survey forms. Report any abnormal radiation readings and any obvious damage or unusual conditions on site. For example:

- Radiation readings greater than 100 mr/hr in non high radiation areas
- Radiation readings greater than .5 mr/hr outside radiological control areas
- Smoke or fire

- Unusual noises indicating damaged components or explosions

- Changes in structure

- Water or steam leaks

3.3.12 Maintain communications with the Radiological Consequence Assessment group at the Station Emergency Operations Facility (EOF) or the Control Room if the EOF has not been established, keeping them informed of the radiation levels and any unusual condition on site. If the radio fails to work, report by telephone to the Manager of Radiological Consequence Assessment (Ext. , or to the Manager of Control Room Operations (Ext. Unit #1 or Ext. Unit #2).

3.3.13 If any potentially unsafe areas are encountered such as high radiation, contamination areas or where fire or steam leaks are occurring, do not attempt to enter these areas. Report your findings and change your route as necessary to avoid these areas. Report any changes in your planned route. Read your dosimeters frequently.

3.3.14 A complete tour of the outside of the buildings should be made and any areas requested by the Director of SEO.

3.3.14.1 If requested by the Manager of Radiological Consequence Assessment or if the following conditions are known to exist, a special survey should be conducted:

Fuel failure is expected to have occurred in Unit 2.

Releases are in progress from the atmospheric steam dumps.

3.3.14.2 Proceed to the east Penetration Room located on the 38'6" level of the Unit 2 Auxiliary Building near the spent fuel pool.

3.3.14.3 Read the RM-16 radiation monitor which is located to the left of the door directly outside the room. Report this reading by radio and record in the survey form (Figure 3) for the east Penetration Room.

3.3.14.4 Using the dose rate monitor, obtain a waist level dose rate at the location indicated on Figure 3. If abnormal radiation readings are detected, releases may be occurring and this area should be monitored periodically (approximately every 15 minutes while releases are occurring).

3.3.14.5 Proceed to the west Penetration Room also located on the 38'6" level and obtain a waist level dose rate at the location indicated on Figure 2. If abnormal radiation readings are detected, continue to monitor levels at approximately 15 minute intervals while releases are occurring. Record all radiation readings.

3.3.14.6 Using Figure 1, determine the noble gas release rate (Ci/sec) corresponding to the measured dose rate and record and report this value. Record all radiation readings.

3.3.14.7 When finished, return to the Control Room. Remove any protective clothing prior to entering.

3.3.15 If the air sampler is still running, record the flow rate, shut off sampler and record the time on Form EPIP 4203-1 EMT #1 Worksheet.

3.3.16 Remove the filter and cartridge from the air sampler and count the cartridge in accordance with EPIP 4207. Record results for the cartridge on line 9 of Form EPIP 4203-1 EMT #1 Worksheet. Calculate I-131 concentration by selecting the appropriate factor and by inserting the previously calculated values into the formula on line 9. Report the result to the Manager of Control Room Operations. If the iodine activity is greater than $\underline{9 \times 10^{-9}\ \text{uci/cc}}$, inform the Manager of Control Room Operations that all personnel should wear respirators with iodine canisters.

3.3.17 Make a copy of any survey data and give the copy to the Manager of Control Room Operations.

3.3.18 Report to the Manager of Radiological Consequence Assessment at the EOF with the following:

- All original survey data

- Air samples taken

- Smears taken (if not previously counted)

<u>NOTE</u>: Smears may be counted with the count rate meter/pancake probe located in the Control Room emergency equipment cabinet. Air samples may be counted on the Health Physics or chemistry GeLi spectrometers if operable.

4. FIGURES

4.1 Figure 1 Release Rate from Atmospheric Steam Dump vs. Dose Pate

4.2 Figure 2 West Penetration Room

4.3 Figure 3 East Penetration Room

5. TABLES

None

JEL:jms

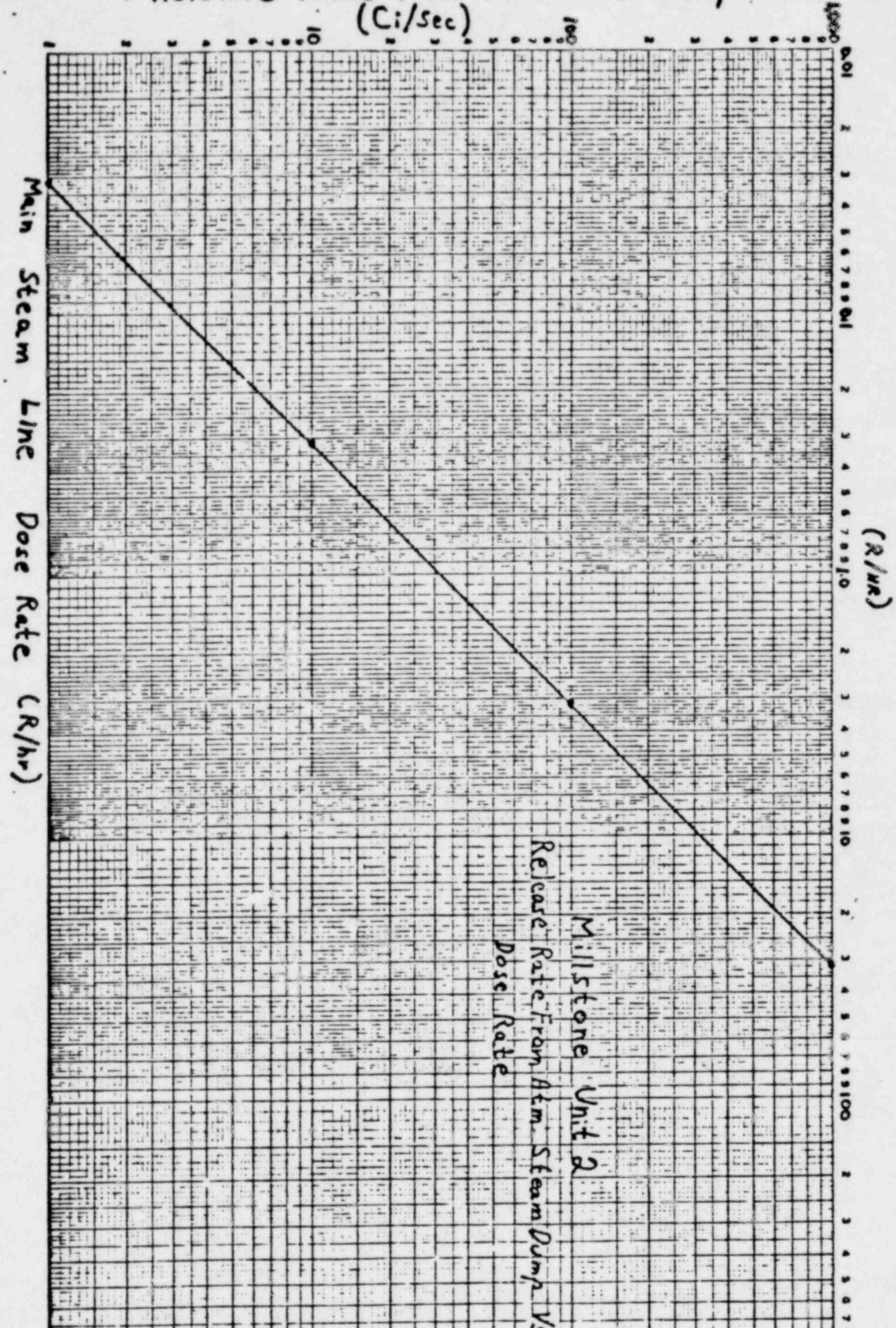

Release Rate From Atm. Steam Dump
(Ci/Sec)
Main Steam Line Dose Rate (R/hr)
(R/hr)
Millstone Unit 2
Release Rate From Atm. Steam Dump Vs
Dose Rate

Figure 1

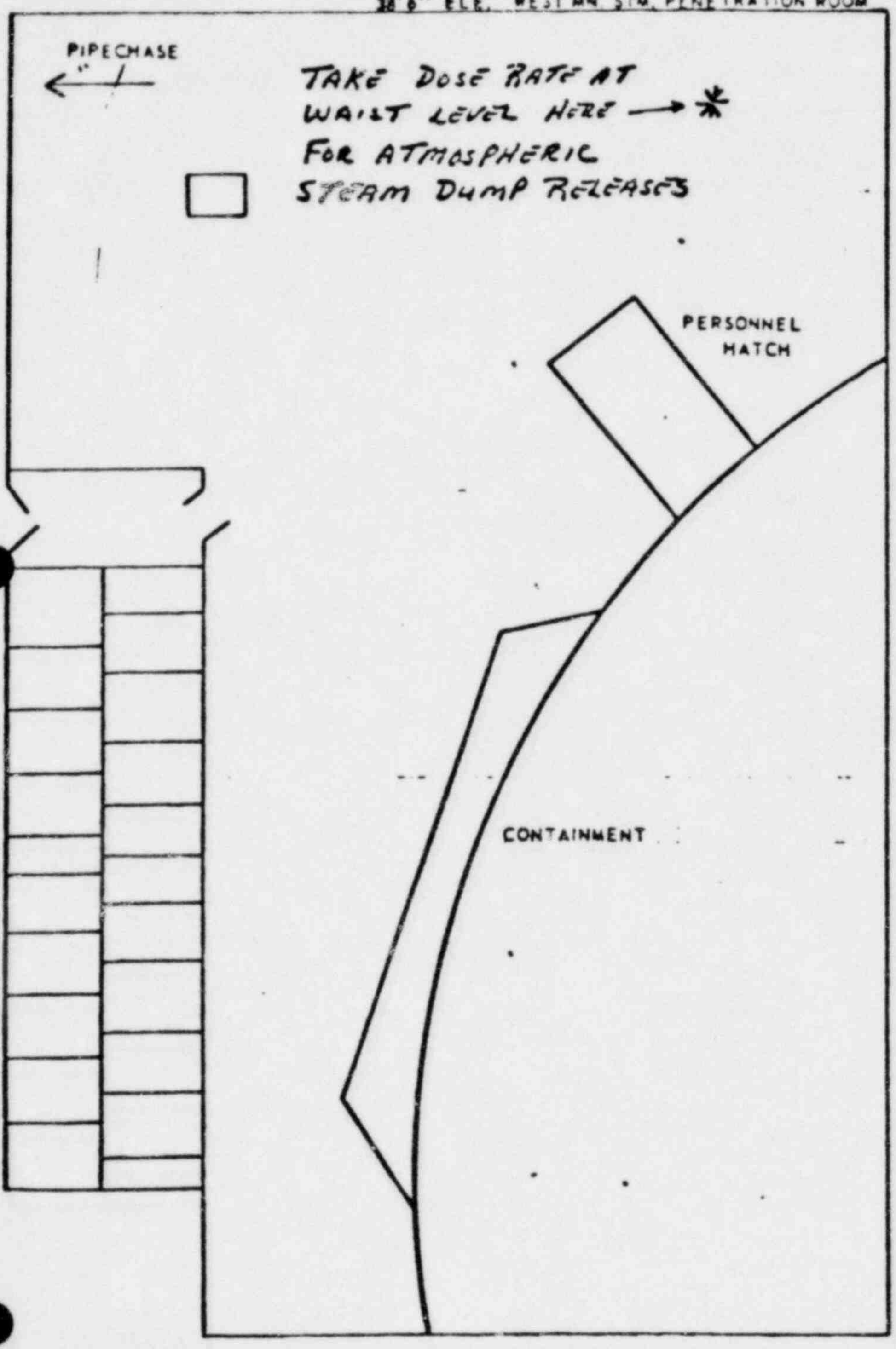
MILLSTONE NUCLEAR POWER STATION
UNIT NO. 2

UP 2459 6-75

TYPE OF SURVEY

DATE ______ TIME: ______ DOSE RATE: ______ CONTAMINATION: ______
INST. TYPE: ______ INST: ______
SURVEY BY: ______ SERIAL NO: ______ 1/EFF: ______
REACTOR POWER: ______ BKG: ______
REVIEWED BY: ______

38'6" ELE. WEST MN. STM. PENETRATION ROOM



SMEAR RESULTS	
POINT	DPM/100CM²

NOTES:

(1) DOSE RATE READINGS TAKEN AT WAIST LEVEL ARE TO BE INDICATED IN MR/HR AT LOCATION TAKEN.

(2) CONTAMINATION RESULTS ARE RECORDED IN DPM/100CM^2. INDICATE AND CIRCLE LOCATION ON SURVEY DIAGRAM.

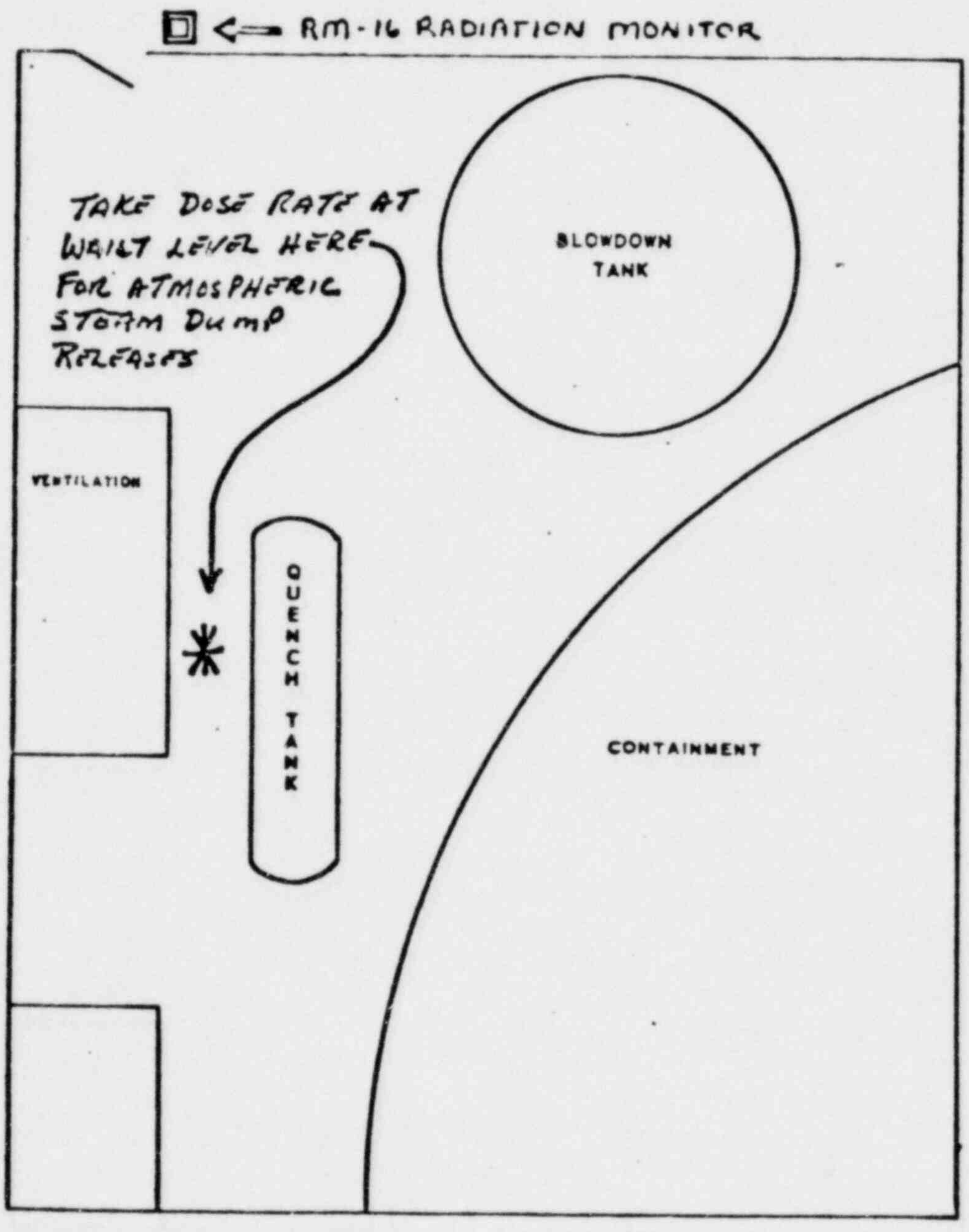
(.ILLSTONE NUCLEAR POWER STATI(
UNIT NO. 2

OP 3459 4-75

TYPE OF SURVEY

DATE ______	TIME: ______	DOSE RATE: ______	CONTAMINATION: ______
		INST. TYPE: ______	INST: ______
SURVEY BY: ______		SERIAL NO: ______	1/EFF: ______
		REACTOR POWER: ______	BKG: ______
REVIEWED BY: ______			

38'6" ELE. EAST MN. STM. PENETRATION ROOM



SMEAR RESULTS	
POINT	DPM/100CM^2

NOTES:

(1) DOSE RATE READINGS TAKEN AT WAIST LEVEL ARE TO BE INDICATED IN MR/HR AT LOCATION TAKEN.

(2) CONTAMINATION RESULTS ARE RECORDED IN DPM/100CM^2. INDICATE AND CIRCLE LOCATION ON SURVEY DIAGRAM.

(3) RECORD REACTOR POWER IF RADIATION SURVEY IS BEING RECORDED

Figure 3

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4204 Rev. 3

Title EMT #2-PROTECTIVE ACTIONS FOR ONSITE PERSONNEL

Prepared By A. Cheatham

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	A.B. Cheatham	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E.J. Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

EMT #2-PROTECTIVE ACTIONS FOR ONSITE PERSONNEL

Page No.	Eff. Rev.
1 - 6	3

EMT #2-PROTECTIVE ACTIONS FOR ONSITE PERSONNEL

1. OBJECTIVE

1.1 To detail the actions of personnel assigned to EMT #2.

1.2 To determine the extent, if any, of injured or contaminated personnel gathered in CPF Assembly Area, Northwest Assembly Area, Northwest manual and non-manual parking areas and the East parking area.

1.3 To determine the general radiation and airborne activity levels in the CPF, Assembly Areas, Northwest Assembly Area, Northwest manual and non-manual parking areas and the East parking lot.

2. DISCUSSION

2.1 The Director of Station Emergency Operations will determine location of alternate assembly areas if necessary and authorize the release of non-contaminated personnel from the site.

2.2 The Manager of Onsite Resources will provide transportation, if necessary, to relocate personnel to an alternate assembly area and arrange to provide transportation for EMT #2 if necessary.

2.3 The manager of Radiological Consequence Assessment will assign qualified personnel to EMT #2. At least one person will be trained as an EMT member. If adequate personnel are available a second team will be dispatched to the CPF to expedite personnel monitoring and area surveys. A duplicate EMT #2 kit is available in the resources center in the CPF

2.4 Emergency Monitoring Team #2 will monitor personnel in the assembly areas for radioactive contamination and notify the Manager of Radiological Consequence Assessment if the results of radiological sampling necessitate relocating evacuated personnel to an alternate assembly area.

2.5 The EMT #2 Kit contains an RO-2A (0-50R/hr) or equivalent dose rate meters. Also available for use in the EOF are Teletector (0-1000R/hr) or equivalent high range meters.

2.6 Administrative exposure limits should not oe exceeded for sampling and monitoring of site areas.

3. INSTRUCTIONS

3.1 Obtain the EMT #2 kit from the emergency equipment cabinet in the EOF. A duplicate kit is available in the resources center in the CPF area. Enter the time of day and the date on Line 1 Form EPIP 4204-1 EMT #2 worksheet. Enter the assigned assembly area and names of the team members on Line 2 and 3 of the worksheet. Normally the Northwest Assembly Area will be surveyed first followed by the parking areas and CPF Assembly Areas unless a second team has been dispatched, or unless directed otherwise by the Manager of Radiological Consequence Assessment.

3.2 Re-zero the low and high range dosimeters in the kit and attach one low range dosimeter, one high range dosimeter and a TLD to the upper front portion of your outer clothing.

3.3 Check the batteries in each of the portable instruments in the kit in accordance with EPIP 4207, "Radiological Sampling During an Emergency."

3.3.1 If all battery checks are satisfactory, indicate this on Line 4 of the worksheet and proceed to the next step. If any instruments indicate weak or dead batteries, install fresh batteries as described in EPIP 4207.

3.3.2 If any meter still does not respond properly to the battery check, obtain another meter and repeat step 3.3.

3.4 Perform a functional check of all the radiation detection instruments in your kit in accordance with EPIP 4207. If all functional checks are satisfactory, indicate this on Line 5 of the worksheet and proceed to the next step. If any meter fails to respond properly, obtain another meter and repeat steps 3.3 and 3.4.

3.5 In the EOF, take waist level dose rate readings with the instrument's beta window open and closed. Record the results on Line 6 of the worksheet.

3.6 Perform a functional check of the two-way radio in your kit as follows:

3.6.1 Turn the radio on.

3.6.2 Ensure that a battery is installed on the bottom of the radio and an antenna is installed on the top.

3.6.3 Select channel 1. Communicate on this channel at all times unless otherwise directed by the EOF.

3.6.4 Turn the "SQUELCH" knob counter clockwise until static is heard. Turn the knob clockwise until the static just stops.

3.6.5 Press the "push-to-talk" button on the side of the radio and request a radio check from Security.

3.6.6 Based on the results of this radio check, make any necessary adjustments to your volume and/or squelch knobs.

3.6.7 Remove a spare battery from the multi-unit charger in the EOF locker and put it into your EMT kit.

3.6.8 Turn the radio off until your team is sent into the field. Indicate radio operability on Line 7 of the worksheet.

3.6.9 If any difficulty is experienced with the radio, notify the Manager of Radiological Consequence Assessment Millstone ext. for resolution.

3.7 Place all equipment which is satisfactory back in the kit. Notify the Manager of Radiological Consequence Assessment that team EMT #2 is ready. When released, proceed to the assigned location. If a vehicle is needed, notify the Manager of Onsite Resources that the team needs transportation.

3.8 Upon arrival at the assembly area, initiate a particulate and iodine air sample in accordance with EPIP 4207. Log location, sample time on and flow rate (2) on Line 8 of the worksheet.

Concurrently, a team member should check the personnel assembled to see if any require medical attention, and if so, notify the Manager of Radiological Consequence Assessment.

3.9 Take waist level dose rate readings with the beta window open and closed. Record the results on Line 10 of the worksheet. If either reading is greater than 5 MR/HR, notify the Manager of Radiological Consequence Assessment.

3.10 Check the background for personnel frisking with an E-140/HP-210 probe or equivalent. Slowly rotate the probe to obtain the highest reading. Record the maximum reading on Line 11 of the worksheet. If the background is greater than 300 cpm, notify the Manager of Radiological Consequence Assessment and request an alternate location to monitor personnel.

3.11 If the background is less than 300 cpm, one team member should start frisking the assembled personnel. Injured personnel should be checked first.

3.12 Personnel with contamination levels less than 100 cpm above background (using an E-140/HP-210 probe or equivalent) are considered clean. Personnel who are clean may be released from the station.

3.13 The Manager of Radiological Consequence Assessment will be notified if there are personnel with contamination levels exceeding 100 cpm above background. These personnel will report to the EOF for decontamination.

<u>CAUTION</u>: If possible, cover contaminated areas to prevent spreading the contamination to clean areas.

3.14 A team member will count the air sample using the portable scaler in accordance with EPIP 4207. Log results on Line 9 of the worksheet. Report to the Manager of Radiological Consequence Assessment the sample volume in cc (4) and the corrected cpm (5).

3.15 When all personnel have been frisked, notify the Manager of Radiological Consequence Assessment that the team will go to the Condensate Polishing Facility to check station personnel for contamination, if requested.

3.16 Using another worksheet, fill in the required information on Lines 1, 2, and 3. Skip lines 4, 5, 6, and 7.

3.17 Repeat steps 3.8 through 3.14 and record survey results on Lines 8, 9, 10, and 11 on the worksheet.

3.18 When all personnel have been frisked, notify the Manager of Radiological Consequence Assessment that the team will return to the EOF for further instructions.

3.19 Upon arrival at the EOF, give the completed worksheets and all samples to the Manager of Radiological Consequence Assessment.

4. FIGURES

None

5. TABLES

None

AGC:ck

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4211 Rev. 2

Title ON CALL PROCEDURE

Prepared By W. Buch

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGClark	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

EJMroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

ON CALL PROCEDURE

Page No.	Effective Revision
1 - 4	2

1. OBJECTIVE

Provide instructions for personnel on-call to meet the requirements of our Emergency Plan.

2. DISCUSSION

2.1 Within 60 minutes of classifying the incident and activating the Station Emergency Organization, on shift personnel are augmented by on-call personnel who will report to the EOF.

2.2 The on-call individuals are alerted to report to the EOF by the radiopager system. The names of these individuals, their home phone numbers, and the dates they are on-call shall be kept on lists in the control rooms and the EOF.

2.3 SF-120 contains a listing of names and phone numbers for qualified Directors and Managers as well as other station personnel that may be needed in an emergency. The on-call lists contain additional individuals that may be used to augment station manning in an emergency.

3. INSTRUCTIONS

3.1 Individuals on call must be able to report to the EOF within 60 minutes of being notified.

3.2 Individuals qualified to be on-call for more than one position (Mechanic/EMT) must only be on-call for one position at a time.

3.3 On-call individuals must report to the EOF for the following incident classifications:

a. ALPHA (General Emergency)
b. BRAVO (General Emergency)
c. CHARLIE-TWO (Site Emergency)
d. CHARLIE-ONE (Alert)

3.4 On-Call individuals with radiopager shall listen for daily test messages. If the radiopager does not receive the test message, personnel should notify the control room immediately and remain accessible by telephone during the balance of their on-call assignment. The test schedule is as follows:

Sunday 1900 Hours	Monday 1100 Hours
Tuesday 1900 Hours	Wednesday 1100 Hours
Thursday 1900 Hours	Friday 1100 Hours
Saturady 1900 Hours	

3.5 Upon receiving a Radiopager Notification of an Alpha, Bravo, Charlie 1 or Charlie 2 incident, the on-call person must call one of these numbers and report his name, function, and estimated time of arrival at the EOF.

444-2750
444-6244
444-2748

3.6 If on-site when the evacuation alarm sounds, personnel who are on-call for that day. should report as follows:

a.	On-Call Director of Station Emergency Organization	- EOF
b.	On-Call Manager of Control Room Operation	- Respective Control Room
c.	On-Call Manager of Public Information	- EOF
d.	On-Call Manager of Radiological Consequence Assessment	- EOF
e.	On-Call Manager of Technical Support	- Respective TSC
f.	On-Call Manager of External Communications	- EOF
g.	On-Call Manger of Security	- RC/CPF
h.	On-Call Manager of On-Site Resources	- RC/CPF
i.	On-Call Manager of Engineering support	- EOF
j.	EMT's	- EOF
k.	On-Call Chemistry Technicians	- Immediate Operational Support Center OSC/OAO
l.	On-Call I&C Technicians	- Immediate Operational Support Center OSC/OAO
m.	On-Call Mechanic	- Immediate Operational Support Center OSC/OAO

n. On-Call Electrician - Operations Assistant's Office

NOTE: All personnel responding to the EOF from site should carry their TLD & PIC (Dosimeter) with them.

3.7 If off-site (after hours or lunch) when notified to report in, on-call/called in personnel report to the EOF. Personnel will be sent to their appropriate duty station, dependent upon the incident, by the Director. If the Director is not yet present, personnel are to remain in the EOF until he arrives and he contacts the affected unit unless directed otherwise by the on-duty Shift Supervisor or Duty Officer. (Exception-The on-call/called in Shift Supervisor and SCO should contact either control room to determine any immediate needs for additional personnel).

4. FIGURES

N/A

5. TABLES

N/A

WB:jms

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4218 Rev. 0

Title USE OF POTASSIUM IODIDE (KI) TABLETS AS A THYROID BLOCKING AGENT

Prepared By WALT BUCH

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGElnd	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

EJ Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

USE OF POTASSIUM IODIDE (KI) TABLETS AS A THYROID BLOCKING AGENT

PAGE NO.	EFFECTIVE REVISION
1 - 3	0
Attachment A	0
Attachment B	0

1. OBJECTIVE

To provide instructions and guidelines for issuing Potassium Iodide (KI) tablets to emergency workers during a radiological emergency.

2. DISCUSSION

2.1 The use of Potassium Iodide tablets to minimize the absorption of radioactive iodine by the thyroid has been authorized for use by medically approved emergency workers. During a radiological emergency radioactive iodine is only one of many airborne radioactive materials emergency workers will encounter. As Potassium Iodide is only effective against iodine is will only be issued if respiratory protection equipment cannot be used or if exposures to the thyroid exceed acceptable limits while respiratory protection equipment is used.

2.2 Potassium iodide is a prescription drug and must be administered only to personnel which have been medically authorized to receive the drug. Also accurate records must be maintained of the issuance and use of Potassium Iodide.

2.3 The single dosage of potassium iodide is 130 milligrams and is effective for a 24 hour period. It is most effective when administered within 2 hours prior to the commencement of exposure. It is not effective if administered greater than 12-24 hours prior to exposure or greater than 4 hours after an exposure is over. During periods of prolonged exposure to radioactive iodine, a daily dosage of 130 milligrams of potassium iodide can be issued for up to 10 days without further medical approval.

3. INSTRUCTIONS

3.1 Evacuate all personnel from radio iodine atmospheres until protective measures can be implemented.

3.2 In those situations where evacuation is not possible, respiratory protective devices such as Scott air packs will be worn.

3.3 KI will only be issued when other means of protection cannot be provided and exposure is calculated to be greater than 10 Rem iodine inhalation.

3.4 Only the Manager of Control Room Operations or the Director of the Station Emergency Organization can authorize the use of KI Tablets.

3.5 The station nurse will provide a listing of personnel not medically authorized to use KI. To the Manager CRO and/or Director SEO.

3.6 Prior to issuing KI Tablets, an evaluation will be made to determine if exposure to the thyroid from inhalation only will be equal on greater than 10 Rem eg., Breathing 2 x 10^{-6} uCI/cc/I^{131} for 1 hour =1 Rem to thyroid (ADULT).

3.7 KI will only be issued to company employees (Northeast Utilities and its affiliates).

3.8 Issue of the tablets must be closely controlled and documented.

3.8.1 Attachment A must be filled out and retained for each issue of KI Tablets.

3.8.2 Employees receiving KI must be briefed on its use and effects. Ensure Attachment B is understood and signed by all using personnel.

3.8.3 Issue 1 (one) 130 Potassium Iodide Tablet to the emergency worker. The tablets are located at the Emergency Operation Facility (EOF). Ensure that the tablets are less than 3 years old prior to issuing.

3.9 Attachments A and B shall be forwarded to Health Physics for use in calculating iodine exposure/dose and retention.

4. FIGURES

None

5. TABLETS

None

WB:ck

KI PILL ISSUE INFORMATION

I. Employee Name: ______________________________

Social Security Number: ____________________

Sex: ___________________ if female, indicate if pregnant ________

Height: ____________________________________

Weight: ____________________________________

II. Employees Emergency Function (brief description):

III. High Airborne Iodine Areas Expected to Enter (brief description):

Signature: _______________________________________
Emergency Manager

Date/Time: _______________________________________

EMPLOYEE INFORMATION ON POTASSIUM IODINE

Patient Package Insert For

THYRO-BLOCK™

(POTASSIUM IODIDE)
(pronounced po-TASS-e-um EYE-oh-dyded
(abbreviated: KI)
TABLETS and SOLUTION U.S.P.

TAKE POTASSIUM IODIDE ONLY WHEN PUBLIC HEALTH OFFICIALS TELL YOU. IN A RADIATION EMERGENCY, RADIOACTIVE IODIDE COULD BE RELEASED INTO THE AIR. POTASSIUM IODIDE (A FORM OF IODINE) CAN HELP PROTECT YOU.

IF YOU ARE TOLD TO TAKE THIS MEDICINE, TAKE IT ONE TIME EVERY 24 HOURS. DO NOT TAKE IT MORE OFTEN. MORE WILL NOT HELP YOU AND MAY INCREASE THE RISK OF SIDE EFFECTS. DO NOT TAKE THIS DRUG IF YOU KNOW YOU ARE ALLERGIC TO IODIDE. (SEE SIDE EFFECTS BELOW.)

INDICATIONS

THYROID BLOCKING IN A RADIATION EMERGENCY ONLY.

DIRECTIONS FOR USE

Use only as directed by State or local public health authorities in the event of a radiation emergency.

DOSE

Tablets:	ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: One (1) tablet once a day. Crush for small children. BABIES UNDER 1 YEAR OF AGE: One-half (½) tablet once a day. Crush first.
Solution:	ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: Add 6 drops to one-half glass of liquid and drink each day.

For all dosage forms: Take for 10 days unless directed otherwise by State or local public health authorities.

Store at controlled room temperature between 15° and 30° C (59° to 86° F). Keep container tightly closed and protect from light. Do not use the solution if it appears brownish in the nozzle of the bottle.

WARNING

Potassium iodide should not be used by people allergic to iodide. Keep out of the reach of children. In case of overdose or allergic reaction, contact a physician or the public health authority.

DESCRIPTION

Each THYRO-BLOCK™ TABLET contains 130 mg of potassium iodide.

Each drop of THYRO-BLOCK ™ SOLUTION contains 21 mg potassium iodide.

HOW POTASSIUM IODIDE WORKS

Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salt or fish. The thyroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill-up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.

WHO SHOULD NOT TAKE POTASSIUM IODIDE

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antithyroid drug). Pregnant and nursing women and babies and children may also take this drug.

HOW AND WHEN TO TAKE POTASSIUM IODIDE

Potassium Iodide should be taken as soon as possible after public health officials tell you. You should take one dose every 24 hours. More will not help you because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivery glands, and "iodism" (metallic taste burning mouth and throat, sore teeth and gums, symptoms of head cold, and sometimes stomach upset and diarrhea).

A few people have an allergic reaction with more serious symptoms.

These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland (goiter).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

HOW SUPPLIED

THYRO-BLOCK™ TABLETS (Potassium iodide, U.S.P.) bottles of 14 tablets (NDC 0037-0472-20). Each white, round, acored tablet contains 130 mg potassium iodide.

THYRO-BLOCK™ SOLUTION (Potassium Iodide Solution, U.S.P.) 30 ml (1 fl. oz.) light-resistant, measured-drop dispensing units (NDC 0037-4287-25). Each drop contains 21 mg potassium iodide.

WALLACE LABORATORIES
Division of
CARTER-WALLACE, INC.
Cranbury, New Jersey 08512

Note: I HAVE READ AND UNDERSTAND THE ABOVE

Emergency Manager Name____________________ Empolyee Signature__________

Social Security Number____________________ Employee SSN________________

Date/Time of Briefing_____________________ Date/Time of KI Pill_______

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4304 Rev. 4

Title Emergency Response Center and Facilities

Prepared By W. Buch

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	A E Clark	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

EMERGENCY RESPONSE CENTERS AND FACILITIES

PAGE NO.	EFFECTIVE REV.
1 to 12	4
Attachment 1	4
Attachment 2	4

1. OBJECTIVE

1.1 This procedure describes the operation of the Emergency Response Facilities that are required to support the emergency plan.

2. LICENSE REQUIREMENTS

None

3. FSAR REFERENCES

None

4. PLANT OPERATING REQUIREMENTS

N/A

5. PREREQUISITES

N/A

6. DISCUSSION

6.1 On-Site Technical Support Centers (TSC)

6.1.1 Both computer rooms (Unit 1 and Unit 2) are considered a common Technical Support Center (TSC) for Millstone 1 and 2.

NOTE: Millstone considers that the NRC requirement for an NRC office in the TSC is satisfied by the Unit 1 computer Room for a Unit 2 incident and vice versa. In the event that the incident is site related, the Unit 2 computer room is the NRC's area.

6.1.2 The center will normally be staffed by the On-Site Technical Support Manager, engineers and any necessary selected staff.

6.1.3 The center will provide a base for the analysis of operations data and the development of plans, procedures and recommended actions in direct support of the Manager of Control Room Operations.

6.1.4 The center is equipped with dedicated communications between the On-Site Technical Support Center, the Control Room and the EOF.

6.1.5 Monitoring equipment is provided to enable monitoring for direct radiation and airborne contaminants.

6.1.6 Access to technical data and drawings is provided.

6.1.7 If the On-Site Technical Support Center becomes uninhabitable, the Director of Emergency Operations will relocate the TSC staff to the EOF to perform their required functions.

6.2 Immediate Response Operations Support Center & On-Site Operational Support Center

6.2.1 The On-Site Operations Personnel Support Center is located in the Operations Assistants' Offices. The On-Site Operational Support Center is located at the CPF during normal working hours and the EOF of the normal working hours.

6.2.2 These areas will serve as a staging area for On-Site Personnel not immediately involved in the current Emergency Operations.

6.3 Control Room

6.3.1 The Control Room is staffed with essential operating personnel only.

6.3.2 Further description of the Control Room as it relates to the activation of the emergency plan is contained in unit procedures.

6.4 Site Emergency Operations Facility (EOF)

6.4.1 EOF Description

6.4.1.1 The EOF is located on the west side of the access road approximately 1000 feet from Route 156.

6.4.1.2 The EOF provides the facilities required for overall emergency control for External Communications, Site Engineering Support, Radiological Consequence Assessment, Public

Information, Security and On-Site Resources.

6.4.1.3 The managers of External Communication, Site Engineering Support, Radiological Consequence Assessment, Manager of Public Information, On-Site Resources and the Director of Emergency Operations will be located in this facility. Equipment is provided to project doses and dispatch radiological monitoring teams. A network of communications provides all necessary internal and external information flow. Computer terminal and technical information is available to support Control Room Operations with technical data and advice.

6.4.1.4 Representatives of various off-site agencies will be able to obtain information directly from this facility.

6.5 On-Site Resources Center

6.5.1 The On-Site Resources Center is located in the CPF and/or EOF.

6.5.2 The On-Site Resources Center will serve as a staging/assembly area for all personnel directly associated with the emergency organization. This includes managers and EMT's.

6.5.3 The Manager of On-Site Resources is located in the CPF and/or EOF. Direct Communications are available from the EOF to the CPF initial evacuation staging and release point.

6.6 CPF Initial Staging and Evacuation Area (CPF Assembly Areas)

6.6.1 The Condensate Polishing Facility (CPF), on the 28'-6" level, is the initial evacuation staging and release point. This area serves as both an Operations Support Center and as an Onsite Resources Center.

6.6.2 The Manager of Security will provide direction and coordination to the assembled employees as relayed from the Manager of Resources.

6.6.3 The Manager of Security will direct people either to evacuation areas or to the EOF as directed.

6.6.4 The CPF First Aid Station is available on the 28'-6" level if needed.

6.6.5 The preferred method of transportation of personnel from the plant or CPF staging area to the EOF is by private vehicles. The Manager of Resources will provide alternate transportation if deemed necessary.

6.7 State EOC

6.7.1 The State EOC is located in the Connecticut State Armory, Hartford, Conn.

6.7.2 This center will support the information flow to the general media and off-site organizations.

6.8 Off-Site Emergency Operations Center (EOC)

6.8.1 The Off-Site Emergency Operations Center is located at Room N101, NUSCO South (Berlin).

6.8.2 The Off-Site EOC will assume the overall direction of the site and NUSCO support of emergency operations and in-plant recovery activities utilizing the expertise and resources available in the Northeast Utilities organization.

6.8.3 The Director of NUSCO Emergency Operations will supervise all Off-Site EOC operations.

6.8.4 Direct communications will be available between the Off-Site EOC and the Site EOF.

7. PROCEDURE

7.1 EOF Operating Instructions

7.1.1 EOF Lighting

7.1.1.1 All EOF lights will normally be turned off except for a series of night lights.

7.1.1.2 To energize the EOF interior lights, place the following breakers to the "On" position. Breakers 26, 28, 29 and 30 in power panel EPP1 and Breakers 2, 4, 6 and 9 in power panel PP1. These panels are located in the equipment room.

7.1.1.3 To energize the EOF parking lot lights, place Breakers 34 and 36 in power panel LP1 to the "On" position. This panel is located in the equipment room.

7.1.1.4 In the event that the EOF is being powered from the emergency diesel, only the lights and equipment served from power panel EPP1 and ELP1 will be energized. Attachment 1 shows what lights and equipment will be energized. Attachment 2 shows what lights and equipment will not be energized.

7.1.2 Air Handling System

The Heating, Ventilating and Air Conditioning System includes a split system air conditioner consisting of condenser/compressor and evaporator/air handling unit, open coil duct heaters, ventilation filter unit, duct work dampers, diffusers, troffers and an automatic temperature control system. The control panel is located in the equipment room.

7.1.2.1 The unit will normally be operating in the automatic mode.

7.1.2.2 If the unit is not running, place the power ON/OFF selection the the "ON" position and observe a white power on light.

7.1.2.3 Press the unit start switch and observe a unit operating green light.

7.1.2.4 The NIGHT OVERRIDE/NORMAL switch will be in the "NORMAL" position. The unit has an automatic timer and maintains the heat at

68°F during the day and 55°F during the night. The air conditioning is maintained at 78°F during the day and shut off during the night. If the EOF is being manned at night and additional heating or cooling is required, place the NIGHT OVERRIDE/NORMAL switch to the "NIGHT OVERRIDE" position. This will enable the unit to operate in a daytime condition.

7.1.2.5 The HI RAD/NORMAL switch is in the "NORMAL" position.

<u>NOTE</u>: If the EOF Director determines that a High Radiation condition exists, refer to Section 7.1.3.

7.1.3 Radiation Filter Unit

The Radiation Filter unit bypasses the normal air intake and directs air flow to the High Radiation Filter unit in the event of airborne contamination.

7.1.3.1 If the EOF Director determines that a High Radiation condition exists, the Radiation Filter unit is to be activated.

7.1.3.2 "CLOSE" the three interior airlock doors. Refer to Section 7.1.4 for airlock door operation.

7.1.3.3 Place the HI RAD/NORMAL switch to the "HI RAD" position. With this action, the following sequence of events will occur:

1. Activates the Zone 5 alarm to tell the director the "High Rad Filter is Running".
2. Activates the Hi-Rad filter motor (M-4) to draw air through the radiation filter unit.
3. Activates a timing relay to time out while dampers change position.

4. Activates the door system to pressurize.

5. Activates the door interlock system (lights and horns).

6. Activates the control for the radiation filter unit heating system.

7.1.3.4 The EOF is now protected from the outside environment.

7.1.4 Airlock System

This airlock system includes three (3) airtight doors, an air supply system, and a door light system. The system is controlled by the High Radiation selector switch on the HVAC panel in the mechanical equipment room. Activation of this switch will alarm the director's annunciator as well as activate the airtight door seal and the door access light system as described below.

7.1.4.1 In order to maintain a controlled environment, only one door is to be operated at a time.

7.1.4.2 There are red and green lights on each side of the airlock doors. Entry or exit should be made only when the indicator light is green.

7.1.4.3 If either door is operated while a red light is on, resulting in two open doors, there will be an audible alarm. The light system does not prevent the operation of both doors at the same time.

7.1.4.4 If the interior airlock door does not open, it may be overridden by use of a bypass valve inside the airlock or by a button inside the control panel for each door on the interior of the EOF next to each airlock door.

7.1.4.5 If a low pressure alarm is received, check shut the airlock vent valves.

7.1.5 Fire Detection and Alarm System

The Fire Detection and alarm system is divided into an alarm control panel located in the equipment room and on communicator panel located in the Director's Office.

7.1.5.1 The alarm control panel monitors 11 zones. The zone descriptions are as follows:

Zone-1 Air Handling Duct Heat Detector: The duct heater has heat probes that will trip if the heaters exceed set limits.

Zone-2 Radiation Air Filter Unit Heat Detector: A controller in the rad filter has a probe that will sense a temperature of 190°C.

Zone-3 Diesel Generator Heat Detector: A heat detector is located in D/G enclosure to detect a heat rise of 190°C.

Zone-4 Building Smoke Detectors & Kitchen Heat Detector: Conventional units to alarm on smoke or fire within the main floor of the facility.

Zone-5 High Rad Air Filter Running: The high rad selector switch on HVAC control panel has activated the Radiation Filter unit.

Zone-6 HVAC Malfunction: The HVAC System has malfunctioned.

Zone-7 Septic System Trouble: The septic system has malfunctioned.

See system description for troubleshooting.

Zone-8 Generator Malfunction: The generator has malfunctioned.

Zone-9 Manual Fire Station: The Manual pull stations when activated will alarm but not trip and block main BVR & D/G.

Zone-10 Door System Low Pressure: In the high rad situation, the air lock doors have lost air pressure or are not pressurized.

Zone-11 Rad Filter High Temp Warning: The controller in the rad filter has a probe that will sense a temperature of 150°C.

7.1.5.2 Any alarm received will flash in at the alarm control panel, located in the equipment room. Depress the "ACKNOWLEDGE" switch to silence the alarm. When the alarm condition clears, depress the "RESET" switch to reactivate the alarm control panel.

7.1.5.3 Alarms received in Zone 1 through Zone 11 are indications of system troubles. Alarms received in Zone 1 through Zone 4 are potentially serious and should be investigated immediately.

7.1.5.4 The Director's annunciator is an extension of the alarm control panel and is located in the Director's office.

7.1.5.5 The Director can silence the alarm and the panel will stay lit. For an interim period, an external horn is also activated when the Director's annunciator is energized to warn security of an equipment manfulction or fire within the facility. The control panel will alarm until acknowledged. Reset from the control panel will also clear/reset the director's annunciator but the director's reset will not clear the control panel.

The trouble alarm will indicate a failure of the control panel annunciator or supervisory circuitry.

7.1.5.6 The window arrangement for the annunciator is as follows:

Building fire	Filter Unit Running	Septic System Malfunction	Generator Malfunction
HVAC Malfunction	Rad Filter Fire	Door Low Pressure	Rad Filter Warning
Spare	Spare	Trouble (Auxiliary)	
Spare	Spare	Reset	Silence

7.2 Technical Support Center (TSC) Operating Instructions

7.2.1 Both Computer Rooms (Unit 1 and 2) are considered a common technicial support center (TSC) for Millstone 1 and 2.

7.3 On-Site Operations Support Center (OSC) Operating Instructions.

7.3.1 The On-Site Operations Support Center (OSC) is located in the CPF and or EOF.

7.3.2 The On-Site Operations Support Center will serve as a staging/assembly area for personnel not immediately involve in the emergency.

7.3.3 Personnel will be accounted for and directed to other assembly areas on assigned an emergency function.

7.4 Immediate Responce Operational Support Center. (IR OSC) Operating instructions.

7.4.1 The IR OSC is located in the Respective Operations Assistant's Office.

7.4.2 The IR CSC is a staging area for operations department personnel who are on call or not immediately required to support the emergency operations.

7.4.3 Personnel snould check in with the Shift Supervisor and await further instructions.

WB:jms

Attachment 1

ELP1 120/208V PANEL		EPP1 227/480V PANEL	
1	Kitchen Area		
2	Dishwasher	3	Compressor Cond. Unit
3	Kitchen Micro Oven		
4	Lav. Areas Rec.		
5	Wall Mtd. Heaters 208V	4	Trans. for ELP1
6	SPARE		
7	Kitchen Disposal		3-Stage Duct Htr. #1
8	Office Rec.	9	
9	Off. Clock & Emg. Unit Outlet		
10	Office Rec.		
11	Door Control Pn'ls. & Ann. Air Comp. Outlet	10	3-Stage Duct Heater #2
12	Office Rec.		
13	Outdoor Rec.		
14	Office Rec.	15	Vent Air Filter Unit
15	Mech. Rm. Rec.		
16	Radio Equip. Rec.		
17	Radio Equip. Rec.	16	Vent Air Filter Unit Heater
18	Battery Charger		Air Handling Unit #1
19	Rad. Filter Unit Alarm Cir.		
20	Day Tank & Gen. Heater	21	
21	HVAC Control Cabinet		
22	Fire Alarm Cabinet		
23	HVAC Fan M-2 & M-3	22	Spare
24			
25	Septic System		
26		25	Hot Water Heater
27	120/208 Panel Tel. Equip. Com. Rm.		
28	Fl. Duct. Rec.	26	Office Lighting
29		28	Office Lighting
30	Fl. Duct Rec.	29	Security Lights
31		30	Office Lighting
32	Fl. Duct. REc.	31	O.S. Building Lights

Attachment 1

ELP1 120/208V PANEL		EPP1 227/480V PANEL	
33		32	Spare
34	Fl. Duct. Rec.	34	Spare
35		33	Spare
36			
37			
38			
39			
40			
41			
42			

Attachment 2

PP1 277/480V PANEL		LP1 120/208V PANEL	
1	Transformer for L.P.1	1	Maint. Outlets Cleaning
2	Office Lighting	2	SPARE
3	Transformer for L.P.1	3	SPARE
4	Mech. Equip. & Lavatory Areas	4	SPARE
5	Transformer for L.P.1	5	SPARE
6	Office Lighting	6	SPARE
7	SPARE	7	SPARE
8	SPARE	8	SPARE
9	Office Lighting	9	SPARE
10		10	SPARE
11		11	SPARE
12		12	SPARE
13		13	SPARE
14		14	
15		15	
16		16	
17		17	
18		18	
19		19	
20		20	
21		21	
22		22	
23		23	
24		24	
25		25	
26		26	
27		27	
28		28	
29		29	
30		30	
31		31	
32		32	

Attachment 2

PP1 277/480V PANEL		LP1 120/208V PANEL	
33		33	
34		34	Site Lighting Parking Lot
35		35	
36		36	Site Lighting Parking Lot
37		37	
38		38	
39		39	
40		40	
41		41	
42		42	

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4501 Rev. 1

Title Radioactive Materials Transport Accident

Prepared By P. J. Przekop

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGI Clark	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

E J Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

RADIOACTIVE MATERIALS TRANSPORT ACCIDENT

Page No.	Eff. Rev.
1 - 5	1

1. PURPOSE

To provide instructions for station personnel responding to an accident involving the transporation of radioactive materials in Connecticut.

2. DISCUSSION

The transporation of radioactive materials to and from the station is a routine operation. In the event that a transport vehicle is involved in an accident, it may be necessary to dispatch a Survey Team to the scene of the accident to assess the resultant conditions. This survey team would consist of Health Physics or other trained plant personnel under the overall direction of the Director of Station Emergency Operations. The survey team would obtain the necessary equipment from Health Physics or the Station Emergency Operations Facility proceed to the scene of the accident, survey the immediate area, evaluate the extent of the accident, provide the necessary protection and determine the corrective action to control/clean up any resultant radiological conditions.

3. SYMPTOMS

3.1 The station is notified of an accident involving a Millstone radioactive materials shipment. During normal business hours, the call would come to the receptionist and be transferred to the Unit 1 Control Room. During off normal hours, the call would come directly to the Unit 1 Control Room.

4. AUTOMATIC ACTIONS

NA

5. IMMEDIATE ACTION

5.1 Unit 1 Shift Supervisor

5.1.1 Determine

5.1.1.1 The nature of the accident, i.e., what type of shipment is involved and the extent of the accident.

5.1.1.2 The location of the accident.

5.1.1.3 The name, title and location of the person reporting the accident.

5.1.1.4 Local and/or State Police have been notified.

5.1.1.5 The validity of the report by checking with the appropriate Police Department.

5.1.2 <u>Instruct the person reporting the accident to:</u>

5.1.2.1 Notify police to keep the area evacuated (1000 feet if possible) until a radiological survey team has arrived, surveys have been made, and barriers have been established.

5.1.2.2 Not touch the material in the shipment.

5.1.2.3 Keep all persons upwind, if possible.

5.1.2.4 Use normal fire fighting technique in case of fire.

5.1.2.5 Not eat, drink or smoke in the immediate area.

5.1.2.6 Take necessary steps to save human life.

5.1.3 <u>Notify</u>

5.1.3.1 The SSSA/STA and request that he make appropriate notifications in accordance with ACP 1.07, if the incident occurs inside Connecticut, including on-site.

5.1.3.2 The Duty Officer of the unit shipping the material (Unit 1 Duty Officer if not known what unit material originated from.).

5.1.3.3 The on-call Director of Station Emergency Operations and Manager of Radiological Consequence Assessment and provide them with details of the incident.

5.1.3.4 Two Health Physics Technicians and request they report to the Unit 1 Control Room. (They will comprise the survey team).

5.1.3.5 The appropriate radwaste contractor if the accident occurs outside Connecticut.

5.2 Shift Supervisors Staff Assistant/Shift Technical Advisor

5.2.1 Report to the control room to provide communications assistance to the SS.

6. SUBSEQUENT ACTION

6.1 Shift Supervisor's Staff Assistant/Shift Technical Advisor

6.1.2 Make appropriate notifications as directed by the Shift Supervisor in accordance with ACP 1.07.

6.2 On-Call Director of Station Emergency Operations and Manager of Radiological Consequence Assessment

6.2.1 The Director of SEO and Manager of Radiological Consequence Assessment shall proceed to the scene of the accident. They should make prior arrangements with the Survey Team so that they arrive at the scene of the accident together. Identify yourself and meet with outside assistance upon arrival and brief them on conditions, if known. Assist local/state authorities in establishing any required radiologically controlled areas.

6.2.2 Establish communications, via radio or telephone, with the appropriate Unit Control Room. Describe the extent of the accident and the need for additional personnel for radiological protection and/or cleanup.

6.2.3 Keep local/state authorities present briefed, recommend actions to limit/prevent the spread of contamination and identify assistance required to clean up any contamination resulting from the accident.

6.2.4 The Director SEO shall request that the Duty Officer notify ANI/MAELU (NELPIA) at if the incident has a potential of affecting off-site persons or if financial assistance may be required.

6.2.5 Maintain a record of the actions taken by the station personnel.

6.2.6 Complete a "Plant Incident Report" (SF-1001) and submit to higher supervision.

6.3 Survey Team

6.3.1 Report to the station (Control Room), check in with the Shift Supervisor for additonal information obtain the necessary equipment from Health Physics or the Station Emergency Operations Facility including radio and proceed to the scene of the incident with Director of Station Emergency Operations or Station Superintendent and the Manager of Radiological consequence Assessment.

6.3.2 Assist in surveys, providing for protection for personnel involved in the cleanup operation and in the cleanup operations as required.

6.3.3 Record all pertinent data for subsequent evaluation.

6.4 Shift Supervisor

6.4.1 Maintain communications with the Director of Emergency Operations.

6.4.2 Provide assistance as requested by Director of Emergency Operations (call station personnel into provide support.)

6.4.3 Direct calls from outside agencies to Duty Officer or higher supervision if present.

6.5 Duty Officer

6.5.1 Verify upper management, state and local authorities (have been notified) in accordance with ACP-1.07.

6.5.2 Provide additional information as necessary to these individuals/agencies requesting information.

PJP:jms

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4502 Rev. 1

Title Toxic Material Release

Prepared By P. J. Przekop

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGS Check	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

EJ Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

TOXIC MATERIALS RELEASE

Page No.	Eff. Rev.
1 - 3	1

1. OBJECTIVE

To provide an outline of action by station personnel in the event that the chlorine tank car is damaged in such a manner as to preclude the operation of the safety features designed into the unit so that liquid chlorine escapes uncontrolled fron the tank car.

2. DISCUSSION

Chlorine is a toxic chemical that reacts with water to form HCl. This material can be very harmful to human tissue, especially lung tissue. The liquid chlorine tank car is a double walled tank. The piping that is used to fill or empty contain excess flow check valves that prevent the rapid escape of the chemical. Mechanical problems with the valves on the tank car can be safely handled with the Emergency Kit "C" that is kept at the South entrance to the Unit 1 Machine Shop. The only condition that could affect the plant personnel is the rupture of both the outer and inner tanks on the car. This condition could result in an uncontrolled release of liquid chlorine.

3. SYMPTOMS

3.1 Physical damage to the chlorine tank car resulting in the spillage of the contents onto the ground. This material will readily evaporate and drift downwind.

3.2 This material has a very pungent odor, that of household bleach water but is much more dangerous.

4. AUTOMATIC ACTIONS

N/A

5. IMMEDIATE ACTIONS

5.1 Stay upwind and away from the tank car.

5.2 Contact the Control Room. Give them necessary details of the accident, such as degree of leak, personnel injured, direction the vapors are traveling and etc.

5.3 The Shift Supervisors will determine if there is a potential for drawing the vapors into the building ventilation, secure the ventilation and initiate a station or downwind area evacuation, if it is required. The emergency plan shall be placed into effect if necessary to protect the station or personnel.

5.4 The Unit 1 Shift Supervisor will determine if there is danger to the general public and assess the incident in accordance with OP 501. He shall also take the necessary actions as specified by this procedure.

5.5 The Unit 1 Shift Supervisor shall also notify the Duty Officer and SSSA/STA and request that appropriate notifications in accordance with ACP 1.07 are made. If it is determined that off-site persons may be affected or financial assistance may be required, the Duty Officer shall notify ANI/MAELU (NELPIA) at 677-7305.

5.6 The Unit 1 Shift Supervisor will have the SSS/STA notify the Chemical Transport Emergency Center, Telephone Number: 1-800-424-9300,to request their assistance if necessary.

6. <u>SUBSEQUENT ACTION</u>

6.1 The Chemical Transport Emergency Center will call the emergency team in our sector (3) located in Delaware City, Delaware.

6.2 The team leader will call Millstone to evaluate the problem and determine the required action. These teams have the equipment required to handle almost every problem. Chartered airplanes are available for their use as well as the standard means of transportation.

PJP:jms

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4601 Rev. 1

Title Page/Siren System Evacuation Alarm Tests

Prepared By A. G. Cheatham

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AG Cheatham	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

ENVIRONMENTAL IMPACT

(Adverse environmental impact)
(If yes, document in PORC/SORC meeting minutes) YES [ ] NO [X]

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

EJ Mroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

PAGE/SIREN SYSTEM

EVACUATION ALARM TESTS

PAGE	EFF. REV.
1 - 3	1

1. OBJECTIVE

1.1 To test the Page/Siren System Evacuation Alarm.

2. ACCPTANCE CRITERIA

2.1 This test shall be considered satisfactory provided the Page/Siren System Evacuation Alarm is audible in all monitored areas of the plant or site.

3. REFERENCES

None

4. PREREQUISITES

4.1 Ensure the Unit One, Unit Two Operations Supervisors and Shift Supervisors, Unit Three Security, Security Supervisor, Environmental Lab, and the Nuclear Information Representative are informed prior to each test.

5. INITIAL CONDITIONS

5.1 Shift Supervisor or Supervising Contol Operator from both Units sign the data form, giving their permission to conduct the test.

5.2 The Security Supervisor will assign guards to monitor designated areas of the plant.

6. PRECAUTIONS

None

7. PROCEDURE

NOTE: The Page/Siren System Evacuation Alarm will normally be tested first from Unit One Control Room then from Unit Two Control Room.

7.1 Data sheet indicates areas to be monitored, during the monthly testing. This schedule provides all occupied areas of the site to be monitored quarterly.

7.1.1 Announce twice over the "810" page "the following is a test of the Evacuation Alarm from Unit One (Unit Two) Control Room."

7.1.2 Turn the Evacuation Alarm Switch on CRP 903 (C04) to the page/test position for approximately 10 seconds, then return it to the mid position.

7.1.3 Announce twice over the "810" page "Test of Evacuation Alarm from Unit One (Unit Two) Control Room complete.

7.2 For testing outside Evacuation Alarm .

7.2.1 Announce twice over the "810" page with the outside page button depressed" the following is a test of the Evacuation Alarm from Unit One (Unit Two) Control Room."

7.2.2 Turn the Evacuation Alarm switch on CRP (C04) to the page/siren position for approximately 10 seconds, then return it to the mid position.

7.2.3 Announce twice over the "810" page with the outside page button depressed "test of the Evacuation Alarm from Unit One (Unit Two) Control Room complete."

7.3 If any defective speakers are found report them to the appropriate Unit Shift Supervisor, so repairs can be initiated.

8. RESTORATION

None

9. SURVEILLANCE DATA SHEET

9.1 Form EPIP 4601-1

10. CHECK-OFF LISTS

None

11. FIGURES

None

AGC:ck

E.J. Mroczka
Form Approved by Station Superintendent

12-28-81
Effective Date

STATION PROCEDURE COVER SHEET

A. IDENTIFICATION

Number EPIP 4602 Rev. 3

Title COMMUNICATIONS TELEPHONE TEST

Prepared By A. G. Cheatham

B. REVIEW

I have reviewed the above procedure and have found it to be satisfactory.

TITLE	SIGNATURE	DATE
DEPARTMENT HEAD	AGCheatham	5/25/82

C. UNREVIEWED SAFETY QUESTION EVALUATION DOCUMENTATION REQUIRED:

(Significant change in procedure method or scope as described in FSAR) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) YES [ ] NO [X]
(If yes, document in PORC/SORC meeting minutes)

D. PORC/SORC APPROVAL

~~PORC~~/SORC Meeting Number 82-21

E. APPROVAL AND IMPLEMENTATION

The attached procedure is hereby approved, and effective on the date below:

EJMroczka
Station/Service/Unit Superintendent

6-8-82
Effective Date

SF-301
Rev. 5

COMMUNICATIONS TELEPHONE TEST

Page No.	Eff. Rev.
1 - 7	3
Attachment	3

1. OBJECTIVE

1.1 To perform a test of all extensions of the telephones for emergency hotline communication on a monthly basis.

1.2 To perform a test of all EOF and Millstone extensions used for emergency communications on a monthly basis.

1.3 To perform a test of all Central Office extensions used for emergency communications on a monthly basis.

2. LICENSE REQUIREMENTS

None

3. REFERENCES

3.1 ACP 1.07 "Communications and Outside Assistance Procedure".

4. PLANT OPERATING REQUIREMENTS

N/A

5. PREREQUISITES

None

6. PRECAUTIONS

6.1 Notify Unit 1 and Unit 2 Control Room prior to conducting any hotline tests.

7. PROCEDURE

These tests are to be performed on a monthly basis by the Station Services Engineering Department.

7.1 NRC

7.1.1 Each extension will be tested by picking up the extension handset and waiting for an answer. Identify the facility calling and the purpose of the call. Inform the Operations Duty Officer that five extensions are to be tested. Request that the facility call return the call. Perform this test at the following locations:

7.1.1.1 EOF

7.1.1.2 Unit 1 Technical Support Center

7.1.1.3 Unit 2 Technical Support Center

7.1.1.4 Unit 1 Control Room

7.1.1.5 Unit 2 Control Room

7.1.2 If any extensions are not operable, refer to ACP 1.07 "Communication and Outside Assistance Procedure", Section 5.6.1 for appropriate action.

7.1.3 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1.

7.1.4 For detailed instructions on the ENS refer to attachment 1.

7.2 State Police

7.2.1 Notify the State Police at nd inform them of the test of the emergency phones.

7.2.2 Each extension will be tested by picking up the handset and waiting for an answer. Identify the facility calling and the purpose of the call. Request that the facility called return the call. Perform this test at the following locations.

7.2.2.1 Unit 1 Control Room

7.2.2.2. Unit 1 Technical Support Center

7.2.2.3 Unit 2 Technical Support Center

7.2.2.4 EOF

7.2.3 Results of the test will be reported on the Telephone Communictions Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

7.3 Waterford Police

7.3.1 Notify the Waterford Police at and inform them of the test of the emergency phone.

7.3.2 Each extension will be tested by picking up the handset and waiting for an answer. Identify the facility calling and the purpose of the call. Request that the facility called return the call. Perform this test at the following location.

7.3.2.1 Unit 1 Control Room

7.3.2.2 Unit 1 Technical Support Center

7.3.2.3 Unit 2 Technical Support Center

7.3.2.4 EOF

7.3.3 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

7.4 NUSCo

7.4.1 Notify the following personnel and inform them of the test of the emergency phones.

7.4.1.1 R.A.B. 3593 Berlin

7.4.2 Each extension will be tested by picking up the handset and waiting for an answer. Request that the facility called return the call. Perform this test on the NUSCo circuit, Manager of Resources circuit, Manager of External Communications circuit, Manager of Radiological Assessment circuit and Manager of Technical Support circuit at the following locations.

7.4.2.1 EOF

7.4.2.2 Unit 1 Control Room - NUSCo circuit only.

7.4.2.3 Unit 1 and Unit TSC - Technical Support Only.

7.4.3 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

7.5 State EOC-Hartford Armory

7.5.1 Contact Richard Cassada, to coordinate the test or the Media Center Hotline.

7.5.2 Each extension will be tested by picking up the handset and waiting for an answer. Request that the facility called return the call. Perform this test at the following locations.

7.5.2.1 EOF

7.5.2.2 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

7.6 EOF, TSC and Millstone Extensions

7.6.1 Test each Millstone extension by picking up the handset and dialing . Request that the operation return the call.

7.6.2 Test each EOF extension by picking up the handset and dialing . Request that the operation return the call.

7.6.3 Results of the test will be reported on the Telephone Communication Test Form EPIP 4602-1. Any extension malfunction will be reported to the station telephone operator for resolution.

7.7 EOF and TSC Central Office Telephone Lines

7.6.1 Test each central office line by picking up the handset and dialing . Request that the telephone operator return the call.

7.6.2 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any Central Office line malfunction will be reported to the station telephone operator for resolution.

7.8 Health Physics Network (HPN)

7.8.1 Notify the NRC Resident Inspector on extension that the HPN circuit is to be tested.

7.8.2 Test each Millstone HPN circuit by picking up the handset and dialing Perform this test at the following locations.

7.8.2.1 EOF

7.8.2.2 H. P. Supervisor's Office

7.8.3 Request that the Resident Inspector return the call by dialing 63.

7.8.4 Results of the test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any HPN circuit malfunction will be reported in the following manner:

7.8.4.1 Call collect

7.8.4.2 Report the organization as the NRC.

7.8.4.3 Report the station location as Millstone and include building and room location.

7.8.4.4 Report the callback number as

7.8.4.5 Report the circuit number GDA02061.

7.8.4.6 Report the time the trouble occurred.

7.8.4.7 Report the nature of the trouble.

7.9 Control Room - TSC

7.9.1 Notify the Unit 1 Control Room and the Unit 2 Control Room of the test.

7.9.2 Each line will be tested by picking up the handset and waiting for an answer. Identify the facility calling and the purpose of the call. Request that the facility return the call. Perform this test at the following location.

7.9.2.1 Unit 1 TSC

7.9.2.2 Unit 2 TSC

7.9.3 Results of this test will be reported on the Telephone Communications Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

7.10 Intercom

7.10.1 Test each intercom set by picking up the handset and dialing the access code.

7.10.2 The access codes and locations to be tested are as follows:

7.10.2.1 EOF

7.10.2.2 Unit 1 Control Room

7.10.2.3 Unit 1 TSC

7.10.2.4 Unit 2 Control Room

7.10.2.5 Unit 2 TSC

7.10.3 Results of the test will be reported on the Telephone Communication Test Form EPIP 4602-1. Any extension malfunction will be reported to Station Services Engineering for resolution.

8. INSPECTION DATA SHEET

8.1 EPIP 4602-1

CC:ck

Emergency Notification System (ENS)

Operation at plant end of circuit.

A) IDLE State - all lamps on all ENS phones are extinquished.

B) Outgoing call to NRC Operations Center

1 Control Room or Shift Supervisor initiates call.

a) All phones in CR and SSO have steady lamps.

b) Ringing tone is heard in handset of initiating phone.

c) TSC and EOF ENS phone lamps blink.

d) Resident Inspector's office phone(s) rings and times out, lamp on phone(s) continues to blink until Resident Inspector answers, or call ends.

2. TSC initiates call.

a) Phones associated with TSC phone along with CR and SSO phones have a steady lamp.

b) Initiating phone hears ringing tone in handset.

c) EOF ENS phone lamp blinks.

d) Resident Inspector's office phone(s) rings and times out, lamp on phone(s) continues to blink until Resident Inspector Answers, or call ends.

3. EOF initiates call.

a) Phones associated with EOF phone along with CR and SSO phones have a steady lamp.

b) Initiating phone hears ringing tone in handset.

c) Resident Inspector's office phone(s) rings and time out, lamp on phone(s) continues to blink until Resident Inspector answers, or call ends.

4. Resident Inspector's office initiates call.

a) Resident Inspector's office phone(s) steady lamp appears and ringing tone is heard in handset.

b) No indications at any plant locations.

NOTE: The ENS circuit does not have privacy feature.

C) Incoming call to plant.

1. All ENS phones ring and lamps blink, until call is answered (except Res. Insp).

2. Resident Inspector's office - not answered.
   Ring times out after 30 (to 90) seconds but lamp continues to blink until Resident Inspector answers. A re-ring occurs if plant does not answer before time out.
3. ENS line answered at CR or SSO.
   a) All phones stop ringing and a steady lamp appears on all ENS phones associated with CR and SSO.
   b) TSC and EOF ENS phone lamps will continue to plink until answered.
   c) Resident Inspector office phone(s) lamp will continue to blink until answered, or call ends.
4. ENS line answered at TSC.
   a) All phones stop ringing and a steady lamp appears on all ENS phones associated with TSC, CR and SSO.
   b) EOF ENS phone lamps will continue to blink until answered.
   c) Resident Inspector office phone(s) lamp will continue to blink until answered, or call ends.
5. ENS line answered at EOf
   a) All phones stop ringing and a steady lamp appears on all ENS phones associated with EOF, CR and SSO.
   b) TSC ENS phone lamps will continue to blink until answered.
   c) Resident Inspector office phone(s) lamp will continue to blink until answered, or call ends.
6. Line answered by Resident Inspector.
   a) Phone(s) in Resident Inspector's office stop ringing and steady lamp appears on phone.
   b) All plant ENS phones continue to ring and blink until answered, then see item C-3, 4 or 5 above.

D) Troubles: A circuit trouble lite has been installed and labled in the Control Room area. Suggested lable: "ENS Line Failure When Lit."
   1. Normal condition: lamp is illuminated. Notify RNRCOC immediately by commercial line.

EMERGENCY PLAN IMPLEMENTING FORMS

NUMBER	TITLE	REV.	EFF. DATE
4101-1	Unusual Event Checklist Shift Supervisor/Designee	0	7/15/81
4101-2	Unusual Event Checklist Shift Technical Advisor/SSSA	1	9/15/81
4101-3	Unusual Event Checklist Duty Officer	0	7/15/81
4102-1	Alert Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4102-2	Alert Emergency Shift Technical Advisor/SSSA	1	9/15/81
4102-3	Alert Emergency Duty Officer/Manager of TSC	0	7/15/81
4102-4	Alert Emergency Director of Station Emergency Operations	2	6/8/82
4102-5	Alert Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4102-6	Alert Emergency Manager of Public Information	0	7/15/81
4102-7	Alert Emergency Manager of External Communication	1	9/15/81
4102-8	Alert Emergency Manager of Security	1	1/6/82
4102-9	Alert Emergency Manager of On-Site Resources	2	10/26/81
4102-10	Alert Emergency Manager of Engineering Support	0	7/15/81
4103-1	Site Area Emergency Shift Supervisor/Manager of Control Room OPS	2	4/13/82
4103-2	Site Area Emergency Shift Technical Advisor/SSSA	1	9/15/81

4103-3	Site Emergency Duty Officer/Manager of TSC	0	7/15/81
4103-4	Site Area Emergency Director of Station Emergency Operations	2	6/8/82
4103-5	Site Area Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4103-6	Site Area Emergency Manager of Public Information	0	7/15/81
4103-7	Site Area Emergency Manager of External Communication	1	9/15/81
4103-8	Site Area Emergency Manager of Security	1	1/6/82
4103-9	Site Emergency Manager of On-Site Resources	2	10/26/81
4103-10	Site Area Emergency Manager of Engineering Support	0	7/15/81
4104-1	General Emergency Shift Supervisor/Manager of Control Room OPS	3	4/13/82
4104-2	General Emergency Shift Technical Advisor/SSSA	1	9/15/81
4104-3	General Emergency Duty Officer/Manager of TSC	0	7/15/81
4104-4	General Emergency Director of Station Emergency Operations	2	6/8/82
4104-5	General Emergency Manager of Radiological Consequence Assessment	0	7/15/81
4104-6	General Emergency Manager of Public Information	0	7/15/81
4104-7	General Emergency Manager of External Communication	1	9/15/81

4104-8	General Emergency Manager of Security	1	1/6/82
4104-9	General Emergency Manager of On-Site Resources	2	10/26/81
4104-10	General Emergency Manager of Engineering Support	0	7/15/81
4201-1	Worksheet #1 Noble Gas Release Rate	1	4/13/82
4201-2	Worksheet #2 Iodine-131 Release Rate	0	7/15/81
4201-3	Worksheet #3 Meteorological Data	1	12/8/81
4201-4	Worksheet #4 Noble Gas Dose	0	7/15/81
4201-5	Worksheet #5 Thyroid Dose	0	7/15/81
4201-6	Worksheet #6 Doses Vs. Distance	2	1/5/82
4201-7	Dose Calculation Data Sheet	0	7/15/81
4201-8	Air Sample Activity Concentrations Worksheet	0	7/15/81
4201-9	Radiation Dose Rate Worksheet	0	7/15/81
4202-1	Millstone Post Accident Sampling Data Sheet	0	12/8/81
4202-2	Post Accident Sample Data Sheet Stack/Vent Particulate and/or Charcoal Release	0	3/1/82
4202-3	Post Accident Sample Data Sheet Drywell/Containment Particulate and/or Charcoal Activity	0	3/1/82
4202-4	Post Accident Sample Data Sheet Stack/Vent Gaseous Release	0	3/1/82
4202-5	Post Accident Sample Data Sheet Drywell/ Containment Gaseous Activity	0	3/1/82
4202-6	Post Accident Sampling Reactor Coolant Isotopic Worksheet	0	3/1/82
4202-7	Post Accident Sampling Reactor Coolant Chemical Analysis	0	3/1/82

4203-1	EMT #1 Worksheet	1	12/8/81
4204-1	EMT #2 Worksheet	0	7/15/81
4205-1	EMT #3 Data Sheet	0	7/15/81
4205-2	Air Sample Work Sheet	0	7/15/81
4206-1	Offsite EMT Data Sheet	0	7/15/81
4206-2	Air Sample Work Sheet	0	7/15/81
4208-1	First Aid Kits	0	7/15/81
4208-2	Basket & Stretchers	0	7/15/81
4208-3	Personnel Contamination Form	0	7/15/81
4209-1	Emergency Re-Entry Checklist	0	7/15/81
4212-1	Worksheet #1 MP-1 Drywell Curie Level Estimation	0	2/19/82
4212-2	Worksheet #2 MP-2 Containment Curie Level Estimation	0	2/19/82
4214-1	Millstone Post Accident Sampling Data Sheet	0	6/1/82
4214-2	Post Accident Sampling - Reactor Coolant Isotopic Worksheet	0	6/1/82
4214-3	Post Accident Sampling - Reactor Coolant Chemical Analysis	0	6/1/82
4214-4	Determination of Total Dissolved Gas	0	6/1/82
4214-5	Post Accident Sampling - Calculation of Gas Sample Volume	0	6/1/82
4214-6	Post Accident Sample Data Sheet Reactor Coolant Gaseous Activity	0	6/1/82
4215-1	Unit #1 Containment Gaseous Activity Post Accident Sample Data Sheet	0	6/1/82
4217-1	Unit #2 Containment Gaseous Activity Post Accident Sample Data Sheet	0	6/1/82

4601-1	Page/Siren System Evacuation Alarm Test	0	7/15/81
4602-1	Telephone Communications Test	1	2/10/82
4603-1	Emergency Operations Facility Radiological Kits	1	4/13/82
4603-2	Emergency Operations Facility Access Road - Inventory List	2	4/13/82
4603-3	Unit Control Rooms Emergency Equipment	2	4/13/82
4603-4	Unit 1 Technical Support Center Radiological Equipment Checklist	1	12/21/81
4603-5	CPF Assembly Area - Radiological Kit	2	4/13/82
4603-6	First Aid Emergency Rescue Kits and Emergency Dosimetry	1	12/21/81
4603-7	Ambulance Kit Inventory	0	7/15/81
4603-8	Emegency Equipment Inventory List	1	4/13/82
4603-9	Acid Spill Kits	1	12/21/81
4605-1	Emergency Operations Facility Ventilation System Filter Test	0	7/15/81
4606-1	EOFEDG Operability Test	0	7/15/81
4608-1	E.O.F. Air Lock OP Test	0	7/15/81
4609-1	E.O.F. Fire Detection Test	0	7/15/81
4610-1	Unit 1/Unit 2 Data Sheet	3	11/26/81
4610-2	Unit 2 Data Sheet	Cancelled 9/1/81 (SORC 81-38)	
4611-1	PA Speaker Inspection Form	0	7/15/81
4612-1	Tri-Town Radio Test-Unit 1 Control Room	0	7/15/81
4612-2	Tri-Town Radio Test-EOF	0	7/15/81
4612-3	State Police Radio Test	0	7/15/81

4612-4	Waterford Police Radio Test	0	7/15/81
4613-1	Radiopage - Daily Test Log Sheet	1	11/24/81

Approved: EJMroczka Date: 6-8-82 SORC Mtg. No. 82-21

ALERT EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date________________

STEP	ACTION	TIME	INITIALS
1.	Establish communication with managers in EOF, CPF and TSC. Contact the control room to ascertain the event's status.	______	______
2.	Brief EOF managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.	______	______
3.	When satisfied that the EOF is activated, notify control room and Duty Officer that you have assumed the function of Director of Site Emergency Operation and have Admininstrative Control of the station.	______	______
4.	Initiate use of the logbook and tape recorder and record data and communications including time of occurrences.	______	______
5.	Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).	______	______
6.	Contact Manager of On-Site Resources and request person be provided to perform the logging function.	______	______
7.	For any Manager position not yet manned have Manager of On-Site Resources contact designated on call Manager or qualified replacement.	______	______
8.	Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of Radiological Consequency Assessment has not arrived. (Team 3 should be dispatched in the downwind direction).	______	______
9.	Initiate the coordination of site emergency actions to: (if possible)		
9.1	Stop or minimize the source of the problem.	N/A	N/A
9.2	Contain the results of the problem.	N/A	N/A

ALERT EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member Title

Date ____________

STEP	ACTION	TIME	INITIALS
9.3	Evaluate the results of the problem.	N/A	N/A
9.4	Clean up the results of the problem and restore the Station to a normal condition.	N/A	N/A
10.	During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an hourly basis, and as necessary. (Include meterological assessments and dose estimates of any actual releases).	N/A	N/A
10.1	Director of Corporate Emergency Operations.	N/A	N/A
10.2	Manager of Public Information.	N/A	N/A
10.3	Manager of External Communications.	N/A	N/A
11.	Consider requesting outside assistance of the following groups using the Manager of External Communications:	N/A	N/A
11.1	Waterford Police - use RED hot line	N/A	N/A
11.2	Waterford Fire and Ambulance Department - use RED hot line.	N/A	N/A
11.3	State Police - use BLUE hot line	N/A	N/A
11.4	Radiation Management Corporation - 215-841-5141	N/A	N/A
11.5	Lawrence and Memorial Hospital -	N/A	N/A
11.6	U.S. Coast Guard -	N/A	N/A
11.7	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
11.8	ANI/MAELU (NELPIA) , (for finacial assistance)	N/A	N/A
11.9	Refer also to SF-109, Agency Call List	N/A	N/A

ALERT EMERGENCY

Director of Station Emergency Operations Date ____________
Emergency Organization Member Title

STEP	ACTION	TIME	INITIALS
12.	Based on calculated and field measurements of offsite releases, recommend protective actions to the State in accordance with SF-106.	N/A	N/A
13.	Coordinate and direct outside assistance groups arriving on site.	N/A	N/A
14.	At least hourly and as necessary ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.		
14.1	Appropriate outside groups, agencies and public officials using radiopage and telephone recorders.	N/A	N/A
14.2	NRC resident inspector	N/A	N/A
14.3	NRC - use white hot line	N/A	N/A
14.4	U. S. Coast Guard -	N/A	N/A
14.5	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
14.6	Lawrence and Memorial Hospital - Emergency Room Charge Nurse)	N/A	N/A
14.7	Radiation Management Corporation	N/A	N/A
14.8	INPO Support Functions (SF-109)	N/A	N/A
15.	Verify that all personnel in the protected area have been accounted for. Initiate search and rescue parties, as necessary, to locate missing personnel.		
16.	Based on existing and potential conditions and results, consider either reducing, maintaining or escalating the Site Area emergency classification, using the EAL's and guidance in OP 501 and OP 2501.	N/A	N/A
17.	During the course of the incident, refer to the appropriate 4200 series procedures as necessary.	N/A	N/A

ALERT EMERGENCY

Director of Station Emergency Operations Date ____________
Emergency Organization Member Title

STEP	ACTION	TIME	INITIALS
18.	Authorize exposures to emergency workers in excess of administrative limits as necessary.	N/A	N/A
19.	Designate evacuation routes if site evacuation becomes necessary.	N/A	N/A
20.	Consult with NRC, State and Corporate Representatives on a periodic basis.	______	______
21.	Resolve questions on licensing with NRC.	______	______
22.	After incident and Unit conditions have stabilized to allow the securing of the emergency organization, confirm with Director of Corporate Emergency Operations and notify all Emergency Managers to secure posts and return to normal operation. In addition, have Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.	______	______
22.	Complete Plant Incident Report in accordance with ACP 10.01.	______	______

Approved: E J Mroczka Date: 6-8-82 SORC Mtg. No. 82-21

SITE AREA EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
1.	Establish communication with managers in EOF, CPF and TSC. Contact the control room to ascertain the event's status.	______	______
2.	Brief EOF managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.	______	______
3.	When satisfied that the EOF is activated, notify control room and Duty Officer that you have assumed the function of Director of Site Emergency Operation and have Administrative Control of the station.	______	______
4.	Initiate use of the logbook and tape recorder and record data and communications including time of occurrences.	______	______
5.	Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).	______	______
6.	Contact Manager of On-Site Resources and request person be provided to perform the logging function.	______	______
7.	For any Manager position not yet manned, have Manager of On-Site Resources contact designated on-call Manager or qualified replacement.	______	______
8	Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of Radiological Consequence Assessment has not arrived. (Team 3 should be dispatched in the downwind direction.)	______	______
9.	Initiate the coordination of site emergency actions to: (if possible)	N/A	N/A
9.1	Stop or minimize the source of the problem.	N/A	N/A
9.2	Contain the results of the problem.	N/A	N/A
9.3	Evaluate the results of the problem.	N/A	N/A

SITE AREA EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
9.4	Clean up the results of the problem and restore the Station to a normal condition.	N/A	N/A
10.	During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an hourly basis, and as necessary. (Include meterological assessments and dose estimates of any actual releases.)	N/A	N/A
10.1	Director of Corporate Emergency Operations.	N/A	N/A
10.2	Manager of Public Information.	N/A	N/A
10.3	Manager of External Communications.	N/A	N/A
11.	Consider requesting outside assistance of the following groups using the Manager of External Communications:	N/A	N/A
11.1	Waterford Police - use RED hot line	N/A	N/A
11.2	Waterford Fire and Ambulance Department - use RED hot line.	N/A	N/A
11.3	State Police - use BLUE hot line	N/A	N/A
11.4	Radiation Management Corporation -	N/A	N/A
11.5	Lawrence and Memorial Hospital -	N/A	N/A
11.6	U.S. Coast Guard -	N/A	N/A
11.7	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
11.8	ANI/MAELU (NELPIA) (for financial assistance)	N/A	N/A
11.9	Refer also to SF-109, Agency Call List	N/A	N/A

SITE AREA EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
12.	Based on calculated and field measurements of off-site releases, recommend protective actions to the State in accordance with SF-106.		
13.	Coordinate and direct outside assistance groups arriving on site.	N/A	N/A
14.	At least hourly and as necessary, ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.	N/A	N/A
14.1	Appropriate outside groups, agencies and public officials using radiopage and telephone recorders.	N/A	N/A
14.2	NRC resident inspector	N/A	N/A
14.3	NRC - use white hot line	N/A	N/A
14.4	U. S. Coast Guard	N/A	N/A
14.5	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
14.6	Lawrence and Memorial Hospital Emergency Room Charge Nurse)	N/A	N/A
14.7	Radiation Management Corporation	N/A	N/A
14.8	INPO Support Functions (SF-109)	N/A	N/A
15.	Verify that all personnel in the protected area have been accounted for. Initiate search and rescue parties, as necessary, to locate missing personnel.		
16.	Based on existing and potential conditions and results, consider either reducing or maintaining the general emergency classification using the EAL's and guidance in OP 501 and OP 2501.	N/A	N/A
17.	During the course of the incident, refer to the appropriate 4200 series procedures as necessary.	N/A	N/A

SITE AREA EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
18.	Authorize exposures to emergency workers in excess of administrative limits as necessary. Emergency sampling should not be performed if it results in workers exceeding administrative limits.	N/A	N/A
19.	Designate evacuation routes if site evacuation becomes necessary.	N/A	N/A
20.	Consult with NRC, State and Corporate representatives on a periodic basis.	______	______
21.	Resolve questions on licensing with NRC.	______	______
21.	After incident and Unit conditions have stabilized to allow the securing of the emergency organization, confirm with Director of Corporate Emergency Operations and notify all Emergency Site Managers to secure posts and return to normal operation. In addition, have Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.		
22.	Complete Plant Incident Report in accordance with ACP 10.01.	______	______

Approved: EJ Mroczka Date: 6-8-82 SORC Mtg. No. 82-21

GENERAL EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ______________

STEP	ACTION	TIME	INITIALS
1.	Establish communication with managers in EOF, CPF and TSC. Contact the control room to ascertain the event's status.	______	______
2.	Brief EOF managers (and other personnel as appropriate) on the situation and the functions they are expected to perform.	______	______
3.	When satisfied that the EOF is activated, notify control room and Duty Officer that you have assumed the function of Director of Site Emergency Operation and have Administrative Control of the station.	______	______
4.	Initiate use of the logbook and tape recorder and record data and communications including time of occurrences.	______	______
5.	Establish communication with all Managers and the Director of Corporate Emergency Operations (when available).	______	______
6.	Contact Manager of On-Site Resources and request person be provided to perform the logging function.	______	______
7.	For any Manager position not yet manned, have Manager of On-Site Resources contact designated on-call Manager or qualified replacement.	______	______
8	Designate a trained EMT member to dispatch Teams 2 and 3 if the Manager of Radiological Consequence Assessment has not arrived. (Team 3 should be dispatched in the downwind direction.)	______	______
9.	Initiate the coordination of site emergency actions to: (if possible)	N/A	N/A
9.1	Stop or minimize the source of the problem.	N/A	N/A
9.2	Contain the results of the problem.	N/A	N/A
9.3	Evaluate the results of the problem.	N/A	N/A

GENERAL EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ______

STEP	ACTION	TIME	INITIALS
9.4	Clean up the results of the problem and restore the Station to a normal condition.	N/A	N/A
10.	During the course of the emergency, ensure periodic update information is relayed to the following personnel on at least an hourly basis, and as necessary. (Include meterological assessments and dose estimates of any actual releases.)	N/A	N/A
10.1	Director of Corporate Emergency Operations.	N/A	N/A
10.2	Manager of Public Information.	N/A	N/A
10.3	Manager of External Communications.	N/A	N/A
11.	Consider requesting outside assistance of the following groups using the Manager of External Communications:	N/A	N/A
11.1	Waterford Police - use RED hot line	N/A	N/A
11.2	Waterford Fire and Ambulance Department - use RED hot line.	N/A	N/A
11.3	State Police - use BLUE hot line	N/A	N/A
11.4	Radiation Management Corporation -	N/A	N/A
11.5	Lawrence and Memorial Hospital -	N/A	N/A
11.6	U.S. Coast Guard -	N/A	N/A
11.7	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
11.8	ANI/MAELU (NELPIA) (for financial assistance)	N/A	N/A
11.9	Refer also to SF-109, Agency Call List	N/A	N/A

GENERAL EMERGENCY

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
12.	Based on calculated and field measurements of off-site releases, recommend protective actions to the State in accordance with SF-106.	______	______
13.	Coordinate and direct outside assistance groups arriving on site.	N/A	N/A
14.	At least hourly and as necessary, ensure the following organizations are or have been notified of the Station's condition using the Manager of External Communications.	N/A	N/A
14.1	Appropriate outside groups, agencies and public officials using radiopage and telephone recorders.	N/A	N/A
14.2	NRC resident inspector	N/A	N/A
14.3	NRC - use white hot line	N/A	N/A
14.4	U. S. Coast Guard	N/A	N/A
14.5	AMTRAK - Chief Train Dispatcher (Boston)	N/A	N/A
14.6	Lawrence and Memorial Hospital - Emergency Room Charge Nurse)	N/A	N/A
14.7	Radiation Management Corporation	N/A	N/A
14.8	INPO Support Functions (SF-109)	N/A	N/A
15.	Verify that all personnel in the protected area have been accounted for. Initiate search and rescue parties, as necessary, to locate missing personnel.	______	______
16.	Based on existing and potential conditions and results, consider either reducing or maintaining the general emergency classification using the EAL's and guidance in OP 501 and OP 2501.	N/A	N/A
17.	During the course of the incident, refer to the appropriate 4200 series procedures as necessary.	N/A	N/A

Director of Station Emergency Operations
Emergency Organization Member (Title)

Date ____________

STEP	ACTION	TIME	INITIALS
18.	Authorize exposures to emergency workers in excess of administrative limits as necessary. Emergency sampling should not be performed if it results in workers exceeding administrative limits.	N/A	N/A
19.	Designate evacuation routes if site evacuation becomes necessary.	N/A	N/A
20.	Consult with NRC, State and Corporate representatives on a periodic basis.	______	______
21.	Resolve questions on licensing with NRC.	______	______
21.	After incident and Unit conditions have stabilized to allow the securing of the emergency organization, confirm with Director of Corporate Emergency Operations and notify all Emergency Site Managers to secure posts and return to normal operation. In addition, have Manager of External Communications contact all outside groups notified during the emergency with a summary of the Station's condition and intentions.		
22.	Complete Plant Incident Report in accordance with ACP 10.01.	______	______

E.J. Mroczka 12-14-81
Form Approved By Station Superintendent Effective Date

STATION PROCEDURE CHANGE FORM

A. IDENTIFICATION

PROCEDURE NUMBER 4612 REV. 1 CHANGE NO. 1

PROCEDURE TITLE WATERFORD, STATE AND TRI TOWN RADIO TEST

INITIATED BY [signature]

B. CHANGE 7.2.1.2 CHANGE 12 WATTS TO 70 WATTS

7.2.1.4 SEE ATTACHED SHEET

REASON FOR CHANGE

12 WATT REPEATER REPLACED WITH 70 WATT REPEATER LOCATED ON STACK

D. NON-INTENT CHANGE AUTHORIZATION (N/A for Intent Changes)

TITLE	SIGNATURE	DATE
Shift Supervisor (on duty)	[signature]	5/31/82
Control operator	Dale E Bergstrom	5/31/82

E. REVIEWED

Department Head [signature] 5-31-82
John V. [signature] 6-3-82

Unreviewed Safety Question Evaluation Documentation Required:
(Significant change in procedure method or scope as described in FSAR) [ ] YES [X] NO
(If yes, document in PORC/SORC meeting minutes)

ENVIRONMENTAL IMPACT

(Adverse environmental impact) [ ] YES [X] NO
(If yes, document in PORC/SORC meeting minutes)

F. PORC/SORC RECOMMENDS APPROVAL (or confirmation of interim change within 14 days)

~~PORC~~/SORC Meeting Number 82-24

G. APPROVAL AND IMPLEMENTATION

The change is hereby implemented and is effective this date, except for interim changes which were implemented and effective per the Authorization of D above.

E.J. Mroczka 6-3-82
Station Superintendent/Unit Superintendent Date

SF-302
Rev. 5
Page 1 of 1

7.2.1.4 To change the repeater power, the touch-tone pad must be employed. The first digit entered should be held until a white light comes on, then enter the remaining digits of the code. After a repeater has been turned on, enter the code to turn on the channel ground for that repeater. The touch-tone control codes are as follows:

~~1)~~

2) Channel Guard "ON" both repeater

3) ~~Watt~~ Channel Guard "OFF"

4) watt "ON" - ~~watt "OFF"~~ IN UNIT 1 HSV Room

5) ~~watt "ON"~~ - ~~watt "OFF"~~ WATT AT STACK "ON"

7.3 State Police Radio

7.3.1 Radio Operation

7.3.1.1 Ensure channel 1 has been selected prior to transmitting message.

7.3.1.2 To transmit to the State Police depress the transmit button on the hand microphone. To receive release the transmit button on the hand microphone.

7.3.2 Radio Test

7.3.2.1 The State Police radio is tested daily at 0600. Unit 1 Control Room will perform this test.

7.3.2.2 The procedure is as follows:

Millstone: Calling Troop E for a signal

State Police: "Thats a good signal

Millstone:

7.3.2.3 The State Police Radio test is to be logged on form EPIP 4612-3. At the end of each

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

NORTHEAST UTILITIES

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

TABLE OF CONTENTS

Section No.	Section Title
Section 1	Common Administrative/Organization/Operational Procedures
Section 2	Senior NU Management - Procedures
Section 3	Director, Corporate Emergency Operations Center Procedures
Section 4	Manager, Radiological Consequence Assessment Procedures
Section 5	Manager, Technical Support Procedures
Section 6	Manager, Resources - Procedures
Section 7	Manager, External Communications - Procedures
Section 8	Manager, Public Information - Procedures
Section 9	NUSCO, Nuclear Operations Duty Officer Procedures
Section 10	Equipment Surveillance Procedures

SECTION 1. COMMON ADMINISTRATIVE/ORGANIZATION/OPERATIONAL PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-1.01	Preparation, Issuance and Control of Procedures	3	11/81
CONI-1.02	Corporate Organization for Nuclear Incidents (CONI)	5	4/82
CONI-1.03	Alerting and Notification using the Radiopager System	3	11/81
CONI-1.04	Training of Corporate EOC On-Call Staff	0	10/81
CONI-1.05	Corporate EOC, Operations		Under preparation

SECTION 2. SENIOR NU MANAGEMENT PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-2.01	Senior NU Management Responsibilities		Under preparation

SECTION 3. DIRECTOR, CORPORATE EMERGENCY OPERATIONS CENTER PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-3.01	On-Call Corporate EOC Director - Logistics and Responsibilities	1	2/82

SECTION 4. MANAGER, RADIOLOGICAL CONSEQUENCE ASSESSMENT PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-4.01	On-Call Radiological Consequence Assessment Staff - Logistics	2	11/81
CONI-4.02	On-Call Manager of Radiological Consequence Assessment, Responsibilities and General Guidelines	1	2/82
CONI-4.03	Estimating Post-Accident Release Rates	1	4/82
CONI-4.04	Calculation of Off-Site Doses From Airborne Releases	0	11/81
CONI-4.05	Guidance and Documentation of EMT and POST Plume Monitoring	1	1/82
CONI-4.06	Airborne and Ingestion Pathway Sampling	0	2/82
CONI-4.07	Inhalation and Ingestion Dose Calculations	0	2/82

SECTION 5. MANAGER, TECHNICAL SUPPORT PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-5.01	On-Call Technical Support Staff Logistics	2	2/82

SECTION 6. MANAGER OF RESOURCES, PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-6.01	On Call Corporate Manager of Resources, Responsibilities and Duties	1	11/81

SECTION 7. MANAGER, EXTERNAL COMMUNICATIONS

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-7.01	Manager of External Communications, Logistics	2	4/82

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

SECTION 8. MANAGER OF PUBLIC INFORMATION PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-8.01	On-Call Public Information Staff Logistics	1	3/82

SECTION 9. NUSCO, NUCLEAR OPERATIONS DUTY OFFICER PROCEDURE

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-9.01	Notification of and Communications with Upper Management and the On-Call Organization	2	2/82

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

SECTION 10. EQUIPMENT SURVEILLANCE PROCEDURES

TABLE OF CONTENTS

Procedure Number	Procedure Title	Revision Number	Issue Date
CONI-10.01	Emergency and Telephone Communications Test Procedure	1	2/82

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-1.01

PREPARATION, ISSUANCE AND CONTROL OF PROCEDURES

APPROVED RC Rodgers
CONI-Procedure Manual Coordinator

REVISION 3

DATE November, 1981

CONCURRENCE RC Rodgers
Corporate Nuclear Emergency Plan Coordinator

PREPARATION, ISSUANCE AND CONTROL OF PROCEDURES

1.0 PURPOSE

This procedure defines the method of preparation, issuance, and control of Corporate Organization for Nuclear Incidents (CONI) procedures and for their revision.

2.0 APPLICABILITY

This procedure applies to all Corporate Organization For Nuclear Incidents procedures and their revisions.

3.0 REFERENCES

3.1 Nuclear Engineering and Operations Group Procedure 1.03, "Preparation of Quality Related and Other Procedures, Format and Content".

3.2 NE & O group Procedure 2.04 Nuclear Incidents Response Plan.

4.0 DEFINITIONS

4.1 Corporate Organization for Nuclear Incidents (CONI) Procedures Manual

A binder marked "Corporate Organization for Nuclear Incidents Procedures Manual" with an identifying "controlled copy" number which contains a Table of Contents and copies of the latest revisions of all such procedures.

4.2 Corporate Nuclear Emergency Plan Coordinator (CNEC) and the CONI - Procedure Manual Coordinator (CONI-PMC) shall be the Manager, Radiological Assessment Branch (Reference 3.2).

5.0 RESPONSIBILITIES

5.1 The CONI-PMC is responsible for coordinating the preparation, processing, and distribution of the CONI Procedures, their revisions and deletions, in accordance with the requirements outlined in Section 6.0.

The CNEC is responsible for assuring that changes necessary to maintain the Procedures Manual in compliance with the Millstone and Haddam Neck Station's Emergency Plans are made.

5.2 NUSCO Staff/Supervision (Lead managers) identified by the CNEC are responsible for the preparation and approval of their specific procedures (Attachment 8.1).

5.3 The CNEC is responsible to sign all CONI procedures to signify concurrence and that the procedure does not degrade the effectiveness of the Emergency Plan.

5.4 Individuals assigned controlled copies of the CONI Procedure Manual are responsible for maintaining the copy of the manual up-to-date.

5.5 All individuals within the Corporate Organization for Nuclear incidents are responsible for identifying the need for additional procedures and/or revisions to existing procedures, and for relating the need to the CONI-PMC.

5.6 It is the responsibility of all NUSCO Corporate Office staff involved with nuclear incident response to be familiar with and follow the requirements of all applicable CONI procedures.

6.0 INSTRUCTIONS

CONI procedures are prepared as necessary to control and assure satisfactory and consistent performance of activities in connection with nuclear incident response activities and to ensure that those activities meet the requirements described in the Millstone and Haddam Neck Stations Emergency Plans and the State of Connecticut Emergency Plan.

6.1 Preparation of New Procedures

6.1.1 The CONI-PMC in conjunction with lead individuals will be responsible for the preparation, maintenance and approval of specific CONI procedures. These individuals are listed in Attachment 8.1.

6.1.2 Proposed new procedures are prepared in typewritten draft form in accordance with the format prescribed in NEO 1.03 "Preparation of Quality Related and Other Procedures, Format and Content."

6.2 Revisions to Procedures

6.2.1 Revisions to procedures can be proposed by any member of the NUSCO staff. Revisions must be coordinated with the lead individuals designated in Attachment 8.1 and the CONI-PMC.

6.2.2 Revision numbers for updated procedures are obtained from the CONI-PMC. Individual pages containing proposed revisions may be submitted to the originator for review; however, the entire procedure will be reissued each time a procedure is revised. The current revision number will be indicated on the lower right-hand corner of each page. Portions of the procedure affected by the revision will be marked by a vertical line (1) in the right margin opposite the revised portion. (Vertical line indicating the previous revision will be removed.) This line demarcation does not apply to Figures and Attachments and Table of Contents.

6.3 General Requirements for Preparation and Issuance of New Procedures and Revisions

6.3.1 The CONI-PMC controls the assignment of procedures and revision numbers using individual Procedures Control Sheets (Figure 7.1).

6.3.2 The new procedure/revision will be distributed for review and comment by the CONI-PMC, utilizing Procedure Review Transmittal Form (Figure 7.2). Upon completion of this review and resolution of comments by the designated lead manager, the draft is submitted for editing and final typing.

NOTE: Sign-off by the CONI-PMC must be obtained <u>in writing prior to the issuance</u> of a new procedure or revision.

6.3.3 After approval by the designated lead manager and concurrence by the CNEC, the procedure or procedure revision and updated CONI Procedures Table of Contents (Figure 7.3) are duplicated and transmitted to Manual Holders (who are listed on a Control Record similar to Figure 7.5 using Procedure Transmittal Receipt Form (Figure 7.4). The master copies of the latest applicable revisions of all procedures are maintained in the office of the CONI-PMC (Manager, Radiological Assessment Branch).

6.3.4 Uncontrolled information copies of procedures may be distributed. These copies shall be marked "Uncontrolled Copy."

6.3.5 The receipt of the Procedure Transmittal Receipt Form and its attachments shall be acknowledged by the Manual Holder by completing the acknowledgement receipt portion and returning it to the CONI-PMC, who will maintain records of acknowledgements using the

Procedure Receipt Acknowledgement Record (Figure 7.5) after which the receipts may be discarded.

6.3.6 About ten (10) days after the issuance of new/revised/deleted procedures, the CONI-PMC shall verbally contact personnel indicated by delinquent acknowledgement sheets to assure that new/revised/deleted procedures have been received.

6.3.7 Copies of procedures other than those offically assigned to Manual Holders shall be marked "Uncontrolled" and their currentness must be verified prior to use.

6.3.8 The requirements of any procedure may not be altered or superseded by correspondence or other means not prescribed herein; a procedure revision must be made in accordance with the requirements of this procedure in a timely manner. Only the Senior Vice President, Nuclear Engineering and Operations can alter procedures temporarily by passing the method prescribed herein.

7.0 FIGURES

Figure No.	Figure Title
7.1	Control Sheet
7.2	Procedure Review Transmittal Form
7.3	Table of Contents
7.4	Procedure Transmittal Receipt Form
7.5	Procedure Receipt Acknowledgement Record

8.0 ATTACHMENTS

8.1 Designated NUSCO Staff/Supervision (lead managers) to write, maintain, and approve procedures.

CONTROL SHEET

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS PROCEDURE NO. ____________

TITLE ________________________________

____

REV. #	NATURE OF PROCEDURE/REVISION	DATE ISSUED
0		
1		
2		
3		
4		
5		

Figure 7.1
Rev. 3
Date: November 1981
Page: 5 of 10

FIGURE 7.2

NORTHEAST UTILITIES

PROCEDURE REVIEW TRANSMITTAL FORM

TO **LISTED BELOW

Date: ____________

FROM

SUBJECT Corporate Organization for Nuclear Incidents Procedures

The attached new ( ) revised ( ) deleted ( ) procedure(s) to the Corporate Organization for Nuclear Incidents (CONI) Procedure Manual (is) (are) being proposed.

PROCEDURE NO.	TITLE
____________	____
____________	____
____________	____

COMMENTS:

____

____

____

Please forward your comments/approval to: ____________________,

by: ______________________________.

Attachment

**

Figure 7.2
Rev. 3
Date: November 1981
Page: 6 of 10

FIGURE 7.3

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS PROCEDURE MANUAL

TABLE OF CONTENTS

PROCEDURE NO.	PROCEDURE TITLE	REVISION NO.	ISSUE DATE

NORTHEAST UTILITIES

PROCEDURE TRANSMITTAL RECEIPT FORM

TO CONTROL COPY HOLDER #________ Date: ____________

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS PROCEDURE MANUAL

TRANSMITTAL NO. ______

FROM R. C. RODGERS, MANAGER, RADIOLOGICAL ASSESSMENT BRANCH

SUBJECT NEW/REVISED PROCEDURES

The attached new/revised procedure(s):

Procedure No.	Rev.
____________	______
____________	______
____________	______
____________	______
____________	______

is) (are) forwarded for inclusion in the Corporate Organization For ıclear Incidents Procedure Manual assigned to you.

A revised TABLE OF CONTENTS is also attached to reflect current status.

NOTE: This form to be routed to affected personnel in your group and retained.

PLEASE DETACH AND RETURN LOWER PORTION TO:

R. C. Rodgers, Radiological Assessment Branch
NORTHEAST UTILITIES SERVICE COMPANY
POST OFFICE BOX 270
HARTFORD, CONNECTICUT 06101

This acknowledges receipt of the Corporate Organization for Nuclear Incidents Procedures information contained in Transmittal No. ________,
dated ______________.

____________________ SIGNATURE OF MANUAL HOLDER ________ DATE ________ COPY NO.

FIGURE 7.5

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS PROCEDURE MANUAL

PROCEDURE RECEIPT ACKNOWLEDGEMENT RECORD

TRANSMITTAL NO. ____________ DATE ____________________________

DESCRIPTION: ____

____

____

____

CONTROLLED COPY HOLDERS

MANUAL NO.	HOLDER	ACK.	MANUAL NO.	HOLDER	ACK.
1		______	31		______
2		______	32		______
3		______	33		______
4		______	34		______
5		______	35		______
6		______	36		______
7		______	37		______
8		______	38		______
9		______	39		______
10		______	40		______
11		______	41		______
12		______	42		______
13		______	43		______
14		______	44		______
15		______	45		______
16		______	46		______
17		______	47		______
18		______	48		______
19		______	49		______
20		______	50		______
21		______	51		______
22		______	52		______
23		______	53		______
24		______			
25		______			
26		______			
27		______			
28		______			
29		______			
30		______			

ATTACHMENT 8.1

DESIGNATED NUSCO STAFF (SUPERVISION) TO PREPARE, MAINTAIN AND APPROVE SPECIFIC PROCEDURES*

Date: July, 1981

CONI Procedure Manual Section #	Title, Name	Prepare and Maintain	Approve
1	Supervisor, Radiation Protection R. E. Brisco	X	-
	CONI-PMC R. C. Rodgers	-	X
2&3	CNEC (Manager, Radiological Assessment) R. C. Rodgers	X	-
	Senior Vice President, NE & O W. G. Counsil	-	X
4	Supervisor, Radiological Engineering R. A. Crandall	X	-
	Manager, Radiological Assessment Branch R. C. Rodgers	-	X
5	Manager, Mechanical System Engineering P. F. Santoro	X	X
6	Director, Generation Construction E. R. Foster	X	X
7	Manager, Licensing R. T. Laudenat	X	X
8	Manager, Nuclear System Communication G. R. Doughty	X	X
9	Nuclear Operations Engineer T. J. Dente	X	X
10	Supervisor Radiological Protection Section, NUSCO R. E. Brisco	X	X

*The Manager, Radiological Assessment Branch, NUSCO serves as Corporate Nuclear Emergency Plan Coordinator (CNEC) and CONI Procedure Manual Coordinator (CONI-PMC). The CNEC signs concurrence on all procedures in the CONI manual.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-1.02

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS

APPROVED	R C Rodger CONI-Procedure Manual Coordinator
REVISION	5
DATE	April 1982
CONCURRENCE	R C Rodgers Corporate Nuclear Emergency Plan Coordinator

CORPORATE ORGANIZATIONS FOR NUCLEAR INCIDENTS

1.0 PURPOSE

This procedure identifies the individuals who will fulfill the different functions required by the corporate organization for Nuclear Incidents.

2.0 APPLICABILITY

This procedure applies to all corporate office individuals assigned responsibilities for fulfilling functions necessary to respond to nuclear incidents.

3.0 REFERENCES

3.1 Nuclear Engineering and Operations Procedure NEO 2.04, Nuclear Incidents Response Plan.

4.0 DEFINITIONS

4.1 Minor Nuclear Incidents - Those which usually require only reporting and notification of state/local officials and corporate management. These are usually responded to by the normal corporate organization. These are State Incident Classes, GOLF, FOX, ECHO and DELTA.

4.2 Serious Nuclear Incidents - Those which require activation of on-call emergency organization at the stations and the corporate office. These are State Incident Classes, CHARLIE ONE, CHARLIE TWO, BRAVO and ALPHA.

4.3 On Call Corporate Emergency Organization - The group of individuals who will respond to the Corporate Emergency Operations Center within 90 minutes of the classification of a serious nuclear incident.

4.4 The Corporate Nuclear Emergency Plan Coordinator (CNEC) is the NUSCO, Manager Radiological Assessment Branch.

5.0 RESPONSIBILITY

5.1 The Corporate Nuclear Emergency Plan Coordinator (CNEC) who is the NUSCO Manager, Radiological Assessment Branch is responsible for coordinating the establishment of the Corporate Organization for Nuclear Incidents as required by Reference 3.1

and for coordinating the selection of the on-call staff for the Emergency Organization.

5.2 The Senior, Vice President, Nuclear Engineering and Operations Group, shall approve the staffing of the on-call corporate emergency organization for nuclear incidents.

5.3 The lead Nuclear Operations Duty Officer for the on-call Corporate Emergency Organization shall be responsible for developing annual on-call schedules. Copies of these schedules and revisions thereof shall be sent to the CNEC.

6.0 INSTRUCTIONS

6.1 Emergency On-Call Organization

6.1.1 The CNEC shall, on an annual basis, coordinate the selection of staff for the on-call Corporate Emergency Organization and submit it for approval to the Senior Vice President Nuclear Engineering and Operations. The on-call Corporate Emergency Organization for nuclear incidents shall be established in accordance with Reference 3.1. This organization is shown in Figure 7.1. The responsibilities are given in Attachment 8.1.

6.1.2 The staff selected for the on-call Corporate Emergency Organization is provided in Attachment 8.2.

6.1.3 Changes done between the annual overall selection to the on-call staff shall be made after coordinating with the CNEC and with the approval of the Senior Vice President Nuclear Engineering and Operations Group. Attachment 8.2 shall be revised accordingly within 30 days by the CNEC.

6.1.4 The Lead Nuclear Operations Duty Officer of the on-call Corporate Emergency Organization shall prepare annual on-call schedules for the staff in the format of Figure 7.2. The weekly on-call schedule shall commence on every Monday. In the event Monday is a holiday, it shall commence on Tuesday. These annual schedules shall be provided to the CNEC.

6.1.5 The Nuclear Operations Duty Officer shall prepare a Weekly On Call Schedule identifying all the individuals who are on-call for a particular week using the format of Figure 7.3. This shall be posted in the Corporate Emergency Operations Center.

6.1.6 The Lead Director and Managers shall provide a list of names, addresses and telephone numbers of all on-call staff to the CNEC and the Lead Nuclear Operations Duty Officer. The list shall be prepared in the format of Figure 7.4.

Changes to this list shall be identified to the CNEC and Lead Nuclear Operations Duty Officer within five (5) working days.

6.1.7 On-call individuals shall notify immediately the Nuclear Operations Duty Officer if their on-call staff weekly schedules are modified due to sickness, travel, etc.

6.2 Recovery Operations Organization

6.2.1 The Corporate Organization for Recovery Operations shall be established in accordance with Reference 3.1. The CNEC shall coordinate the annual selection of staffing. The Senior Vice President Nuclear Engineering and Operations Group shall approve the staffing. The Recovery Operations organization is shown in Figure 7.5. The staffing is identified in Attachment 8.3.

6.2.2 The changes made between the annual overall selection of the Recovery Operations staff shall be coordinated with the CNEC and approved by the Senior Vice President Nuclear Engineering and Operations Group.

6.3 Minor Nuclear Incidents

6.3.1 For nuclear incidents classified as GOLF, FOX, ECHO, and DELTA, the normal corporate functional organization will be in effect. Specific notification actions will be described in CONI 1.03.

6.3.2 In the case of DELTA nuclear incidents the on-call Managers of Radiological Consequence Assessment and his support staff will be mobilized as necessary.

7.0 FIGURES

7.1 On-Call Corporate Emergency Organization for Nuclear Incident

7.2 Annual On-Call Schedule Form

7.3 Weekly On-Call Schedule Form

7.4 On-Call Staff Telephones and Addresses

7.5 Corporate Recovery Operations Organization

8.0 ATTACHMENTS

8.1 Functional Responsibilities of On-Call Corporate Emergency Organization

8.2 On-Call Corporate Emergency Organization Staff Appointment List

8.3 Recovery Operations Organization Staff Appointment List

ON-CALL CORPORATE EMERGENCY ORGANIZATION FOR NUCLEAR INCIDENTS

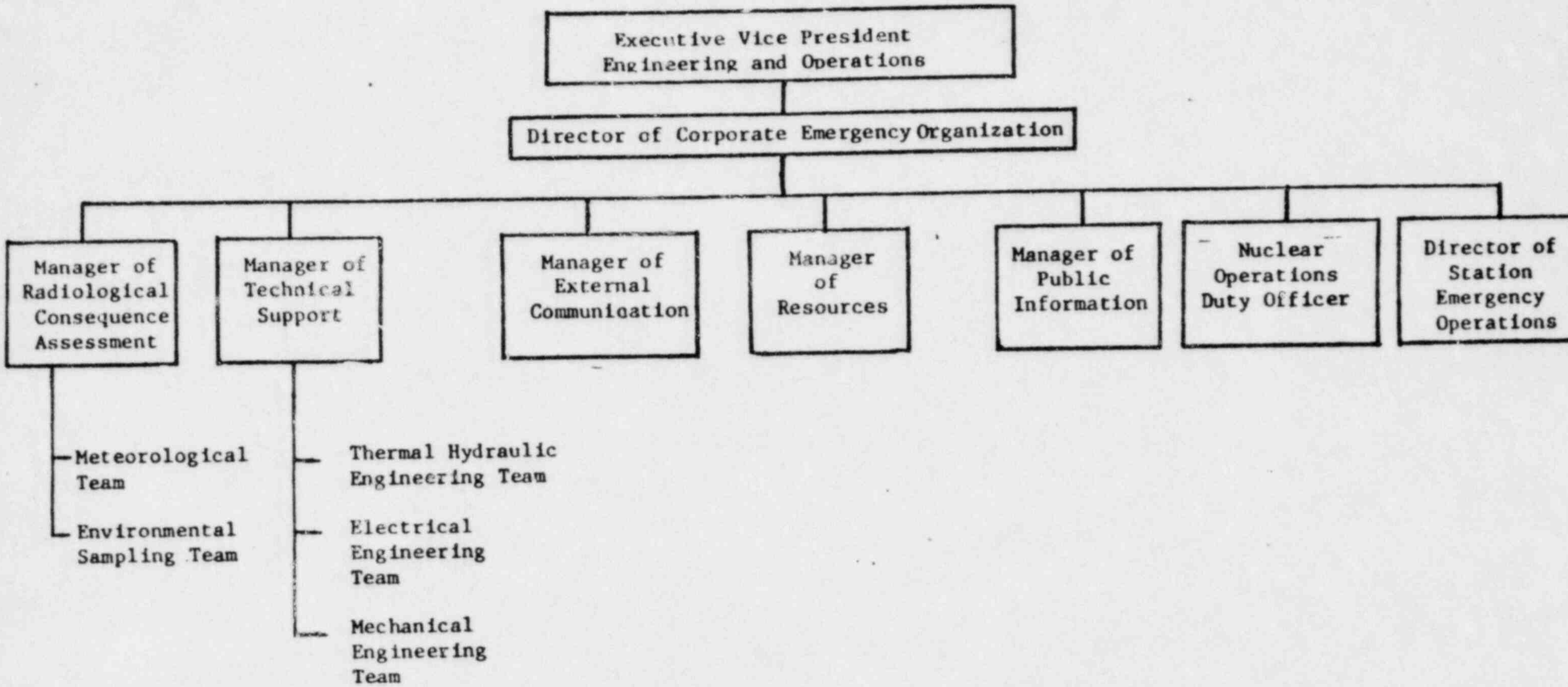


Figure 7.1
Rev. 5
Date: April 1982
Page: 5 of 27

CORPORATE EOC STAFF-MANAGERS

ON-CALL SCHEDULE FORM

Year _____ Page of

Week (Mon 0800 to Mon 0800)	Director	Mgr. Ext. Comm.	Mgr. Resources	Nuc. Ops. Duty Off.	Mgr. Public Info.	Mgr. Rad. Conseq.	Mgr. Tech. Support

*When holiday occurs on Monday, the schedule coverage extends to 0800 on Tuesday.

CORPORATE EOC STAFF-SUPPORT TEAMS

ON-CALL SCHEDULE FORM

Year ______ Page of

Week (Mon 0800 to Mon 0800)	Meteor. Team	Env. Field	Thermal Hydraulics Eng. Team	Mech. Eng. Team	Electrical Eng. Team

*When holiday occurs on Monday, the schedule coverage extends to 0800 on Tuesday.

CORPORATE EMERGENCY ORGANIZATION - WEEKLY ON CALL SCHEDULE

WEEK OF ____ TO ____

Director of Emergency Operations - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

Manager of Radiological Consequence Assessment - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

Manager of Technical Support - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

Manager of External Communications - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

Manager of Resources - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

NUSCO Nuclear Operations Duty Officer - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

Manager of Public Information - ______________________
Name

Revision: ______________________ ______________________ __________
Name Date Initials

CORPORATE EMERGENCY ORGANIZATION - WEEKLY ON CALL SCHEDULE (Continued)

WEEK OF ____ TO ____ Page 2 of 2

Meteorological Team - ____________________
Name

Revision: ____________________ ____________________ ____________
Name Date Initials

Environmental Sampling Team - ____________________
Name

Revision: ____________________ ____________________ ____________
Name Date Initials

Thermal Hydraulics Engineer - ____________________
Name

Revision: ____________________ ____________________ ____________
Name Date Initials

Mechanical Engineer - ____________________
Name

Revision: ____________________ ____________________ ____________
Name Date Initials

Electrical Engineer - ____________________
Name

Revision: ____________________ ____________________ ____________
Name Date Initials

ON-CALL CORPORATE EMERGENCY ORGANIZATION

On-Call Staff Telephones and Addresses

EOC Title:

Year:

Name	Home Address	Home Telephone	Business Extension

CORPORATE ORGANIZATION FOR RECOVERY OPERATIONS

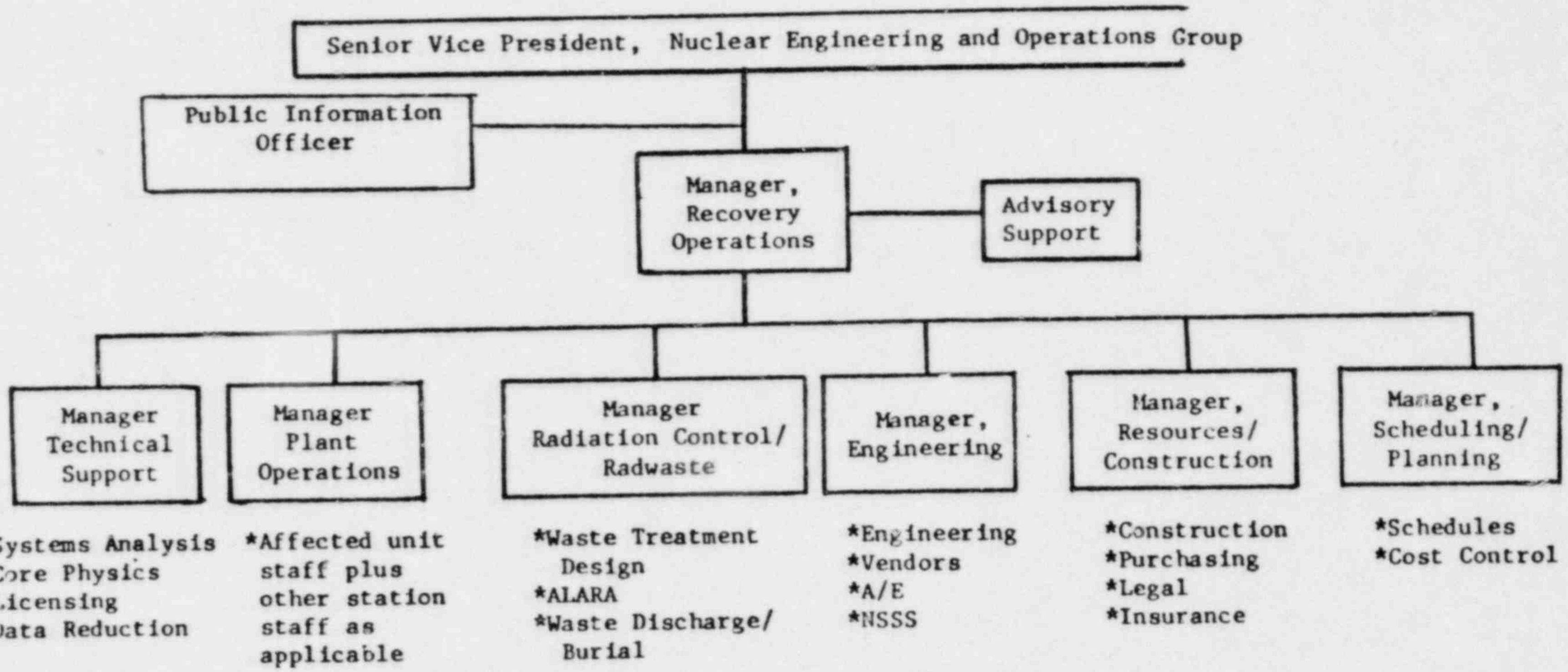


Figure 7.5
Rev. 5
Date: April 1982
Page: 11 of 27

DIRECTOR OF ON-CALL CORPORATE EMERGENCY ORGANIZATION

Reports to: Executive Vice President, NUSCO.

Supervises: Corporate Emergency Operations Center
Director of On-Site Emergency Operations
Corporate EOC, Manager of Radiological Consequence Assessment
Corporate EOC, Manager of Technical Support
Corporate EOC, Manager of External Communications
Corporate EOC, Manager of Resources
Corporate EOC, Manager of Public Information
Corporate EOC, Nuclear Operations Duty Officer

Basic Function:

Overall responsibility for the site emergency operations and the Corporate Office support of station emergency operations and in-plant recovery activities utilizing the expertise and resources available in the Northeast Utilities organization. Serves as necessary as the official company spokeman for the emergency.

Primary Responsibilities:

1. Assume command of all corporate and site emergency operations.
2. Coordinate corporate emergency operations with the Site emergency operations needs.
3. Anticipate situations and problems; make contingency plans.
4. Dispatch responsible person(s) to Media Center and State of Connecticut Emergency Operation Center.
5. Assign specific tasks to Corporate EOC Managers and solicit recommendations from them.

Principal Working Relationship:

1. Director of Station Emergency Operations
2. NU Corporate Management
3. All Corporate EOC Managers

CORPORATE EOC, MANAGER OF RADIOLOGICAL CONSEQUENCE ASSESSMENT

Reports To: Director of Corporate Emergency Organization

Supervises: Personnel assigned to Radiological Assessment

Primary Responsibilities:

1. Support Site Manager of Radiological Consequence Assessment with personnel and methods for offsite dose calculation and assessment of station releases. Do more sophisticated assessments as necessary.

2. Provide emergency dosimetry services.

3. Provide health physics and radiological emergency services.

4. Coordinate the environmental monitoring program and the interpretation of the data with State/Federal agencies.

5. Interface with State/Federal agencies in the assessment of the dose consequences, public protective actions and environmental data collection/analyses.

6. Maintain liaison with state agencies/local communities on their public protective actions.

Principal Working Relationships:

1. Director of Corporate Emergency Organization

2. Site Manager of Radiological Consequence Assessment

3. Corporate EOC, Manager of Technical Support

4. Corporate EOC, Manager of External Communications

5. Corporate EOC, Manager of Resources

6. State Department of Environmental Protection

Staff Expertise Needed:

Offsite Radiation Dose
Health Physics Calculation
Environmental Radiological Monitoring
Meteorology
Radiochemistry
Radiation Shielding & ALARA Evaluations
Personnel Dosimetry
State/Local Community Emergency Plans

On-Call Support Teams

Meteorological Team
Environmental Field Sample Collection Team

CORPORATE EOC, MANAGER OF TECHNICAL SUPPORT

Reports To: Director of Corporate Emergency Organization

Supervises: Personnel assigned to reactor core thermal hydraulics support teams, mechanical, civil and electric engineering technical support teams.

Basic Function:

1. Provide engineering support, as requested.
2. Consult with technical experts within the related disciplines, as requested.

Principal Working Relationships:

1. Director of Corporate Emergency Organization
2. Manager of On-Site Technical Support
3. Corporate EOC, Manager of Resources
4. Corporate EOC, Manager of External Communications
5. Corporate EOC, Manager of Radiological Consequence Assessment

Staff Expertise Needed:

Fluid Dynamics and ECCS Systems
Fuel Mechanical Design - Performance Codes
Core Thermal - Hydraulics
Mechanical Engineering
Civil Engineering
Electrical Engineering
Safety Analysis
ASME Codes
Material Sciences Fuel, Components & Structures, Welding, NDE
Electrical & Instrumentation Controls

Services Needed:

- Pump Design
- ECCS Performance
- Reactor Pressure Vessel
- Containment Performance
- Reactor Pressure Vessel Internals
- Control Rod Drives
- Mechanical and Structural Analysis
- Off gas processing
- Nuclear Instrumentation
- Seismic Analysis
- System Design
- Electrical Engineer
- Core Performance Specialist
- RAD Waste Systems
- Hydrogen Gas Generation
- Licensing

On-Call Support Teams

- Electrical Engineering Team
- Mechanical Engineering Team
- Core-Thermal-Hydraulic Engineering Team

CORPORATE EOC, MANAGER OF EXTERNAL COMMUNICATIONS

Reports To: Director of Corporate Emergency Organization

Supervises: Personnel assigned to external communications at the Corporate EOC.

Basic Function:

Primary Responsibilities:

1. Coordinate technical communications between the Corporate Emergency Operations Center and the Site Emergency Operations Center and the local, state and federal emergency operations centers and the Media center.

2. Work with the Corporate EOC Manager of Public Information to insure accuracy and timeliness of NU input at the Media center.

3. Work with the Director of Corporate Emergency Organization in collecting technical information as input to press releases from the media center.

4. Relay updated information periodically to the other personnel in the Corporate Emergency Operations Center and NU senior management.

Principal Working Relationships

1. Director of NUSCO Emergency Organization

2. Corporate EOC, Manager of Radiological Consequence Assessment

3. Corporate EOC, Manager of Technical Support

4. Corporate EOC, Manager of Resources

5. Site Manager of External Communications

6. Corporate EOC, Manager of Public Information

7. NRC Regional and Headquarters Staff

Staff Expertise Needed:

Telephone Operators
Technical Writers
Typing

CORPORATE EOC, MANAGER OF RESOURCES

Reports To: Director of Corporate Emergency Organization

Supervises: Staff Administrative and logistics groups and design and construction groups assigned to assist in the emergency operations.

Basic Function:

Coordinate the acquisition of manpower and equipment from within NU or from consultants/contractors needed to support the emergency operations.

Primary Responsibilities:

1. Acquire personnel or consultants for engineering design and construction reviews.
2. Acquire housing, office and construction equipment to support the emergency needs.
3. Acquire manpower to meet the requested needs in the technical and craft disciplines.
4. Arrange for purchasing, financial and legal assistance.
5. Provide for food deliveries to the Corporate Emergency Operations Center or other designated location.
6. Provide for general office support such as typing, reproduction and print duplication.

Principal Working Relationships:

1. Director of Corporate Emergency Organization
2. Site Manager of Resources
3. Corporate EOC, Manager of Technical Support
4. Corporate EOC, Manager of External Communications
5. Corporate EOC, Manager of Radiological Consequence Assessment

6. Corporate Purchasing/Legal Departments

Staff Expertise Needed

Acquisition and logistics of different technical and craft
Manpower and equipment
Purchasing Agent
Transportation Consultant
Security Consultant
Administrative Consultant
Legal
Insurance
Medical

CORPORATE EOC, MANAGER OF PUBLIC INFORMATION

Reports To: Director, Corporate Emergency Organization

Supervises: NU Public Information Staff assigned to Corporate EOC and Media Center.

Basic Function:

To coordinate and prepare NU input to media center releases.

Primary Responsibilities:

1. Acquire technical information from Corporate EOC Manager of Ext. Communication and PI. input from the Station Manager of Public Information.
2. Prepare NU Media Center releases through the NU representative at the Media Center.
3. Assist in the preparation of materials for TV/Radio appearance and news conferences at the Media Center by NU management.

Principal Working Relationship

1. Director Corporate Emergency Organization
2. Corporate Manager of Ext. Communication
3. NU Media Center Represenative
4. Station Manager of Public Information Officer

Staff Expertise Needed:

Communications Specialists
Typing

NUCLEAR OPERATIONS DUTY OFFICER

Reports To: Director, Corporate Emergency Organization

Supervises: None

Basic Function:

To ensure on-call staff is assembled at the Corporate EOC and to assist the Director, Corporate Emergency Organization in maintaining communications with the station EOF.

Primary Responsibilities: (at EOC)

1. Initially ensure that all on-call corporate EOC staff have responded.

2. Assist the Director, Corporate Emergency Organization in maintaining communications with Station EOF, control room and TSC.

3. Maintain corporate EOC status boards and commmitment follow lists.

4. Assist the Director, Corporate EOC in maintaining documentation of his conversations, decisions and recommendation.

Staff Expertise:

Knowledge of station operations

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

MEMO

April 1, 1982
WGC-82-G-220

TO: Distribution**

FROM: W. G. Counsil

SUBJECT: Revision to NUSCO Emergency On-Call Staff for Nuclear Incidents

This memo revises the previous January 21, 1982 on-call staff. Revised on-call schedules should be prepared by the lead on-call managers as necessary to include the changes. A double asterik signifies changes made by this revision. The new changes are effective April 1, 1982.

On-Call Directors

W. G. Counsil (lead)
J. P. Cagnetta
R. P. Werner
J. F. Opeka
G. L. Johnson

On-Call Radiological Consequence Assessment Managers

R. C. Rodgers (lead)
R. A. Crandall
J. W. Doroski
H. W. Siegrist
E. J. Molloy

On-Call Technical Support Managers

P. F. Santoro (lead)
A. R. Roby
E. A. DeBarba
R. N. Smart
P. M. Blanch

0570 2-81

On-Call External Communications Managers

R. T. Laudenat (lead)
J. R. Himmelwright
R. Osella
R. M. Kacich
R. O. Bagley

On-Call Resources Managers

E. R. Foster (lead)
L. A. Albee
R. E. Busch
B. L. Carlson
A. K. Gulesserian
R. E. Proulx

**Nuclear Operations Duty Officers

T. J. Dente (lead)
W. J. Dietz
W. D. Bartron
V. P. Spunar
R. P. Traggio

Mechanical Engineers (report to Technical Support Managers

R. E. McMullen
J. P. Donohue
S. J. Weyland
T. J. Mawson
M. Kupinski

On-Call Public Information Officers

G. Doughty (lead)
R. Bromberg
J. Keenan
A. J. Castagno

On-Call Electrical Engineers (report to Technical Support Managers

T. A. Shaffer
B. A. Tuthill
M. F. Samek
D. V. Clemons
G. R. Pitman

On-Call Thermal Hydraulics Engineer (report to Technical Support Managers

M. V. Bonaca
L. W. Ward
A. Gharakhani
M. P. Hills
C. S. Banwarth

On-Call Meteorological Team (report to Radiological Consequence Assessment Managers

D. S. Powell
H. L. Chamberlain
G. S. Kowalczyk
J. A. Santovasi

On-Call Environmental Sampling Team

D. Lenth (lead)
G. Martel
W. Peterson
R. Parker
D. Struthers
R. Nejfelt
R. Marchinkoski
D. Hess
J. Quinn
R. Bedard

WGC/RCR/bjm

**CONI Procedure Manual Holders

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

July 27, 1981
WGC-81-G-469

TO: Distribution*

FROM: W. G. Counsil

SUBJECT: DESIGNATION OF STAFFING FOR THE CORPORATE ORGANIZATION FOR RECOVERY OPERATIONS

Per NRC requirements we are required, as part of our advance planning, to designate the specific assignments of individuals to the various roles in the Recovery Operations Organization.

The individuals identified below by their normal functional title will fill the organizational roles as depicted in the attached figure. Additional support staff and operational aspects will be identified in procedures that will be part of the Corporate Organization for Nuclear Incidents Procedure Manual

Recovery Operations Organization Title	Normal Functional Title
1. Director, Recovery Operations	Vice President, Generation Engineering & Construction
2. Manager, Technical Support	Director, Nuclear Engineering
3. Manager, Plant Operations	Affected Station/Unit Superintendent
4. Manager, Radiation Control/Radwaste	Manager, Radiological Assessment Branch
5. Manager, Engineering	Director, Generation Engineering
6. Manager, Resources/Construction	Director, Generation Construction
7. Manager, Scheduling/Planning	Manager, Cost & Schedule Control
8. Public Information Officer	Manager, System Communications

Please be aware that part of the qualification of the Emergency Plan during the full scale exercise requires a phasing in of the Recovery Operations Organization and its participation for about one hour in the latter part of the exercise. There will be one of these exercises annually.

WGC/RCR/jem
Attachment

*R. P. Werner
J. P. Cagnetta
J. F. Opeka
E. J. Mroczka
R. H. Graves
G. L. Johnson
C. F. Sears
R. C. Rodgers
E. R. Foster
R. E. Proulx
R. R. Doughty
P. F. Santoro
R. T. Laudenat
R. E. Brisco

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-1.03

ALERTING AND NOTIFICATION USING THE RADIOPAGER SYSTEM

APPROVED RC Rodgers
CONI-Procedure Manual Coordinator

REVISION 3

DATE November 1981

CONCURRENCE RC Rodgers
Corporate Nuclear Emergency Plan Coordinator

ALERTING AND NOTIFICATION USING THE RADIOPAGER SYSTEM

1.0 PURPOSE

To describe the emergency radiopager notification system used by the nuclear stations to alert and notify NU senior management, the Corporate Emergency Organization, the Station On-Call Organization and state and local officials of nuclear incidents.

2.0 APPLICABILITY

This procedure applies to all Level One and Level Two radiopager users within the NUSCO corporate office organization.

3.0 REFERENCES

3.1 State of Connecticut Emergency Response Plan Annex V., Procedure 402.2. Classification and Notification of Incidents to State and Local Officials.

3.2 L. F. Sillin, Jr. memo dated May 28, 1981, "NU System Director on Notification and Communications for Significant Events at NU Nuclear Facilities".

4.0 DEFINITIONS

4.1 Level One Radiopager Users - NU senior management and support staff who need to be informed about all nuclear incidents. They are listed in Attachment 8.1.

4.2 Level Two Radiopager Users - NUSCO Corporate Office staff who are part of the On-Call Corporate Emergency Organization and who will respond to the Corporate Emergency Operations Center in Berlin for state incident classes, CHARLIE ONE, CHARLIE TWO, BRAVO AND ALPHA. These individuals are listed by function in Attachment 8.2.

5.0 RESPONSIBILITIES

5.1 All radiopager users will be familiar with the operation of the pager and the State of Connecticut Incident Classification Scheme. (Figures 7.1 and the guidance of Figure 7.2.)

5.2 Level 1. Radiopager users will be responsible to call into the station telephone call back system and receive the details of the incident in the prescribed Incident Report Format.

5.3 Level 2. Radiopager users will be responsible to call into the Berlin telephone call back system and leave name, time and estimated time of arrival. (Does not apply for DELTA FOX and GOLF incidents).

5.4 The NUSCO, Nuclear Operations Duty Officer will be responsible to respond to questions from senior NU management to provide clarifying details on the incident after the radiopager notification has occurred.

5.5 The NUSCO System Communications Duty Officer will be responsible to make the phone call to the Governor's Office as soon as possible after receiving the radiopager notification and obtaining more details of the incident.

5.6 The NUSCO, Nuclear Operations Duty Officer will be responsible to provide written notification about all incidents reported on the radiopagers during working days between 8:00 AM and 4:30 PM.

5.7 The NUSCO, Nuclear Operations Duty Officer is responsible to provide backup telephone alerting of all on-call corporate EOC staff if they do not respond to the radiopage.

6.0 INSTRUCTIONS

6.1 Classification of the Incident

The Station Shift Supervisor or the Director of the Station Emergency Operations will classify the incident using the State of Connecticut Nuclear Incident Classification Scheme, Figure 7.1 and the guidance of Figure 7.2.

6.2 Notification of Incidents

6.2.1 The Station staff (Shift Supervisor's Staff Assistant or his alternate) will use the radiopager system to alert all radiopager users with prerecorded messages. Samples of these 15-second messages are given in Figure 7.3. All radiopager users should be familiar with these messages.

6.2.2 Level One, radiopaging will be done for State of Connecticut Incident classes GOLF, FOX and ECHO. The list of Level One radiopager users are given in Attachment 8.1.

6.2.3 Level Two, radiopaging will be done for State of Connecticut Incident classes DELTA, CHARLIE ONE, CHARLIE TWO, BRAVO, ALPHA. The list of Corporate Office Level Two radiopager users is given in Attachment 8.2. Level Two radiopaging also reaches Level One pagers.

6.3 Response to Radiopaging

6.3.1 Level one radiopager users shall call the station telephone call back system and receive detailed information in the Incident Report format, Figure 7.4. They will leave their name and time at the end of the message. All further information prior to the next radiopager message (if one occurs) should be obtained from the NUSCO, Nuclear Operations Duty Officer. The minimum time between radiopager messages is planned to be between 30 minutes and one hour.

The Nuclear Operations Duty Officer can be reached during non-office hours through the Brush Hill Operator.

6.3.2 Level two radiopager users will for Incident Classes CHARLIE ONE, CHARLIE TWO, BRAVO and ALPHA call the Berlin telephone call back system and leave their name, time and estimated arrival time at the Berlin office (within 75 minutes of receiving the radiopager notification).

6.3.3 For Incident Classes CHARLIE ONE, CHARLIE TWO, BRAVO and ALPHA all Corporate Emergency Operations Organization on-call staff will respond to the radiopager notification and be in the Berlin Emergency Operations Center within 90 minutes of the incident being classified by the stations (within 75 minutes of receiving the radiopager notification).

6.3.4 For Incident Class DELTA, on-call Corporate Office Level Two radiopager users will do nothing.

6.4 Backup to Radiopaging

In the event the radiopager system is inoperative the Station Shift Supervisor's Staff Assistant or his alternate will call the Nuclear Operations Duty Officer, who will in turn provide notification by telephone to the senior NU management (for all incidents) and the On-Call Corporate Office Level Two page users (for State Incident classes CHARLIE ONE, CHARLIE TWO, BRAVO and ALPHA).

6.5 Testing of Radiopagers

6.5.1 Daily testing of the radiopager system will be conducted by each of the stations. Individuals using the radiopager will determine its operability on a daily basis. If the pager is not operating, call Larry Sheehan. Office -Berlin Ext. , Home -

6.5.2 Batteries should be changed once a week. Spare batteries can be obtained from Larry Sheehan.

6.6 Use of Radiopagers

6.6.1 Each of the Corporate on-call groups will be provided with at least two radiopagers. This will provide a spare or can be worn, if desired, by the lead manager in addition to his on-call designee for the week.

6.6.2 The range of the radiopaging system is shown in Figure 7.5.

6.6.3 On-call persons shall not be at a distance from the Berlin office that would prevent them from responding within the prescribed time.

6.6.4 Instructions on the operation of the belt style radiopager unit are provided with it. Refer all questions to individuals identified in Section 6.5.

6.7 Alerting On-Call Corporate Staff Not Carrying Radiopager

The On-Call Corporate Emergency Organization staff who are not carrying the radiopager shall report to the Corporate EOC as rapidly as possible as soon as they discover either by word f mouth, radio, TV or by telephone that a serious nuclear incident has occurred. They shall assist their lead managers and staff the EOC Work Centers.

7.0 FIGURES

Figure 7.1	State of Connecticut Nuclear Incident Calssification Scheme
Figure 7.2	Incidents for Notification of NRC, State and Local Officials by Commercial Nuclear Power Facilities
Figure 7.3	Sample Radiopager Messages (6 items)
Figure 7.4	Nuclear Incident Report Form
Figure 7.5	Range of Radiopager Coverage

8.0 ATTACHMENTS

8.1 Corporate Level 1 Radiopager Users

8.2 Corporate Level 2 Radiopager Users

STATE OF CONNECTICUT NUCLEAR INCIDENT CLASSIFICATION SCHEME

State of Connecticut Incident Class[2,3] & Plant Classification	Incident Description	Notification Actions[1]	Protective Actions
A. GENERAL			
1. GOLF	Radioactive material transportation accident outside afixed facility	*Licensee:[5] notify State DEP[4]	*Limit spread of contamination and initiate clean up
2. FOX	Lost radioactive material in excess of Title 10, CFR30.71, Schedule B Quantities	*Licensee: notify State DEP[4]	*Assist in source recovery
B. FIXED NUCLEAR FACILITY-SPECIFIC			
1. ECHO (Unusual Event without Releases)	[6]Minor incident of general interest but no public hazard with no radioactive releases	*Licensee: call appropriate local agency for fire/police/ambulance *Licensee: notify State DEP[4]	None
2. DELTA (Unusual Event with Releases)	Incident of public interest but no public hazard with unplanned radioactive releases such that site boundary plume doses are less than 0.005 REM to the whole body and/or less than 0.025 REM to the thyroid from plume exposure pathways.	*Licensee: promptly notify state and local officials within 10 miles	None
3. CHARLIE-ONE (Alert)	Incident which has a potential for or has a radioactive release with projected site boundary plume doses between 0.005 and 0.05 REM to the whole body and between 0.025 and 0.25 REM to the thyroid	*Licensee: promptly notify state and local officials within 10 miles *State/Local authorities: provide public with informational messages only if appropriate	*Licensee: activate EOC *State: activate EOC if appropriate *Locals: activate, if appropriate, EOC & put Key EOC personnel on standby *State/Licensee: monitor plume and food pathways and project food pathway doses. Assess need to take action if FDA's Preventative PAG levels for food pathways exist
4. CHARLIE-TWO (Site Area Emergency)	Incident which has a potential for or has a radioactive release with projected site boundary plume doses of 0.05 to 1.0 REM to the whole body and/or 0.25 to 5.0 REM TO the thyroid	*Licensee: promptly notify state and local officials with 10 miles *State/Local authorities: promptly activate public notification system with 2 miles, if necessary *State/Local authorities: provide public with periodic updates on food pathway actions	*Licensee/State/Local authorities: activate EOCs *State/Licensee: monitor plume and food pathways *State: consider putting milk animals on stored feed in downwind direction out to distances where food pathway doses corresponding to FDA's Preventative PAG's occur

FIGURE 7

ate of Connecticut Incident Class[2,3] & Plant Classification	Incident Description	Notification Actions[1]	Protective Actions
5. BRAVO (General emergency without Containment Breach)	Incident which has a potential for or has radioactive releases with projected site boundary plume doses of 1.0 to 5.0 REM to the whole body and/ or 5.0 to 25.0 REM to thyroid	*Licensee: promptly notify State and Local officials with 10 miles *State/Local authorities: promptly activate public notification system within 5 miles *State/Local authorities: provide public with periodic updates on protective actions	*Licensee/State/Local authorities: activate EOCs *State/Local authorities: implement immediately take shelter and access control for 2-mile radius and 5-mile downwind. Assess need to extend distance to 10 miles *State/Local authorities: evacuate 2-mile radius and out to downwind distances where plume exposure levels occur, if not constrained *State/Licensee: monitor plume and food pathways *State: put milk animals on stored feed in downwind direction out to 10 miles and access need to extend distance to areas where the FDA's Preventive PAG levels for food pathways exist *State: control milk/food distribution, as necessary, from affected area where the FDA's Emergency PAG's levels for food pathways exist
6. ALPHA (General emergency with Containment Breach)	Incident which has a potential for or has radioactive releases with projected site boundary plume doses of greater than 5.0 REM whole body and/or 25 REM to the thyroid	*Licensee: promptly notify state and local officials within 10 miles *State/Local authorities: promptly activate public notification system within 10 miles *State/Local authorities: provide public with periodic updates on protective actions	*Licensee/State/Local authorities: activate EOCs *State/Local authorities implement immediately take shelter and access control for 2-mile radius and 10-mile downwind *State/Local authorities: implement evacuation if not constrained out to 2-mile radius and 5 miles downwind. Assess need to extend distance to where plume exposures exceed class Bravo levels. *State/Licensee: monitor plume and food pathways *State: put milk animals within 10 miles in downwind direction on stored feed and assess need to extend unit to distance where the FDA's Preventative PAG levels exist for food pathways *State: control milk/food distrigution, as necessary from affected area where the FDA's Emergency PAG levels exist for the food pathways

F1

State of Connecticut Incident Class (2,3) & Plant Classification	Incident Description	Notification Actions (1)	Protective Actions

***NOTES**

1. As defined in NUREG-0654, prompt notification means: in the case where the licensee actions is the notification of State and Local officials within 10 miles, within 15 minutes of classifying the incident and, in the case where State/Local actions is the notification of the public within 15 minutes of deciding public alerting and notification is necessary.

   State agencies promptly notified by licensee are Governor's Office, State DEP, State Police, State OCP.

2. Classification of events and notification shall be done by the licensee for class Echo, Delta, Charlie-One, Charlie-Two, Bravo, and Alpha events within one hour of occurrence, in accordance with 10CFR50.72 and Connecticut State Regulations Section 19-13-E51.

3. For class Golf, Fox and Echo incidents, if the event is reportable to NRC in accordance with 10CFR50.72, then these actions shall be accomplished within one hour of occurrence.

4. State DEP or their designee.

5. Licensee can also mean facility operator.

6. State Class Echo is a more conservative classification of events than NRC's NUREG-0654 Unusual Event Class because it covers items of general public interest and all 10CFR50.72 reporting items.

Figure 7.1
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INCIDENTS FOR NOTIFICATION TO NUCLEAR REGULATORY COMMISSION (NRC), STATE, AND LOCAL OFFICIALS BY COMMERCIAL NUCLEAR POWER FACILITIES

	Incident	Facility Notification Action(1)	State Incident Class
1.	All 24-hour reportable occurrences to NRC relating to safety tech specifications (not covered below in #2)	Notify State DEP(2) within a few hours	Echo(4) (Unusual Event)
2.	10CFR50.72 reporting (excluding items in #3) and Unusual Events with no radioactive releases	Within one hour of occurrence notify NRC & State DEP(2)	Echo(4) (Unusual Event)
3.	NRC emergency class as defined in NUREG-0654		
a.	Unusual event with unplanned radioactive releases	Telephone call to NRC within one hour of occurrence of event and radiopager notification within 15 minutes of classification of Emergency to state agencies(3) and local officials within 10 miles. Verification phone call to State Police will also be made.	Delta
b.	Alert	Same	Charlie-one
c.	Site Area	Same	Charlie-two
d.	General (without major breach of containment)	Same	Bravo
e.	General (with major breach of containment)	Same	Alpha
4.	Radioactive material is unaccounted for in excess of 10CFR30.71, Schedule B as applicable 10CFR20.402 and 10CFR30.18	Notify within a few hours State DEP(2)	Fox

	Incident	Facility Notification Action[1]	State Incident Class
5.	Incidents requiring outside assistance such as:	Notify State DEP[2] after calling appropriate local community agency	Echo[4]
a.	Personnel Injuries (Requiring less than 48 hours stay in hospital, if longer, see 2)	Ambulance	(Not an Unusual Event)
b.	Fires (less than 10 minutes, longer duration, see 2)	Fire	
c.	Oil Spills	Police	
6.	Any unscheduled shutdown estimated to last more than 48 hours	Notify within a few hours to State DEP[2]	Echo[4] (Not an Unusual Event)
7.	Radioactive material transportation accident in Connecticut	Telephone call within a few hours to State DEP[2] and affected town(s)	Golf
8.	Derating caused by regulatory action	Notify within a few hours State DEP[2]	Echo[4] (Not an Unusual Event)
9.	Derating (greater than 50%) caused by equipment malfunction lasting more than 72 hours	Notify within a few hours to State DEP[2]	Echo (4) (Unusual Event)
10.	Scheduled shutdown for testing, maintenance or refueling expected to last more than 72 hours	Notify within a few hours to State DEP[2] after schedule is confirmed by NEPEX/CONVEX	Echo[4] (Not an Unusual Event)

FOOTNOTES

(1) For Class Golf, Fox, and Echo events, the facility will notify the State DEP using the radiopager with the Incident Report on the telephone call-back machine.

For Class Delta, Charlie-one, Charlie-two, Bravo, and Alpha events, the facility will utilize radiopager notification with an Incident Report on the telephone callback answering machine. A verification phone call to State Police, to ensure the radiopager was received, will also be made by the facility.

(2) State DEP or their designee.

(3) Connecticut State agencies receiving radiopager notification are the Governor's office, DEP, OCP, and State Police.

(4) State Class Echo is a more conservative classification of events than NRC's NUREG-0654 Unusual Event Class because it covers items of general public interest and all 10CFR50.72 reporting items.

RADIOPAGER MESSAGE #1

* THIS IS THE ______________________________ CONTROL.

* A STATE OF CONNECTICUT INCIDENT CLASS ________ IN PROGRESS.

* CALL IN FOR MORE INFORMATION.

(PURPOSE: TO GIVE NOTIFICATION OF AN INCIDENT AND/OR AN CHARLIE-ONE (ALERT) CONDITION.)

RADIOPAGER MESSAGE #2

* THIS IS THE ______________________________ CONTROL.

* THE STATE OF CONNECTICUT INCIDENT CLASS HAS BEEN CHANGED.

* ANOTHER RADIOPAGER UPDATE MESSAGE WILL FOLLOW.

* DO NOT CALL IN FOR INFORMATION.

(PURPOSE: TO ANNOUNCE A CHANGE TO THE NUCLEAR INCIDENT CLASS THAT WILL FOLLOW SHORTLY AS ANOTHER RADIOPAGER MESSAGE #1.)

RADIOPAGER MESSAGE #3

1. THIS IS THE ______________________________ CONTROL.

2. UPDATED INFORMATION ON THE INCIDENT IN PROGRESS IS AVAILABLE.

3. PLEASE CALL IN FOR THIS INFORMATION.

(PURPOSE: TO ANNOUNCE THAT ADDITIONAL UPDATED INFORMATION IS ON THE SYSTEM DESCRIBING ONGOING INCIDENT.)

RADIOPAGER MESSAGE #4

* THIS IS THE ______________________ CONTROL.

* RADIOPAGER MESSAGES ARE TERMINATED.

* THE PLANT IS IN A STABLE CONDITION.

* REPEAT RADIOPAGER MESSAGES ARE TERMINATED.

(PURPOSE: TO ANNOUNCE RADIOPAGER MESSAGES ARE TERMINATED.)

RADIOPAGER MESSAGE #5

* THIS IS THE ______________________ CONTROL.

* THIS IS A DRILL.

* A STATE OF CONNECTICUT INCIDENT CLASS ________ IS IN PROGRESS.

* THIS IS A DRILL.

* CALL IN FOR MORE INFORMATION.

(PURPOSE: DRILL/EXERCISE MESSAGE)

RADIOPAGER MESSAGE #6

* THIS IS THE ______________________ CONTROL.

* THIS IS A RADIOPAGER TEST MESSAGE.

* REPEAT THIS IS A RADIOPAGER TEST MESSAGE.

(PURPOSE: CONDUCT OF RECURRING TESTS OF EQUIPMENT.)

<u>VERIFICATION PHONE CALL MESSAGE TO STATE POLICE</u>

(1) THIS IS THE MILLSTONE/HADDAM NECK NUCLEAR PLANT.

(2) A STATE INCIDENT CLASS DELTA/CHARLIE-ONE/CHARLIE-TWO/BRAVO/ALPHA MESSAGE WAS SENT OUT OVER THE RADIOPAGER.

(3) TAKE FOLLOW-UP ACTION WITH STATE DEP.

______________________	______________	______________
Name of Sender	Date	Time

____

Name of Receiver (State Police)

(PURPOSE: TO OBTAIN STATE POLICE ASSISTANCE IN VERIFYING THAT STATE DEPARTMENT HAS RECEIVED RADIOPAGER MESSAGE FOR INCIDENT CLASSES DELTA, CHARLIE-ONE, CHARLIE-TWO, BRAVO, ALPHA.)

FIGURE 7.4

INCIDENT REPORT

(Telephone Call Back Message Form
(Instructions On Back)

Report Number ______________________
(Optional)

1. This is ______________________ of ______________________
(name & title of person sending message) (organization)

2. In accordance with the State Emergency Plan, this report concerns the MILLSTONE UNIT 1 / UNIT 2/ SITE / HADDAM NECK Nuclear Power Station.

3. This IS / IS NOT a drill.

4. A State of Connecticut Incident Class. (Circle worst case)

GOLF	FOX	ECHO (Unusual Event)*	DELTA (Unusual Event)	CHARLIE-ONE (Alert)	CHARLIE-TWO (Site)
BRAVO (General)	ALPHA (General)				

is being reported on ______________ at ______________.
(Date) (Time)

5. IF GOLF, FOX, ECHO, DELTA, CHARLIE-ONE (ALERT) skip to item #10.

6. The affected zones are as follows: (Enter only if distance specified in classification scheme is extended - Example A1, B1, C1 thru A10, B10, C10)

Class	Zones	Time
ALPHA	________ thru ________	________
BRAVO	________ thru ________	________
CHARLIE-TWO	________ thru ________	________

. The wind is from the ______________ into the ______________ at ________ MPH.
(Example NNW) (Example SSE)

8. It is expected to remain in the direction for ______________ hours.

9. It IS / IS NOT expected to shift and blow from ______________.
(Example NNW)

10. The event description follows: ______________________

11. Access to the Site HAS / HAS NOT been terminated.

12. The following has been requested: FIRE / POLICE / AMBULANCE / ______________.
(Other)

13. The plant status is STABLE / IMPROVING / DEGRADING.

14. A further report WILL / WILL NOT be given.

15. Please leave your name, affiliation and time at sound of tone.

END OF MESSAGE

CONI-1.03-14

INSTRUCTIONS FOR
Telephone Call Back Message Form

1. This message is prepared by the facility operator and put on the telephone call back system recorders, or if this pager-telephone call back system is inoperative use alternate means as specified in procedures.

2. The facility operator sends out radiopager messages. Individuals receiving this message call-in to get more information from the telephone recording machines. They also leave their names and affiliation and time at the tone at the end of the recorded message.

3. Individuals calling in to the telephone recorder should use this form to copy down the information.

4. The preparer of the message (facility operator) should not use technical jargon, abbreviations, etc. This person should use general layman language as much as possible.

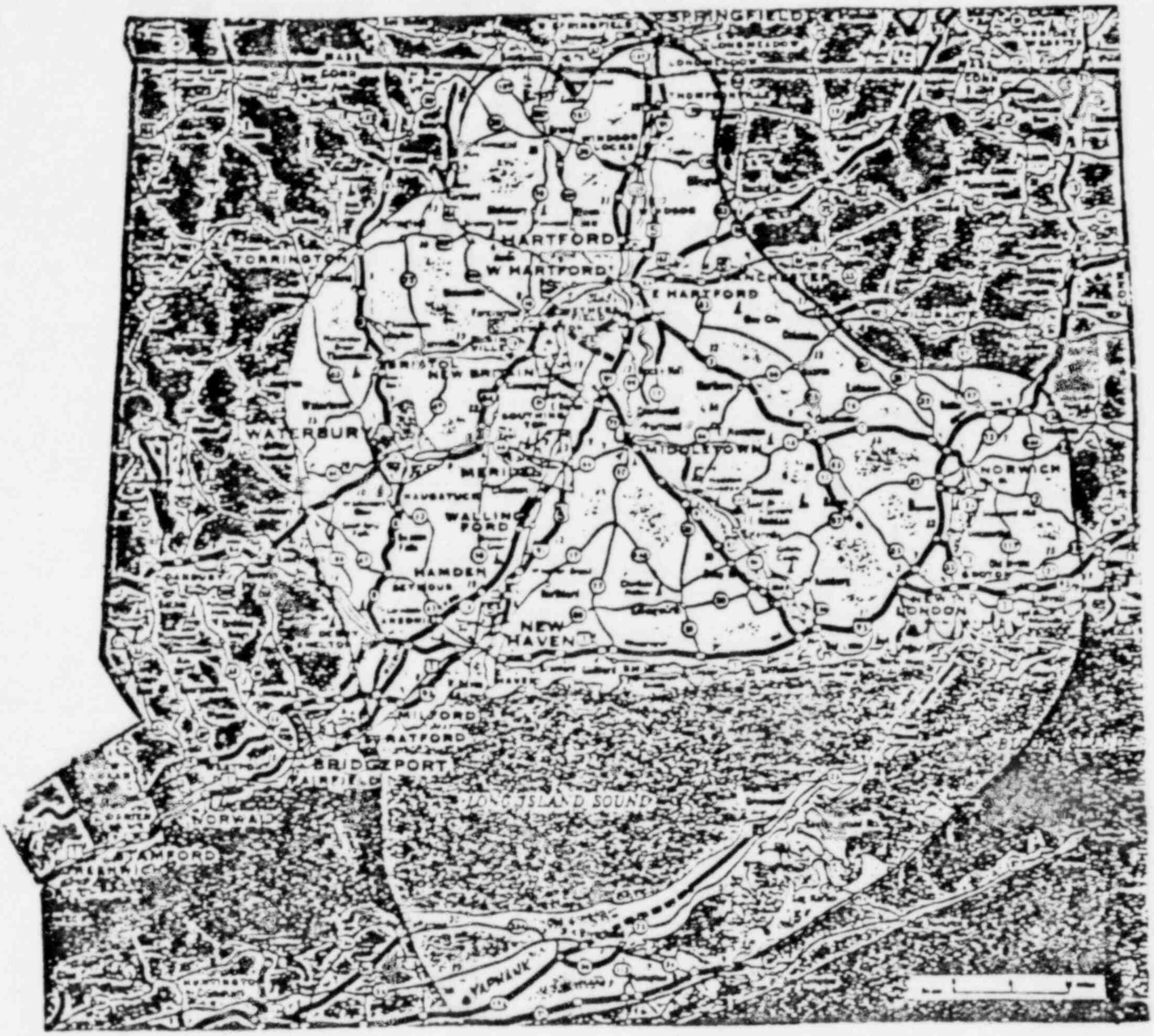
5. The preparer of the message should say "information not available" and "not applicable" when appropriate.

The following is the relationship between the State of Connecticut State Nuclear Incident Classification Scheme and the NRC Incident Classes as given in NUREG-0654.

CT State Class	NRC Class
ECHO*	Unusual event without radioactive releases.
DELTA	Unusual event with radioactive releases.
CHARLIE-ONE	Alert
CHARLIE-TWO	Site Area Emergency
BRAVO	General emergency without major breach in containment integrity.
ALPHA	General emergency with major breach in containment integrity.

7. The message prepared (facility operator) should use CHARLIE-ONE as the mechanism for generating an alert if it is apparent that the potential exists for an event more serious than DELTA, but event classification is not yet final. This will enable the local community, state agencies, and utility emergency staff to begin assembly at their emergency operations centers in a timely manner while the accident assessment is being done.

*State Class Echo is a more conservative classification of events than NRC's NUREG 0654 Unusual Event Class because it covers items of general public interest and all 10 CFR 50.72 reporting items



—RADIOPAGERS—
APPROXIMATE RANGE

CORPORATE LEVEL 1, RADIOPAGER LIST

L. F. Sillin, Jr.

W. B. Ellis

W. F. Fee

W. G. Counsil

J. P. Cagnetta

J. F. Opeka

NUSCO Nuclear Operations Duty Officers

NUSCO Public Information Duty Officer

State Department of Environmental Protection

Nuclear Emergency Planning Coordinators
(P. L. Sheehan, B. Birch)

Chief, Radiological Assessment Branch
(R. C. Rodgers)

CORPORATE LEVEL 2, RADIOPAGER LIST

Director, Corporate EOC

Manager, Ext. Communications

Manager, Tech. Support

Manager, Resources

Manager, Radiological Consequence Assessment

Meteorological Team

Environmental Sampling Team

Electrical Engineering Team

Mechanical Engineering Team

Thermal-Hydraulic Engineering Team

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-1.04

TRAINING OF CORPORATE EOC, ON-CALL STAFF

APPROVED R C Rodgers
CONI-Procedure Manual Coordinator

REVISION 0

DATE October 1981

CONCURRENCE R C Rodgers
Corporate Nuclear Emergency Plan Coordinator

TRAINING OF CORPORATE EOC, ON-CALL STAFF

1.0 PURPOSE

This procedure describes the training program for the Corporate EOC, on-call staff.

2.0 APPLICABILITY

This procedure applies to all Corporate EOC, on-call staff as listed in CONI Procedure 1.02.

3.0 REFERENCES

3.1 CONI Procedure 1.02, Corporate Organization for Nuclear Incidents.

4.0 DEFINITIONS

4.1 The Corporate Emergency Organization Coordinator is defined in CONI 1.01 as the Manager, Radiological Consequence Assessment Branch.

5.0 RESPONSIBILITIES

5.1 The Corporate Emergency Organization Coordinator is responsible for scheduling and operating the training sessions in accordance with the training program described in this procedure.

5.2 The Corporate Emergency Organization Coordinator is responsible for maintaining a file documenting the training programs; i.e., attendance, lesson plans and work sheets.

5.3 The Lead On-Call Managers of the Corporate EOC, On-Call Staff are responsible to insure that their on-call staff and on-call supporting team members are familiar with the ongoing changes to CONI Procedures Section 10 and the CONI procedure section specific to their on-call responsibility. This should be documented in accordance with this procedure.

5.4 Each member of the Corporate EOC On-Call Staff is responsible to support the training program described in this procedure through attendance at all applicable scheduled training sessions.

5.5 The Lead Manager of Public Information is responsible for scheduling and operating the Media Information Session.

6.0 INSTRUCTION

The training program described in this procedure is to insure that a knowledgeable, responsive and effective Corporate EOC, On-Call Organization exists.

6.1 Annual Training

6.1.1 The Corporate Emergency Organization coordinator will schedule and operate the training modules listed in Attachment 8.1. These sessions are generic training applicable to all the Corporate EOC On-Call Staff.

6.1.2 The Lead Director and Lead Managers will schedule and operate the training modules listed in Attachment 8.2.

6.1.3 A Lead Manager of the Corporate EOC staff should participate with his station counterpart in specific training drills as necessary; e.g., the Lead Manager, Radiological Consequence Assessment can participate in the stations health physics, radiological monitoring and emergency medical drills as necessary.

6.1.4 The Lead Manager of Public Information shall schedule and operate a Media Information session on an annual frequency. He will seek assistance from the various Corporate EOC On-Call Staff as necessary.

6.2 Exercises

6.2.1 The Corporate EOC will participate in all small-scale and full-scale exercises scheduled by the State of Connecticut.

6.2.2 The Corporate Emergency Coordinator will notify all Corporate EOC, on-call staff of the scheduled exercises identified in 6.2.1.

6.3 Documentation

6.3.1 The Corporate Emergency Organization coordinator will maintain a central training file to document all Corporate EOC, on-call staff training modules listed in Attachment 8.1 and 8.2.

6.3.2 The Corporate Emergency Organization Coordinator will document the generic training modules listed in Attachment 8.1 using the forms in Attachment 8.3.

6.3.3 The Lead Director and Lead Managers will document the specific training modules listed in Attachment 8.2

using the forms given in Attachment 8.3 (for Module 1) and Attachment 8.4 (for Module 2).

7.0 FIGURES

None.

8.0 ATTACHMENTS

8.1 Generic Annual Training Modules for Corporate EOC On-Call Staff.

8.2 Specific Annual Training Modules for Corporate EOC On-Call Staff.

8.3 Corporate EOC, On-Call Staff Training Record.

8.4 Corporate EOC, On-Call Staff, Acknowledgement of Review of CONI Procedure Change.

ATTACHMENT 8.1

GENERIC ANNUAL TRAINING MODULES FOR CORPORATE EOC, ON-CALL STAFF

1.0 Millstone and Haddam Neck Station Emergency Plans (overview).

2.0 CONI Procedures Section 1.0 (overview and discussion).

3.0 The Corporate EOC, Station EOF, TSC, Control Room, State EOF, Media Center, Local Community EOC, organizations, their functional responsibilities and the interfaces.

4.0 Hands on setup of the Corporate EOC and associated work centers to develop familiarity with equipment, layout, etc.

5.0 Corporate EOC training drill. This could be a tabletop session or an actual play with simulated external input.

6.0 Participation with Millstone and/or Haddam Neck Emergency Organizations in a coordinated training drill.

ATTACHMENT 8.2

SPECIFIC ANNUAL TRAINING MODULES FOR CORPORATE
EOC, ON-CALL STAFF

The following training modules will be conducted by the Lead Director* and Lead Managers of the Corporate EOC, On-Call Staff.

1.0 Specific CONI procedure manual section procedures; e.g., Lead Manager, Radiological Consequence Assessment will train his on-call staff in CONI Section 4 procedures.

2.0 Familiarity with applicable sections of CONI procedures.

*This can be coordinated by the Coordinator, Corporate Emergency Organization for the Lead Director.

ATTACHMENT 8.3

CORPORATE EOC, ON-CALL STAFF TRAINING RECORD

PART A - TRAINING MODULE DESCRIPTION

Training Module Name:

Date:

Time:

Place:

Instructor (name):

Topical Speakers:

Scope of Session:

(Attach lesson plans, etc., as appropriate.)

ATTACHMENT 8.3

CORPORATE EOC, ON-CALL STAFF TRAINING RECORD

PART B - ATTENDANCE REGISTER

Training Module Name:

Date: ______________________ Time: __________

Print Name (first middle initial last)	Signature

Instructor Name:

Signature: Date:

NORTHEAST UTILITIES

NU

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

ATTACHMENT 8.4

TO R. C. Rodgers
Manager, Radiological Assessment Branch

FROM

SUBJECT Corporate EOC On-Call Staff, Acknowledgement of Review of CONI Procedure Changes

Both I and my on-call staff (and on-call supporting team members) listed below have reviewed the CONI procedure changes made in Transmittal No. _______, dated __________________:

On-Call Staff Names (Print)	Initials/Signature
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-3.01

ON-CALL CORPORATE EOC DIRECTOR - LOGISTICS AND RESPONSIBILITIES

APPROVED	W H Owen [signature] Senior Vice President NE&O
REVISION	1
DATE	February 1982
CONCURRENCE	R C Rodgers [signature] Corporate Nuclear Emergency Plan Coordinator

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

ON-CALL CORPORATE EOC DIRECTOR - LOGISTICS AND RESPONSIBILITIES

1.0 PURPOSE

This procedure describes the responsibilities and duties of the on-call Corporate EOC Director as they relate to the coordination of this function, acquisition of backup personnel and specific responsibilities.

2.0 APPLICABILITY

This procedure applies to the On-Call Corporate EOC Director.

3.0 REFERENCES

3.1 CONI Procedure Manual Section 1.0.

3.2 CONI Procedure Manual Procedures 2.01, 4.01, 5.01, 6.01, 7.01, 8.01, 9.01.

4.0 DEFINITIONS

4.1 The "on-call" personnel are those personnel so designated in this procedure who will according to posted schedules, carry a radiopager and who will respond during the period of emergency operations.

4.2 NUSCO Emergency Operations Center - That location designated by corporate guidelines where the Berlin on-call personnel are to report (Berlin Complex, Room N101).

4.3 Normal Hours - The hours between 0800 and 1630 of each working weekday.

4.4 Off Normal Hours - The hours between 1630 and 0800 on each working weekday and all hours on weekends and holidays.

4.5 Director - The Director of the Corporate EOC who is on-call in accordance with posted schedules.

4.6 Lead Director - Lead Director of the Corporate EOC, who is the Senior Vice President of Nuclear Engineering & Operations.

5.0 RESPONSIBILITIES

5.1 The Director after receiving notification will respond in accordance with the detailed instructions as listed in Section 6.0 of this procedure.

6.0 INSTRUCTIONS

6.1 On-Call Personnel

The following personnel are to be considered as on-call personnel and it includes those who may act for the Director in his absence.

Director - Corporate EOC

W. G. Counsil, Lead Director*
J. P. Cagnetta*
J. F. Opeka*
R. P. Werner
G. L. Johnson

*These personnel routinely carry Level 1 radiopagers in addition to fulfilling this on-call function. The others, when on call, carry Level 1 radiopagers.

6.2 On-Call Schedule

6.2.1 The Lead Director shall provide input to the Nuclear Operations Duty Officer once a year on the rotating schedule for those individuals listed in 6.1 in accordance with CONI Procedure 1.02.

6.2.2 The on-call weekly schedules may be varied according to individual's circumstances providing the Director does the following:

6.2.3.1 Notify the NUSCO Nuclear Operations Duty Officer.

6.2.3.2 During normal hours, schedule changes are necessary only if the Director is going out of state.

6.2.3.3 During off-normal hours, the Director shall stay no more than 75 minutes drive from the Berlin EOC. If not, he should change schedule.

6.3 Normal Hours

6.3.1 The Director can be reached by radiopager (beeper) or his office telephone extension.

6.3.2 The on-call personnel listed in Paragraph 6.1 not at their telephone extensions, but in the Berlin office complex will inform their secretaries as to where they are going and leave a telephone number if any.

6.4 Off Normal Hours

6.4.1 The Director can be reached by radiopager (beeper).

6.4.2 In order to obtain call-out resources as necessary, other personnel in 6.1 not on-call should notify the on-call Director as to where they can be reached by telephone during off-normal hours if they plan to be out-of-state for more than one day such as weekends, holidays, business trips, etc.

6.5 Fan Out Notification

6.5.1 CHARLIE-ONE, CHARLIE-TWO, BRAVO, ALPHA

6.5.1.1 Upon notification by radiopager or by telephone and after calling into the station call back system and/or the NUSCO Nuclear Operations Duty Officer for more information, the Director will immediately notify for purposes of a call out resource, in the order listed, at least two of the following personnel if possible. (He may delegate this task to the NUSCO Nuclear Operations Duty Officer.)

W. G. Counsil
J. F. Opeka
J. P. Cagnetta
R. P. Werner
G. L. Johnson

The Director will then call into the Berlin EOC call-back system and identify time of arrival at the EOC. The on-call Director will report within 90 minutes of the classification of the event to the Berlin EOC. This means about 75 minutes after the radiopager notification.

6.5.1.2 Upon arrival at the Berlin EOC, the Director will set up telephones, status boards, etc., and establish communications with the stations, the State EOC, and the Media Center.

6.5.1.3 The Director will assess the need to call in more support staff as necessary.

6.5.2 DELTA Events

6.5.2.1 For DELTA events, the Level 1 radiopager Director will, if necessary, call the NUSCO, Nuclear Operations Duty Officer for more details and offer assistance. The Level 2 radiopager Director can also do this if he feels it is necessary.

6.5.3 The Lead Director will have prepared telephone number listings of his on-call alternates listed in Section 6.1. These will be distributed to individuals listed in Section 6.1.

6.6 Reporting Time Allowance

For Incident Class CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA events, the Director shall report to the NUSCO Emergency Operations Center within 90 minutes after classification of the event by the nuclear station. This means about 75 minutes after radiopager notification.

6.7 Required Reading

The on-call personnel in 6.1 shall read and understand References 3.1 and 3.2. This information will enable them to better perform their responsibilities and give them added insight as to the overall emergency operations organization.

6.8 Some Recommended Actions for the Director of Corporate Emergency Organization

The following are some recommended actions for the Director of Corporate Emergency Organization during a CHARLIE-ONE, CHARLIE-TWO, BRAVO or ALPHA emergency. The recommended actions are listed not in any particular order and should be rearranged, as appropriate, to insure maximum effectiveness of the Corporate Emergency Organization:

6.8.1 Insure that Room N101 is rearranged in accordance with the Corporate EOC sketch. On a per-shift basis, get report on equipment operation (telephones, etc.) and staff attendance at the Corporate EOC. Inform Mgr. Resources of any inoperable equipment for his action.

6.8.2 Verify communications are established between the Director of Corporate Emergency Organization and the affected plant Director of Station Emergency Operations, as well as, the Governor's Office and other related Director of Corporate Emergency Organization phones.

Notify the Manager of Resources of any inoperable phones for action.

6.8.3 Initially when establishing the EOC, direct the Manager of Resources to find additional people to man the various phones under the control of the Manager of External Communications. One person should be assigned to each phone to properly monitor telephone communications.

6.8.4 Log all directions to various EOC Managers using either 3-part memos, log book or other appropriate means. For each action, specify time, as well as the date.

6.8.5 Direct the Manager of Resources to establish relief coverage for all the Corporate Emergency Organization positions based on 3 or 2 shifts per day.

6.8.6 Direct the Manager of Resources to determine what additional Corporate Emergency Organization Managers and Directors are present in Berlin for special assignments.

6.8.7 After making contact with the Governor's office, insure that an available alternative Director of the Corporate Emergency Organization is sent to the State EOC for liaison and to act as the official company spokesman. Assign tasks to other available Directors who have come in, as necessary.

6.8.8 Periodically contact the Director of the affected site EOF for status reports on the plant.

6.8.9 Work with the Director of the affected station emergency organization in a supporting role with the following objectives in mind:

1. Stop or minimize the source of problem.

2. Contain the results of the problem.

3. Evaluate the results of the problem.

4. Clean-up the results of the problem and restore the station to a normal condition.

6.8.10 Make sure that the appropriate corporate officers are informed of the status of the affected plant at least, initially, and on an hourly basis using the Nuclear Operations daily plant status report.

6.8.11 Make sure the Governor's office is informed of the status of the affected plant at least, initially, and on an hourly basis.

6.8.12 Monitor the status of the plant and respond to the station's request for information. Independently evaluate the station's action and, if necessary, direct their course of operation. (If you decide to direct the course of action at the plant, the Director of the affected station EOF is essentially released of his responsibility.)

6.8.13 If the status of the plant and incident are reduced below the CHARLIE-ONE (alert) level, take action to disassemble the Corporate EOC center. Inform the affected station of your action and direct each manager to prepare a report of his actions during the incident, within one working day.

The Corporate Nuclear Emergency Plan Coordinator will assume the responsibility for collecting all the reports, including site reports and preparing a consolidated report for corporate management's review.

6.8.14 Coordinate/ensure the review of the Station modifications with the appropriate Nuclear Review Board.

6.8.15 Establish the Recovery Organization. Ensure a smooth transition from the Emergency Organization to the Recovery Organization.

7.0 FIGURES

Not applicable.

8.0 ATTACHMENT

Not applicable.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-4.01

ON-CALL RADIOLOGICAL CONSEQUENCE ASSESSMENT STAFF LOGISTICS

APPROVED RCRodgers
Lead Manager, Radiological Consequence Assessment

REVISION 2

DATE November 1981

CONCURRENCE RCRodgers
Corporate Nuclear Emergency Plan Coordinator

ON-CALL RADIOLOGICAL CONSEQUENCE ASSESSMENT STAFF LOGISTICS

1.0 PURPOSE

This procedure defines the responsibilities and duties of the NUSCO Manager of Radiological Consequence Assessment as they relate to the coordination and acquisition of personnel and other support services needed during emergency operations at a nuclear power generation facility.

2.0 APPLICABILITY

This procedure applies to the on-call Manager of Radiological Consequence Assessment, during the period of emergency operations and the supporting staff of the Meteorological Team and the Environmental Sampling Team.

3.0 REFERENCES

3.1 NUSCO Nuclear Engineering and Operations Procedure NEO 2.04, Nuclear Incidents Response Plan.

3.2 CONI Procedure Manual Section 1.0.

4.0 DEFINITIONS

4.1 The "on-call" personnel are those personnel so designated in this procedure who will carry a radiopager and who will respond to the period of emergency operations.

4.2 NUSCO Emergency Operations Center - That location which is designated by corporate guidelines where the Berlin on-call personnel are to report (Berlin Complex, Room N101).

4.3 Normal Hours - The hours between 0800 and 1630 of each working weekday.

4.4 Off Normal Hours - The hours between 1630 and 0800 on each working weekday and all hours on weekends and holidays.

4.5 Manager - The on-call Manager of Radiological Consequence Assessment.

4.6 On-Call Lead Manager - Lead Manager of Radiological Consequence Assessment, who is the Manager of Radiological Assessment Branch.

4.7 On-call designation is that time period from 0800 Monday morning through seven consecutive days until 0800 the following Monday morning. It includes Monday if it is a holiday.

5.0 RESPONSIBILITIES

5.1 The Manager and the on-call staff, after receiving notification of an emergency, shall respond to the detailed instructions as listed in Section 6.0 of this procedure.

6.0 INSTRUCTIONS

6.1 On-Call Personnel

6.1.1 The following personnel are to be considered as on-call personnel and it includes those who may act as the Manager in his absence:

Mgr. or On-Call Designee

R. C. Rodgers, Lead Manager
R. A. Crandall
E. J. Molloy
H. W. Siegrist
J. W. Doroski

6.1.2 The following personnel are considered as on-call for the meteorology assessment.

D. S. Powell (Team Leader)
H. L. Chamberlain
J. A. Santovasi
G. S. Kowalczyk

6.1.3 The following personnel are considered as on-call for the Environmental Sampling Team, Middletown operations.

D. W. Lenth (Team Leader)	R. Nejfelt
W. Peterson	R. Marchinkoski
G. Martel	D. Hess
R. Parker	J. Quinn
D. Struthers	R. Bedard

6.2 On-Call Schedule

6.2.1 The Lead Manager shall provide input to the Nuclear Operations Duty Officer once a year on the rotating schedule for those individuals listed in 6.1 in accordance with CONI 1.02.

6.2.2 The Meteorological and the Environmental Sampling Team Leaders will provide input once a year to the Lead Manager on their team membership.

6.2.3 The on-call weekly schedules may be varied according to individual's circumstances providing the individual does the following:

6.2.3.1 Personnel in Section 6.1 notify the NUSCO Nuclear Operations Duty Officer.

6.2.3.2 During normal hours, schedule changes are necessary only if the individual is going out of state.

6.2.3.3 During off-normal hours, on-call person listed in 6.1.1 and 6.1.2 shall stay no more than 75 minutes drive from the Berlin EOC. If not, he should change schedule.

6.2.3.4 At all times, on-call person listed in 6.1.3 shall stay no more than 75 minutes drive from the Middletown Station. If not, he should change the schedule.

6.3 Normal Hours

6.3.1 Those persons listed in 6.1 can be reached by radiopager (beeper) or their telephone extension.

6.3.2 Those individuals listed in Paragraph 6.1 not at their telephone extensions, will inform their secretaries as to where they are going and leave a telephone number if any.

6.4 Off Normal Hours

6.4.1 The on-call Manager and staff listed in Paragraph 6.1 can be reached by radiopager (beeper).

6.4.2 Other personnel in 6.1.1 not on-call should notify the Manager as to where they can be reached by telephone during off normal hours, if they plan to be away from home or out-of-state for an extended period.

6.4.3 On-call personnel in 6.1.2 and 6.1.3 will notify the Manager as to where they can be reached by telephone during off normal hours, if they plan to be away from home for an extended period.

6.5 Fan Out Notification

6.5.1 CHARLIE-ONE, CHARLIE-TWO, BRAVO, ALPHA

6.5.1.1 Upon notification by radiopager or by telephone of a CHARLIE-ONE, CHARLIE-TWO, BRAVO or ALPHA emergency, the Manager will immediately notify in the order listed, at least two of the following personnel.

R. C. Rodgers
R. A. Crandall
E. J. Molloy
H. W. Siegrist
J. W. Doroski

The Manager will then call into the Berlin EOC call-back system and identify time of arrival at the EOC. All notified personnel will report within 90 minutes of the classification of the event to the Berlin EOC.

6.5.1.2 When notified, the on-call Meteorological and Environmental Sampling team members will call into the Berlin EOC call-back system and give their name, emergency function and identify time of arrival at respective work stations. They will then report to their respective work stations arriving within 90 minutes of the classification of the event. They will also call at least one more member of their respective teams to come in to provide assistance.

6.5.1.3 Upon arrival at the Berlin EOC and their respective work centers, the Manager and supporting staff will set up telephones, status boards, etc., and establish communications with counterparts at the stations, the State EOC, and also with the Environmental Sampling Team in Middletown.

6.5.1.4 The Manager will assess the need to call in more support staff as necessary.

6.5.2 DELTA Events

6.5.2.1 For DELTA events, the on-call Manager will call the station Duty Officer or chemist for more details and offer assistance. The on-call Manager will consult with the Lead Manager as necessary.

6.5.2.2 For DELTA events, the Lead Manager will call, if necessary, the on-call Manager and any other support staff. If the Lead Manager is out of town, he will assign this function to the on-call Manager.

6.5.3 The Lead Manager will have prepared telephone number listings of his on-call staff. These will be distributed to all on-call staff.

6.6 Reporting Time Allowance

6.6.1 The on-call Manager and the Meteorological team member shall report to the NUSCO Emergency Operations Center within 90 minutes after classification of the event by the nuclear station. This means about 75 minutes after radiopager notification.

6.6.2 The on-call Environmental Team personnel listed in Paragraph 6.1.3 will report within 75 minutes to the Middletown Station Office after receiving their notification to report.

6.7 Required Reading

6.7.1 The Manager of Radiological,Assessment and his staff shall read and understand reference 3.1 and 3.2. This information will enable the Manager and designees to better perform their responsibilities and give them added insight as to the overall emergency operations organization.

7.0 FIGURES

Not applicable.

8.0 ATTACHMENT

Not applicable.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-4.02

ON-CALL MANAGER OF RADIOLOGICAL CONSEQUENCE ASSESSMENT, RESPONSIBILITIES AND GENERAL GUIDELINES

APPROVED	RCRodgers Lead Manager, Radiological Consequence Assessment
REVISION	1
DATE	February 1982
CONCURRENCE	RCRodgers Corporate Nuclear Emergency Plan Coordinator

ON-CALL MANAGER OF RADIOLOGICAL CONSEQUENCE ASSESSMENT, RESPONSIBILITIES AND GENERAL GUIDELINES

1.0 PURPOSE

To provide the Corporate Manager of Radiological Consequence Assessment with a listing of his major responsibilities and some general guidelines on how to fulfill each responsibility.

2.0 APPLICABILITY

This procedure should be used during any nuclear incident involving radiation by the on-call Corporate Manager of Radiological Consequence Assessment.

3.0 REFERENCES

3.1 Millstone Station Emergency Plan Implementing Procedures.

3.2 Haddam Neck Station Emergency Plan Procedures.

3.3 CONI Procedures - Section 4.

3.4 CONI Procedure 1.02.

3.5 EMIT Manual (on Radiological Assessment Branch Reference Library)

3.6 State of Connecticut and Local Community Emergency Response Plans. (RAB Reference Library)

3.7 State of Connecticut Ingestion Pathway Plan (RAB Reference Library)

4.0 DEFINITIONS

None.

5.0 RESPONSIBILITIES

The on-call Corporate Manager of Radiological Consequence Assessment is responsible for the use of this procedure.

6.0 INSTRUCTIONS

6.1 Checklist

Attachment 8.1 provides a checklist of the tasks and responsibilities of the on-call Corporate Manager of Radiological Consequence Assessment. This checklist should be completed to ensure that no items are overlooked.

6.2 Assistance

Attachment 8.2 lists the phone numbers of individuals and groups that can provide assistance during an incident. The appropriate people should be contacted if their support is required. If the incident goes beyond 12 hours, consideration should be given to planning personnel schedules for 24-hour coverage.

6.3 Responsibilities

The following lists the major responsibilities of the Corporate Manager of Radiological Consequence Assessment and some general guidelines on how to carry out these responsibilities:

6.3.1 Support the Site Manager of Radiological Consequence Assessment

It is important to remember that the Site Manager has the primary responsibilities in regard to radiological assessment and the Corporate Manager functions as his support. Hence, it is important to determine the Site Manager's priorities for support. For example, the Site Manager may have a good handle on the offsite doses but may need assistance in determining how to get personnel into a high radiation area to stop the source of the leak.

6.3.2 Determine Source Terms

It may be necessary to determine the amount or concentration of radioactivity in a particular system component or area in order to estimate release rates, potential release rates, or back-calculate releases which have already occurred. Some methods to determine source terms include:

6.3.2.1 Grab sample results - data available from station - gross counts or isotopics - gases, iodines or particulates, or liquid activities.

Consider representativeness as a function of time and sample location. Consider decay of short-lived activity.

Some guidelines are available in CONI-4.03 on determining concentrations of noble gas from a dose rate measurement taken on a grab sample container.

6.3.2.2 Radiation monitor readings - Fixed or portable radiation monitors used to take dose rate readings outside or inside of a volume source may be used along with standard geometry and shielding calculations to estimate the amount of radioactivity inside the volume.

- Procedure CONI-4.03 contains some simplified calculations.
- Methods of estimating curies in the containment as a function of radiation monitor readings are available in Station procedures.
- Consider the variation of the monitor reading with time.
- Determine if the monitor is reading beta in addition to gamma radiation.
- Determine if the reading is affected by other sources.

6.3.2.3 Process system inventories - Samples taken during normal operations provide information on typical inventories in various process streams in the plant. The EMIT Manual contains reactor coolant isotopics and offgas isotopics. Discharge permits contain liquid and gaseous waste tank isotopics.

6.3.3. Determine Release Rates

Methodology for determining release rates is given in the following procedures:

CY EPP 1.5-7
MP EPIP 4201
CONI-4.03

6.3.4 Determine Offsite Whole Body and Thyroid Doses

Methodology for determining offsite doses is given in the following procedures.

CY EPP 1.5-7
MP EPIP 4201
CONI-4.04

GASPAR or AIREM runs can also be made.

If an immediate concern exists, verify the site calculations using the site procedures as soon as possible. As time permits, perform more detailed calculations. Verify incident classification as soon as possible.

6.3.5 Determine Ingestion Pathway Doses

Methodology for determining offsite doses via the ingestion pathway of contaminated food products is given in procedure CONI-4.07.

6.3.6 Compile and Analyze Emergency Monitoring Team (EMT) Data

Forms for compiling EMT data are given in Procedure CONI-4.05. The data should then be analyzed for the purposes of:

- Estimating offsite dose rates or concentrations.
- Verifying or modifying the results of calculations based on release rates.
- Locating the plume as a function of time.
- Recommending additional sample locations.

6.3.7 Direct the Collection of Environmental Samples

Production Operations Services Laboratory personnel should be contacted for the collection of environmental samples. Appropriate phone numbers are given in Attachment 8.2. Guidance on types of samples to be taken, recommended sampling locations and times and a listing of all sampling locations are given in CONI-4.06.

6.3.8 Direct the Analysis of Environmental Samples

Phone numbers for Environmental Laboratories are given in Attachment 8.2 and in CONI-4.06. Guidance on recommended analyses are given in Procedure CONI-4.06. Forms for compiling data from the Environmental Laboratories are given in CONI-4.05.

6.3.9 Interface with State and Federal Agencies in the Collection, Analyses and Interpretation of Environmental Data and Dose Projections

The State and Federal agencies have the capability to obtain and analyze environmental data which can be of valuable assistance in determining offsite doses. They have a number of TLD's located around the site. Helicopters or planes may be used for dose rate surveys or air samples. The state has procedures for collection and analyses of samples from the ingestion pathways.

These agencies may very well request information or guidances on which sampling locations to use based on releases, meteorology and our own EMT data. The following points should be considered in providing such guidance:

- Refer to Procedure CONI-4.06 for guidance on locations.

- The outside agency sampling and monitoring should supplement our program in terms of time and location. Avoid too much duplication.

- Depending on the extent of samples being taken and hence laboratory capacities, duplicate or split samples between NU and the outside agency should range from 5-20% as a QA check on results.

- Recommendations as to the types of analyses needed based on known release isotopics should be made in order to reduce wasted time at the analysis laboratory.

The results from outside agencies should be recorded using the same methodology as given in CONI-4.05.

6.3.10 Direct the Calculation and Interpretation of Meteorological Data

An on-call meteorologist reports to the Manager of Radiological Consequence Assessment. Their names and home phone numbers are listed in Attachment 8.2. In most cases, they should be assigned the responsibility to obtain the meteorological data and perform X/Q calculations.

Meteorological data is available from a number of sources including:

- Station control room or EOC readout of wind direction, wind speed and ΔT. (Past and present data.)

- Any TSO connected to the Engineering computer. This data may be obtained as follows:

  - LOGON as appropriate.

  - Enter EDAN.

  - Enter 1 for Bimonthly file.

  - Enter 1, 2, or 3 for desired output option.

  - Enter A for Millstone data or B for CY data. If those towers are down and backup data is desired, then Enter H for Norwalk or E for Maromas.

  - Enter the appropriate julian calendar day and times required. Be sure to adjust EDAN's EST to EDT during daylight savings periods.

  - Enter * to display all parameters for that time period.

  (Only past data is available.)

- EDAN host system - Procedures are in the EDAN room for polling past and present information from a particular site.

- Met tower computer - If the EDAN host cannot be used, information may still be available at the computer at the met tower. Trained individuals may be sent down to obtain this data (past and present data). The security guards have keys.

- Traveler's Weather Service - A contract has been established with Traveler's to provide meteorological information during an emergency. Phone numbers are given in Attachment 8.2. They are capable of predicting future conditions as well as providing past and present information.

6.3.11 - Provide Emergency Dosimetry Services

Obtain or assist the Manager of Resources in obtaining additional dosimetry or monitoring instrumentation as necessary from:

- NUSCO TLD Lab.
- The alternate nuclear site.
- Other nuclear facilities in the area; e.g., Combustion Engineering, Electric Boat, Vermont Yankee, Yankee Westboro, etc.

Phone numbers are given in Attachment 8.2.

6.3.12 Provide Additional Health Physics Personnel

Work with the Manager of Resources to provide additional HP personnel if required. Personnel may be available from many of the groups shown in Attachment 8.2.

6.3.13 Provide Technical Support

The station may require technical support in a variety of areas. For example, shielding calculations, internal dose assessments, interpretation of regulations, etc. The appropriate RAB staff should be called out to help in providing such assistance. Anticipate as much as possible these needs.

6.3.14

Establish Information Support Center to Local Communities

Call out RAB staff knowledgeable in local community Emergency Plans. Establish telephone communications. (Reference 3.6 and 3.7).

6.4 NUSCO EOC Functions

In addition to fulfulling the above responsibilities, the following functions should be performed while acting as the Manager of Radiological Consequence Assessment:

6.4.1 Keep the NUSCO EOC Director informed of all significant items within your responsibility.

6.4.2 Interact with the other EOC managers in order to keep them informed of items which may affect the completion of their responsibilities.

6.4.3 Maintain a log of information, phone calls, actions, etc.

6.4.4 Maintain communications with your staff in the Work Center and keep them informed as necessary.

6.4.5 Keep aware of the status of plant conditions, corrective actions, etc. which could have an effect on your decisions.

6.4.6 Manage and direct staff activity. Anticipate conditions/actions as much as possible. Plan ahead.

7.0 FIGURES

None.

8.0 ATTACHMENTS

8.1 Task Checklist.

8.2 List of Phone Numbers.

TASK CHECKLIST

		Completed By
1.	Inform NUSCO Duty Officer and EOC Director of your presence and planned location.	________
2.	Contact additional RAB personnel for support.	________
3.	Establish following phone connections at EOC:	
	a. Hot line to station RCA Manager.	________
	b. Internal extension -	________
	c. Outside line -	________
4.	Establish following phone connections at Work Center:	
	a. Hot line to station RCA Manager.	________
	b. Hot line to POSL.	________
5.	Establish communications with:	
	a. Station Manager RCA - ________ Name	________
	b. On-call meteorological team - ________ Name	________
	c. On-call POSL individual - ________ Name	________
	d. State DEP Office/State EOC post in EOC and Work Center.	
6.	Maintain log book of all activities.	________
7.	Consider whether schedule arrangements are necessary to ensure 24-hour Radiological Consequence support for the duration of the emergency.	________
8.	Call for additional assistance - see Attachment 8.2.	________

TASK CHECKLIST

	Completed By
9. Determine which concerns the Station Manager of RCA wants priority assistance on from Corporate Office - Section 6.3.1.	________
10. Determine source terms - Section 6.3.2.	________
11. Determine release rates - Section 6.3.3.	________
12. Determine offsite whole body and thyroid doses - Section 6.3.4:	
a. Using station's simplified procedures.	________
b. Using more refined methods (e.g., CONI-4.04).	________
13. Determine ingestion pathway doses - Section 6.3.5.	________
14. Compile and analyze EMT data - Section 6.3.6.	________
15. Direct the collection of environmental samples - Section 6.3.7.	________
16. Direct the analysis of environmental samples - Section 6.3.8	________
17. Interface with State and Federal agencies - Section 6.3.9.	________
18. Direct the calculation and interpretation of meteorological data - Section 6.3.10.	________
19. Provide emergency dosimetry services - Section 6.2.11.	________
20. Provide additional Health Physics Personnel - Section 6.2.12.	________
21. Provide technical support (e.g., shielding calculations, internal dose assessments, etc.).	________
22. Establish local Community Emergency Plan assistance group in RAB.	________

	Completed By
23. Keep EOC director and other managers informed of all appropriate items.	____________
24. Maintain awareness of the status of plant conditions.	____________

PHONE NUMBERS

GROUP/INDIVIDUAL	WORK	HOME
1. RAB Staff		-
R. C. Rodgers		
J. E. Mercuri		
A. I. Liponoga		
R. A. Crandall		
H. W. Siegrist		
D. W. Miller		
J. W. Doroski		
E. R. Brezinski		
R. G. Christie		
J. G. McHugh		
A. A. Cardillo		
R. E. Brisco		
D. R. Stands		
L. L. Vanderhorst		
T. M. Matovic		
R. A. Gustafson		
E. J. Molloy		
L. J. Landry		
P. L. Sheehan		
M. E. Birch		
C. R. Palmer		
K. P. Steinmeyer		
E. H. Donnelly		
E. M. Pyne		
A. S. Klotz		
G. H. Baskette		
K. D. Morgan		
M. Brookes		
2. Meteorological/EDAN		
D. S. Powell		
J. A. Santovasi		
H. L. Chamberlin		
G. S. Kowalczyk		
S. Sorentino		
EDAN Room	Old	
Traveler's Weather	-	

PHONE NUMBERS (Continued)

GROUP/INDIVIDUAL	WORK	HOME
3. Production Operation Services Lab		
D. W. Lenth		
G. Martel		
B. Peterson		
R. Parker		
D. Struthers		
Hot Line - RCR Office to Middletown	PLAR (Auto Ring - no extension to dial)	
4. Berlin EOC Phones		
Work Center Extensions		
5. Environmental Laboratories		
a. Chemical Waste Management of Massachusetts, Inc. (Formerly INTEREX)		
Richard Fix		
David Newton		
b. RMC — General Number		
Emergency Number		
Rosemary Hogan		
c. Teledyne — Andrew Hayter		
J. David Martin		
Hewitt Jeter		
d. State of Conn. — Governor's Office		
State DEP Office		
State OCP Office		
State DEP-EOC		
6. Millstone		
Control Room - Unit 1		
Control Room - Unit 2		
Chem. Lab.	(75) -	
A. G. Cheatham		
E. Farrell		
B. Granados/E. Laine		
MP1 HP		

PHONE NUMBERS (Continued)

GROUP/INDIVIDUAL	WORK	HOME
MP2 HP		
EOC Extension - RCA Manager		
Hot Line - RCR office to EOC RCA Manager	PLAR (Auto Ring - no extension to dial)	
7. Conn. Yankee		
Control Room		
Test		
Clow		N/A
Quinn		
Chem. Lab.		
HP		
EOC Extension - (Tie Line or Direct 3EXT)	Dose Assessment RCA Manager DEP Y	
Hot Line - RCR office to EOC RCA Manager	PLAR (Auto Ring - no extension to dial)	
8. Local Nuclear Facilities HP Support		
Other Nuclear Power Plants i.e, Vermont Yankee, Yankee Rowe, Pilgrim, Indian Point, Shoreham	Contact INPO They will contact other utilities	
General Dynamic Electric Boat		
Combustion Engineering		

* All numbers are local calls from Berlin unless indicated.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-4.03

ESTIMATING POST-ACCIDENT RELEASE RATES

APPROVED RCRodgers
Lead Manager, Radiological Consequence Assessment

REVISION 1

DATE April , 1982

CONCURRENCE RCRodgers
Corporate Nuclear Emergency Plan Coordinator

CORPORATE OPERATIONS FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

ESTIMATING POST-ACCIDENT RELEASE RATES

1.0 PURPOSE

During accident situations the estimation of radioactive release rates can be very complex due to the wide variation of potential scénarios. Among other things, one must consider:

1. Accuracy or inaccuracy of release monitors due to background interference, particulate daughter deposition, etc.
2. Variations in flow rates from the release path.
3. Changes in isotopic mixtures.
4. Iodine to noble gas ratios and effects of filters.
5. Results from grab sample - gross counts and/or isotopics.
6. Large fluctuations in release rates in short time intervals.
7. Releases from unmonitored release paths.
8. Potential or actual curie inventories of systems or containments.
9. System or containment leakage rates.

In order to provide a rapid preliminary estimate of offsite doses, simplified station procedures have been developed (CY - EPP 1.5-7, MP - EPIP - 4201). These procedures have built-in assumptions concerning flow rates, isotopic mixtures, etc., and also assume release paths and monitors are operating as designed. The bases for the values in these procedures are included as appendices to this procedure. The purpose of this procedure is to compile certain methodologies, data and plant parameters to assist the NUSCO, Manager of Rad Consequence Assessment in making refinements to the release rates as estimated using the simplified station procedures.

2.0 APPLICABILITY

Not Applicable

3.0 REFERENCE

3.1 CY Procedure EPP 1.5-7

3.2 MP Procedure EPIP 4201

3.3 RAB Reference Manual - Effluent Monitors + Isotopic Tables + Data (EMIT)

4.0 DEFINITIONS

None

5.0 RESPONSIBILITIES

The NUSCO Manager Radiological Consequence Assessment and his designated alternate must be able to effectively use this procedure.

6.0 INSTRUCTIONS

6.1 Information and data must be available from the site. This information will initially be supplied by station personnel through the various types of emergency communication equipment. However, if the necessary manpower is available, it is advisable to send at least one member of the NUSCO Radiological staff to the site to help compile any useful information.

6.2 Although it is better to be safe than sorry, there are potential harmful effects, both physical and emotional, from recommending protective actions for the public. Thus, care should be taken in not being overly conservative. Dose calculations should be as realistic as possible.

6.3 Process and effluent monitors are subject to significant errors under accident situations. Their readings will be influenced by high direct or airborne radiation readings in the area. If there are high levels of noble gases, then daughter product deposition will be of a concern. Calibration curves or conversion factors are based on assumed isotopic ratios. Voltage fluctuations are possible with loss-of-power incidents. Saturation effects may be of a concern. Release rates may vary by orders of magnitude over a few minutes and it may be uncertain that the individual reporting the monitor reading took the maximum, average or instantaneous reading. Thus, caution should be used in determining the significance of RAD monitor readings.

6.4 Estimates of release rates should be made in five steps:

6.4.1 Determine release points.

6.4.2 Determine noble gas concentration at each release point - uC/cc.

6.4.3 Determine iodine concentration at each release point - uC/cc.

6.4.4 Determine flow rate from each release point - CFM.

6.4.5 Combine concentrations and flow rates to get release rates -Ci/sec.

6.5 Release Points

Determine from which of the following locations releases exist. Obtain the worksheet for those locations. If more than one "miscellaneous" release path exists, the equivalent number of worksheets should be used. Worksheets exist for:

Worksheet #	Release Point
1	CY - Main Stack
2	CY - Containment Leakage
3	CY - Steam Dumps or Safeties
4	MP - MP1 Stack
5	MP - MP2 Stack
6	MP - MP2 Steam Dumps or Safeties
7	Miscellaneous - All other Release Points

6.6 Noble Gas Concentrations

Noble gas concentrations may be estimated as follows:

6.6.1 Readings from stack monitor - instructions are given on Worksheets 1, 4 and 5.

6.6.2 Readings on special high range stack monitors or steam dump monitors - instructions are given on Worksheet 1, 3, 4, 5, and 6.

6.6.3 Estimates of CY containment activity based on area radiation monitor readings - instructions are given on Worksheet 2.

6.6.4 Grab samples - grab samples may be taken from any potential release point. For monitored release points they will usually provide more accurate information than the monitors, however they are only good for an isolated time period. For the miscellaneous release points, they will probably provide the only source of information on release concentrations. Grab sample results are recorded and/or calculated on Worksheet 8 which should then be attached to the worksheet from the release point where the grab sample was obtained.

6.6.5 Miscellaneous estimates - in cases where no reliable release monitor readings are available and no grab sample results are available, estimates of releases must be made by some miscellaneous method. The potential methods are as variable as the potential scenarios and hence specific guidance cannot be given on a Worksheet. The methods could range from the use of design basis accident calculation results, to the use of known system inventories of radioactivity, or to the use of in-plant dose rate measurements.

Attachment 8.2 to this procedure lists a number of tables, figures, etc. which may be useful in making such estimates. Some of these references are included as additional attachments to this procedure. The others are located on RAB bookshelves or hanging files.

Worksheet #9 is included in this procedure to be used to enter the assumptions and calculations used to estimate release rates via these miscellaneous methods. This worksheet should then be attached to the worksheet corresponding to the release point for which the estimate was made.

6.7 Iodine Concentrations

Iodine concentrations may be estimated as follows:

6.7.1 Grab Sample Results

One of the most uncertain values after an accident, yet one of the most important from a decision making standpoint is the release rate of radioiodine. Therefore, one of the most important bits of information is a realistic assessment of iodine releases. High priority should be placed on obtaining iodine grab sample results.

Grab sample results, times and locations are recorded on Worksheet #8 which should then be attached to the worksheet for the applicable release point.

6.7.2 Iodine to Noble Gas Ratio

This method results in gross uncertainties in iodine release rates, but until grab sample results are available it may be the only method available to estimate release rates.

Worksheets 1 through 7 list assumed ratios for various types of accidents. These ratios are based on a number of different facts such as design basis accident calculation results, recent studies which indicate that when water or steam is involved most iodine will remain in solution, present ratios of iodine to noble gas in reactor coolant, iodine spiking factors, decay calculations, etc.

Choose the ratio which best corresponds to the accident in question and perform the indicated calculations on the worksheet.

6.7.3 Miscellaneous Estimates

In some cases, estimates of iodine release rates may be made by some miscellaneous methods such as the use of known system inventories, in plant samples, etc. The potential methods are as variable as the potential scenarios and hence specific guidance cannot be given on a worksheet.

Attachment 8.2 to this procedure lists a number of tables, figures, etc. which may be useful in making such estimates. Some of these references are included as additional attachments to this procedure. The others are located on RAB bookshelves or hanging files.

Worksheet #9 is included in this procedure to be used to enter the assumptions and calculations used to estimate iodine release rates via these miscellaneous methods. This worksheet should then be attached to the worksheet corresponding to the release point for which the estimate was made.

6.8 Flow Rates

Flow rates may be estimated as follows:

6.8.1 Flow Monitor Readings

The MP1, MP2 and CY stacks have flow monitors and recorders which directly indicate the flow rate up the stack in CFM. These values may be entered in Section III of the appropriate worksheet.

6.8.2 Rated Fan Flows

The flow through the MP1, MP2 or CY stack can be determined using rated fan flows. The rated flows for each potential input to the stacks are given on the worksheets. Determine which flow paths exist, enter the values on the right hand side of the worksheet and sum these values to get the total flow rate. If the large flow inputs are operating, do not waste the time to determine if the small contributers are operable. Miscellaneous release points may also be serviced by fans with known or estimated flow rates. Enter these of Worksheet #7.

6.8.3 CY Containment Pressure

The design basis leakage rate from the CY containment is 0.18% per day at 40 psig. The leak rate will be correspondingly less for lower pressures. The relationship between pressure (psia) and flow (Q) is approximated by:

$$Q_2 = \sqrt{P2/P1} \cdot Q_1$$

Thus, an equation is provided on Worksheet #2 to determine the flow from the containment as a function containment pressure.

6.8.4 Steam Flow

Release rates from the atmospheric steam dump may be determined by knowing the percent of power if still at power or the time since trip if shutdown. It is assumed for this calculation that all of the steam is being released via the steam dumps or safeties. The appropriate calculations are given on Worksheets #3 and #6.

6.8.5 Leakage Path Size

For miscellaneous release points which are not serviced by any operating ventilation fans, estimates of leakage from the volume containing the source may be made. Some guidance is given on Worksheet #7 for various size openings. The values given assume 0.25" positive pressure in the source volume as compared with the outside. If this method is not applicable, an educated guess must be made.

6.8.6 Default Value

If the required information is not available for any of the above methods of estimating flow, and no reasonable estimates can be made by any other method, then a default value is given on each worksheet.

6.9 Release Rates - Worksheet #10

For each release point, the noble gas and iodine concentrations and flow rates indicated on the corresponding worksheet for that release point, should be entered into the equations on Worksheet #10 and the release rates calculated. Worksheet #10 has space to do this for three separate release points. This worksheet should then be used as input to the dose calculation procedure.

6.10 Supplemental Information

Attachment 8.2 is a listing of information which may be helpful in determining release rates. Some of this information is included as additional attachments to this procedure. Most of it is contained in the EMIT manual.

7.0 FIGURES

None

8.0 ATTACHMENTS

8.1 Worksheets for release estimates.

8.2 Listing of supplemental information.

8.3 Noble gas data.

8.4 Iodine data.

Date ________
Time ________
Initials ______

WORKSHEET #1

RELEASE POINT = CY MAIN STACK - MIXED

I. NOBLE GAS CONCENTRATION - Complete only one section (i.e., A, B or C)

A. Based on Main Stack Monitor

STACK MONITOR READING = ________ cpm

Note: Determine from station personnel whether this is a peak reading or steady state reading. If peak readings are involved try to determine time integrated average cpm over the release period.

CORRESPONDING NOBLE GAS CONCENTRATION = ________ uCi/cc

This is determined from latest stack monitor calibration curve as given in EMIT manual. Use the curve for flashed gases unless it is known that the mixture is over one week old, in which case the curve for Xe-133 should be used.

DEFAULT VALUE - 1 cpm = 10^{-7} uCi/cc

B. Based On High Range Vent Duct Monitor

High Range Vent Duct Monitor Reading = ________ R/hr.
(Again determine time average reading - see above Note.)

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0 HR-4 HR	0.1
4 HR-12 HR	0.2
12 HR-48 HR	0.4
> 48 HR	1.0

________ R/hr. x ________ CF = ________ uCi/cc

C. Based on Grab Sample Result or Estimate

Attach Worksheet #8 or #9

TOTAL NOBLE GAS CONCENTRATION = ________ uCi/cc
From Worksheet #8 or #9

Date ________
Time ________
Initials _____

WORKSHEET #1
Page 2

RELEASE POINT = CY MAIN STACK

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = ________ uCi/cc
I-131

B. Based on Iodine/Noble Gas Ratio

	Scenario	Choose One I/NG. Ratio
1.	LOCA	1×10^{-5}
2.	SGTRA	4×10^{-4}
3.	Fuel Handling Accident - Unfiltered	4×10^{-3}
4.	Fuel Handling Accident - Filtered	2×10^{-4}
5.	Waste Gas System Release	1×10^{-5}
6.	All Others	1×10^{-3}

________ x ____________ x 0.4 = ________ uCi/cc
I/NG Ratio   N.G. Concentration From Page 1   I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = ________ uCi/cc
I-131

Date ________
Time ________
Initials ______

WORKSHEET #1
Page 3

RELEASE POINT = CY MAIN STACK

III. FLOW RATES - Complete only one section

A. Based on Stack Flow Meter

METER READING = __________ CFM

B. Based on Rated Fan Flows

	Fan	Rated CFM	Enter if Operating
1.	Main Exh. Fan A	52,000	________
2.	Main Exh. Fan B	52,000	________
3.	Fuel Bldg. Exh. Fan		
	a. By Passing Filters	15,000	
or	b. Using Filters	4,000	________

TOTAL = __________ CFM

C. Default Value

Flow = 70,000 CFM

Date __________
Time __________
Initials ______

WORKSHEET #2

RELEASE POINT = CY CONTAINMENT LEAKAGE - Ground

I. NOBLE GAS CONCENTRATION - Complete only one section (i.e., A, B, or C)

A. Based on Equipment Hatch ARM

EQUIPMENT HATCH ARM READING = __________ mR/HR

Note: Determine from station personnel whether this is a peak reading or steady state reading. If peak readings are involved try to determine time integrated average reading over the period in question.

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0-4 HRs	0.1
4 HRs-12 HRs	0.2
12 HRs-48 HRs	0.8
48 HRs	5.0

__________ x __________ = __________ uCi/cc
mR/hr CF

B. Based on Charging Floor ARM

Charging Floor ARM = __________ mR/hr
(Again used time average reading - see above Note.)

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0-4 HRs	1×10^{-5}
4 HRs-12 HRs	2×10^{-5}
12 HRs-48 HRs	4×10^{-5}
> 48 HRs	1×10^{-4}

__________ x __________ = __________ uCi/cc
mR/hr CF

C. Based on Grab Sample Result or Estimate

Attach Worksheet #8 or #9

TOTAL NOBLE GAS CONCENTRATION = __________ uCi/cc
From Worksheet #8 or #9

Date __________
Time __________
Initials ______

WORKSHEET #2
Page 2

RELEASE POINT = CY CONTAINMENT LEAKAGE

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = ________ uCi/cc
I-131

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
1. LOCA - Fuel activity released into or with water or steam mixture	1×10^{-4}
2. LOCA - Completely dry core and dry release path of fuel activity from primary boundary	
a. No car fans operable	0.2
b. One or more car fans operable	
(1) T = 0-30 min.	0.2
(2) T = 30 min.-60 min.	0.02
(3) T = 60 min.-180 min.	0.001
(4) T > 180 min.	1×10^{-5}
3. Release of coolant activity (no fuel failure)	0.01

________ x ____________ x 0.4 = ________ uCi/cc
I/NG Ratio   N.G. Concentration From Page 1   I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = ________ uCi/cc
I-131

Date ________
Time ________
Initials ______

WORKSHEET #2
Page 3

RELEASE POINT - CY CONTAINMENT LEAKAGE

III. FLOW RATES

A. Based on Containment Pressure

CONTAINMENT PRESSURE = ________ psig

$$\text{Flow} = \sqrt{\frac{\text{PSIG}}{40}} \times 10 \text{ CFM} = \_\_\_\_\_\_\_\_ \text{CFM}$$

Flow = ________ CFM

B. Default Value

Flow = ___10___ CFM

Date __________
Time __________
Initials ______

WORKSHEET #3

RELEASE POINT = CY ATMOSPHERIC STEAM DUMP AND SAFETIES - Ground

1. NOBLE GAS CONCENTRATION - Complete only one section (A or B)

A. Based on Dose Rate Measurements

Dose Rate by Atmospheric Steam Dump Muffler = __________ mR/hr

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor - CF Steam Dump	Safeties
0-4 HRs	3×10^{-3}	3×10^{-2}
4 HRs-12 HRs	6×10^{-3}	6×10^{-2}
12 HRs-48 HRs	1×10^{-2}	1×10^{-1}
> 48 HRs	3×10^{-2}	3×10^{-1}

__________ x __________ = __________ uCi/cc
mR/hr CF

B. Based on Estimate

Attach Worksheet #9

TOTAL NOBLE GAS CONCENTRATION = __________ uCi/cc
From Worksheet #9

Date __________
Time __________
Initials ______

WORKSHEET #3
Page 2

RELEASE POINT = CY ATMOSPHERIC STEAM DUMP AND SAFETIES

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = __________ uCi/cc
I-131

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
1. Steam Generator Tube Rupture	
(a) Without Gross Fuel Failure	0.05
(b) With Gross Fuel Failure	0.01

__________ x __________ x 0.4 = __________ uCi/cc
I/NG Ratio — N.G. Concentration From Page 1 — I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = __________ uCi/cc
I-131

Date ________
Time ________
Initials ______

WORKSHEET #3
Page 3

RELEASE POINT = CY STEAM DUMP OR SAFETIES

III. FLOW RATES

A. Based on Power Level

_______________ x 7 x 10^4 = __________ CFM
Fraction of Full Power

B. Based on Time Since Rx Trip

Time Since Rx Trip	Choose One Flow Rate
0 - 2 Min.	3500 CFM
2 Min. - 20 Min.	2000 CFM
> 20 Min.	1500 CFM

C. Default Value

Flow = 3500 CFM

Date __________
Time __________
Initials ______

WORKSHEET #4

RELEASE POINT = MP1 STACK - Elevated

I. NOBLE GAS CONCENTRATION - Complete only one section (i.e., A, B or C)

A. Based on MP1 Stack Monitor

MP1 STACK MONITOR READING = ____ ____ cps

Note: Determine from station personnel whether this is a peak reading or steady state reading. If peak readings are involved try to determine time integrated average cps over the release period.

CORRESPONDING NOBLE GAS CONCENTRATION = __________ uCi/cc

This is determined from latest MP1 stack monitor calibration factor as given in EMIT manual.

DEFAULT VALUE - 1 cps = 1×10^{-6} uCi/cc

B. Based On High Range Stack ARM - (Labelled Stack Sample Room)*

High Range Stack ARM Reading = __________ mR/hr.
(Again determine time average reading - see above Note.)

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0 HR-4 HR	3×10^{-3}
4 HR-12 HR	6×10^{-3}
12 HR-48 HR	1×10^{-2}
> 48 HR	3×10^{-2}

________ x ________ = __________ uCi/cc
mR/hr. CF

C. Based on Grab Sample Result or Estimate

Attach Worksheet #8 or #9

TOTAL NOBLE GAS CONCENTRATION = __________ uCi/cc
From Worksheet #8 or #9

*-Note- When this monitor is used, 170,000 CFM must be entered as the flow on Page 4 of this worksheet.

Date ________
Time ________
Initials ______

WORKSHEET #4
Page 2

RELEASE POINT = MP1 STACK

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = ________ uCi/cc
I-131

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
1. LOCA - MP1 or MP2 - Fuel activity released from dry core and dry release pathway	3×10^{-2}
2. LOCA - MP1 or MP2 - Fuel activity released into water or steam	1×10^{-5}
3. MP2 SGTRA	2×10^{-3}
4. Fuel Handling Accident - MP1 or MP2	2×10^{-4}
5. MP1 Off gas or MP2 waste gas incidents	1×10^{-5}
6. Others	1×10^{-2}

________ x ______________ x 0.4 = ________ uCi/cc
I/NG Ratio — N.G. Concentration From Page 1 — I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = ________ uCi/cc
I-131

Date ________
Time ________
Initials ______

WORKSHEET #4
Page 3

RELEASE POINT = MP1 STACK

III. FLOW RATES - Complete only one section

A. Based on Stack Flow Meter

METER READING = __________ CFM

B. Based on Rated Fan Flows

	Fan	Rated CFM	Enter if Operating
1.	MP1 Turb & Rx Bldg. Main Exh. Fan A	80,000	________
	MP1 Turb & Rx Bldg. Main Exh. Fan B	80,000	________
	MP1 Turb & Rx Bldg. Main Exh. Fan C	80,000	________
2.	MP1 Radwaste Bldg. Exh. Fan A	11,000	________
	MP1 Radwaste Bldg. Exh. Fan B	11,000	________
3.	MP1 Radwaste Storage Exh. Fan A	3,600	________
	MP1 Radwaste Storage Exh. Fan B	3,600	________
4.	MP1 Standby Gas Treatment A	11,000	________
	MP1 Standby Gas Treatment B	11,000	________
5.	MP1 Off Gas System		
	a. 30 min holdup pipe	120	________
	b. Recombiner system	20	________
6.	MP1 Xe-Kr Bldg. Exh. Fan	3,000	________
7.	MP1 Mechanical Vaccum Pump	500	________
8.	MP2 EBFS - Fan A	6,000	________
	MP2 EBFS - Fan B	6,000	________
9.	MP2 Condenser Air Ejector	120	________

Date ________
Time ________
Initials _____

WORKSHEET #4
Page 4

Fan	Rated CFM	Enter if Operating
10. MP2 Waste Gas Tank Discharge	5	________
11. MP1 Gland Seal Condenser	20	
12. MP2 Gland Seal Condenser	20	
TOTAL	=	________ CFM

C. Default Value or value if using Interim Stack Monitor

Flow = 170,000 CFM

Date ________
Time ________
Initials ______

WORKSHEET #5

RELEASE POINT = MP2 STACK - Mixed

I. NOBLE GAS CONCENTRATION - Complete only one section (i.e., A, B or C)

A. Based on MP2 Stack (EBRV) Monitor

MP2 STACK MONITOR READING = ________ cpm

Note: Determine from station personnel whether this is a peak reading or steady state reading. If peak readings are involved try to determine time integrated average cpm over the release period.

CORRESPONDING NOBLE GAS CONCENTRATION = ________ uCi/cc

This is determined from latest MP2 stack monitor calibration factor as given in the EMIT manual.

DEFAULT VALUE - 1 cpm = 2×10^{-7} uCi/cc

B. Based On High Range MP2 Stack Duct ARM

High Range Duct ARM Reading = ________ R/hr.
(Again determine time average reading - see above Note.)

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0 HR-4 HR	0.2
4 HR-12 HR	0.5
12 HR-48 HR	1
> 48 HR	2

________ x ________ = ________ uCi/cc
R/hr. CF

C. Based on Grab Sample Result or Estimate

Attach Worksheet #8 or #9

TOTAL NOBLE GAS CONCENTRATION = ________ uCi/cc
From Worksheet #8 or #9

Date ________
Time ________
Initials _____

WORKSHEET #5
Page 2

RELEASE POINT = MP2 STACK

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = ________ uCi/cc I-131

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
1. LOCA	1×10^{-4}
2. Waste Gas System Releases	1×10^{-5}
3. Other	1×10^{-2}

________ x ________ x 0.4 = ________ uCi/cc
I/NG Ratio   N.G. Concentration From Page 1   I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = ________ uCi/cc I-131

Date ________
Time ________
Initials ______

WORKSHEET #5
Page 3

RELEASE POINT = MP2 STACK

III. FLOW RATES - Complete only one section

A. Based on Stack Flow Meter

METER READING = __________ CFM

B. Based on Rated Fan Flows

Fan	Rated CFM	Enter if Operating
MP2 Stack Exh. Fan A	32,000	________
MP2 Stack Exh. Fan B	32,000	________
MP2 Stack Exh. Fan C	32,000	________

TOTAL = __________ CFM

C. Default Value

Flow = 64,000 CFM

Date ________
Time ________
Initials ______

WORKSHEET #6

RELEASE POINT = MP2 STEAM DUMPS OR SAFETIES - Mixed

I. NOBLE GAS CONCENTRATION - Complete only one section (A or B)

A. Based on Dose Rate at Preselected Locations by Steam Dumps and Safeties

West Penetration Room Dose Rate = ________ mR/hr

East Penetration Room Dose Rate = ________ mR/hr

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor - CF Steam Dump	Safeties
0-4 HRs	0.1	3×10^{-2}
4 - 12 HRs	0.2	6×10^{-2}
12 HRs-48 HRs	0.4	1×10^{-1}
> 48 HRs	1.0	3×10^{-1}

West Penetration Room

________ x ________ = ________ uCi/cc
mR/hr CF

East Penetration Room

________ x ________ = ________ uCi/cc
mR/hr CF

B. Based on Estimate

Attach Worksheet #9

TOTAL NOBLE GAS CONCENTRATION = ________ uCi/cc
From Worksheet #9

Date ________
Time ________
Initials ______

WORKSHEET #6
Page 2

RELEASE POINT = MP2 STEAM DUMPS OR SAFETIES

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = ________ uCi/cc
I-131

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
Steam Generator Tube Rupture Accident	
a) No Gross Fuel Failures	6×10^{-2}
b) With Gross Fuel Failures	1×10^{-2}

________ x ________ x 0.4 = ________ uCi/cc
I/NG Ratio   N.G. Concentration From Page 1   I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = ________ uCi/cc
I-131

Date ________
Time ________
Initials ______

WORKSHEET #6
Page 3

RELEASE POINT = MP2 STEAM DUMP OR SAFETIES

III. FLOW RATES

A. Based on Power Level

______________ x 4×10^4 = __________ CFM
Fraction of Full Power

B. Based on Time Since Rx Trip

Time Since Rx Trip	Choose One Flow Rate
0 - 2 Min.	2000 CFM
2 Min. - 20 Min.	1200 CFM
> 20 Min.	800 CFM

C. Default Value

Flow = 2000 CFM

Date __________
Time __________
Initials ______

WORKSHEET #7

RELEASE POINT = MISCELLANEOUS - Ground

I. NOBLE GAS CONCENTRATION - Complete only one section (i.e., A or B)

A. Based on Dose Rate Measurement in Cloud

For example

1) If dose rate measurement is taken in plume as it comes out doorway, etc.

2) If gases are coming out of a particular building or room and the dose rate is measured in that room (ARM or portable survey).

MEASURED DOSE RATE = __________ mR/hr

ESTIMATED VOLUME OF SOURCE SEEN AT DOSE POINT

$$V = \underset{\text{Length}}{\underline{\qquad}}\ \text{ft.} \times \underset{\text{Width}}{\underline{\qquad}}\ \text{ft.} \times \underset{\text{Height}}{\underline{\qquad}}\ \text{ft.} = \underline{\qquad\quad}\ \text{ft.}^3$$

Pick appropriate conversion factor - circle one.

Age of Gases	Conversion Factor CF
0-4 HRs	2×10^{-3}
4 HRs-12 HRs	4×10^{-3}
12 HRs-48 HRs	1×10^{-2}
48 HRs	2×10^{-2}

$$\underset{\text{mR/hr}}{\underline{\qquad\quad}} \times \underset{\text{CF}}{\underline{\qquad\quad}} \times \sqrt[3]{\frac{1}{V}} = \underline{\qquad\quad}\ \text{uCi/cc}$$

Note: If dose rate measurement was taken next to cloud rather than in the cloud - multiply the result by two.

C. Based on Grab Sample Result or Estimate

Attach Worksheet #8 or #9

TOTAL NOBLE GAS CONCENTRATION = __________ uCi/cc
From Worksheet #8 or #9

Date __________
Time __________
Initials _____

WORKSHEET #7
Page 2

RELEASE POINT = MISCELLANEOUS

II. IODINE CONCENTRATION - Complete only one section (A, B or C)

A. Based on Grab Sample Result

Attach Worksheet #8

Iodine-131 Concentration From Worksheet #8 = __________ uCi/cc (I-131)

B. Based on Iodine/Noble Gas Ratio

Scenario	Choose One I/NG. Ratio
1. Release Source From Gas Processing System	1×10^{-5}
2. Release Source From Primary System No Fuel Failure	5×10^{-2}
3. Release Source From Primary System Significant Fuel Failure	1×10^{-4}
4. Fuel Handling Accident	4×10^{-3}
5. Other Sources - Radwaste or Filter Fires, etc.	This method not valid - unknown gas concentration

__________ x __________ x 0.4 = __________ uCi/cc
I/NG Ratio; N.G. Concentration From Page 1; I-131 Concentration

C. Based on Miscellaneous Estimate

Attach Worksheet #9

I-131 Concentration From Worksheet #9 = __________ uCi/cc (I-131)

Date __________
Time __________
Initials ______

WORKSHEET #7
Page 3

RELEASE POINT - MISCELLANEOUS

III. FLOW RATES

A. Based on Rated Fan Flow

Ventilation Flow Rate From Area In Question:

Enter if Operating = __________ CFM

B. Based on Leakage

Estimated Size of Opening Through Which Gas in Leaking

= __________ $ft.^2$

Leakage Rate = __________ $ft.^2$ x 0.4 = __________ CFM

C. Educated Guess

Flow = __________ CFM

Date __________
Time __________
Initials ______

WORKSHEET #8

GRAB SAMPLE RESULTS

I. NOBLE GAS CONCENTRATIONS Sample Time __________

A. Based on Isotopic Analysis - Results Reported From Station

Nuclide	uCi/cc	% Total
Kr 83m		
Kr 85m		
Kr 85		
Kr 87		
Kr 88		
Kr 89		
Xe 131m		
Xe 133m		
Xe 133		
Xe 135m		
Xe 135		
Xe 137		
Xe 138		

Other:

TOTAL uCi/cc = __________

B. Based on Gross Dose Rate Measurement

Dose rate (window closed) at contact with grab sample container = __________ mR/hr.

Note: If contact readings are taken in cpm assume:

2500 cpm = 1 mR/hr and convert to mR/hr

Pick appropriate conversion factor - circle one.

	Conversion Factor - CF		
Age of Gas	10cc Sample	1 Liter Sample	4 Liter Sample
0 - 4 HRs	0.2	0.01	0.005
4 - 12 HRs	0.4	0.02	0.01
12 - 48 HRs	1.0	0.04	0.02
> 48 HRs	2.0	0.1	0.05

$$\frac{\text{\_\_\_\_\_\_\_\_ mR/hr}}{\text{\_\_\_\_\_\_\_\_ CF}} = \text{\_\_\_\_\_\_\_\_ uCi/cc}$$

Date ________
Time ________
Initials ______

WORKSHEET #8
Page 2

GRAB SAMPLES

II. IODINE CONCENTRATION

Sample Time ________
Sample Location ________

A. Based on Isotopic Analysis

Nuclide	uCi/cc
I-131	
I-132	
I-133	
I-134	
I-135	

TOTAL IODINE uCi/cc = ________ or I-131 = ________ uCi/cc

B. Based on Gross Count

Note: Gross counts of charcoal cartridges will result in erroneous results due to the absorption of noble gases on the charcoal. Ensure that silica gel cartridges were used if gross count analyses are used here.

Gross Count Result from Plant = ________ uCi/cc I-131

Date ____ _____
Time ___ ______
Initials _____

WORKSHEET #9

MISCELLANEOUS CALCULATIONS

Use this worsheet to record assumptions and perform calculations if other methods have to be used to estimate release rates.

See Appendix 1 for a listing of potentially useful information.

I. NOBLE GAS CONCENTRATION

NOBLE GAS CONCENTRATION = __________ uCi/cc

Date ________
Time ________
Initials _____

WORKSHEET #9
Page 2

II. IODINE-131 CONCENTRATION

I-131 Concentration = ________ uCi/cc

Date ________
Time ________
Initials ______

WORKSHEET #10

RELEASE RATES

RELEASE POINT = ______________________________

N.G. Release Rate = ____________ x ____________ x 5×10^{-4} =
Noble Gas Conc. Page 1 — Flow Page 3

= ____________ Ci/sec of Noble Gas

I-131 Release Rate = ____________ x ____________ x 5×10^{-4} =
I-131 Conc. Page 2 — Flow Page 3

= ____________ Ci/sec of I-131

RELEASE POINT = ______________________________

N.G. Release Rate = ____________ x ____________ x 5×10^{-4} =
Noble Gas Conc. Page 1 — Flow Page 3

= ____________ Ci/sec of Noble Gas

I-131 Release Rate = ____________ x ____________ x 5×10^{-4} =
I-131 Conc. Page 2 — Flow Page 3

= ____________ Ci/sec of I-131

RELEASE POINT = ______________________________

N.G. Release Rate = ____________ x ____________ x 5×10^{-4} =
Noble Gas Conc. Page 1 — Flow Page 3

= ____________ Ci/sec of Noble Gas

I-131 Release Rate = ____________ x ____________ x 5×10^{-4} =
I-131 Conc. Page 2 — Flow Page 3

= ____________ Ci/sec of I-131

<u>SUPPLEMENTAL INFORMATION</u>

INFORMATION	LOCATION
1. Table - Noble Gas Isotopic - % Breakdown and $\overline{E}_{\beta}$ and $\overline{E}_{\gamma}$ as a function of time	Attachment 8.3
2. Table - Iodine Isotopic - % Breakdown and $\overline{E}_{\beta}$ and $\overline{E}_{\gamma}$ as a function of time	Attachment 8.4
3. Bases for CY emergency does assessment procedure EP 1.5-16 and CY EAL tables	EMIT Manual
4. Bases for MP emergency dose assessment procedure OP501/2501 - Appendix F and MP EAL tables	EMIT Manual
5. CY, MP1, and MP2 Rx water isotopics	EMIT Manual
6. MP1 Off Gas Isotopic	EMIT Manual
7. MP2 and CY Waste Gas Tank Isotopics	EMIT Manual
8. Charcoal Efficiency Test Results	EMIT Manual
9. NUREG-0016 + 0017 - Gaseous and Liquid Effuence from BWR's and PWR's	Folder - Emergency Bookshelf
10. Appendix I Submittals	Bookshelves
11. System Prints	Hanging Files
12. Isotope Code Outputs	Folder - Emergency Bookshelf

NOBLE GASES

Nuclide	$\bar{E}_\gamma$	$\bar{E}_\beta$	%					
			T = 0	T = 1 Hr	T = 4 Hr	T = 12 Hr	T = 48 Hr	T = 300 Hr
Kr-83m	0.00248	0.0371	1.2	2.0	1.4	0.3	-	-
Kr-85m	0.159	0.253	3.8	6.4	5.3	2.1	-	-
Kr-85	0.0022	0.250	0.1	0.2	0.3	0.4	0.8	3.2
Kr-87	0.933	1.32	6.9	7.8	2.0	0.3	-	-
Kr-88	2.18	0.377	9.4	14.4	9.0	1.8	-	-
Kr-89	1.95	1.58	11.7	-	-	-	-	-
Xe-131m	0.0201	0.143	0.1	0.2	0.2	0.3	0.5	1.3
Xe-133m	0.042	0.19	0.4	0.8	1.0	1.4	1.8	0.3
Xe-133	0.0454	0.193	16.7	32.4	42.3	58.7	91.3	95.2
Xe-135m	0.432	0.095	4.6	4.5	4.0	2.5	0.1	-
Xe-135	0.247	0.317	15.9	30.0	34.4	32.3	5.5	-
Xe-137	0.194	1.64	15.1	-	-	-	-	-
Xe-138	1.18	0.611	14.1	1.5	-	-	-	-
$\bar{E}_\gamma$	MeV =		0.77	0.52	0.35	0.16	0.06	0.04
$\bar{E}_\beta$	MeV =		0.74	0.35	0.27	0.24	0.20	0.19
100% Core Activity for MP2 2700 MW_t CY-(X0.7) MP1-(X0.75)	Curies		9.12(8)	4.67(8)	3.54(8)	2.49(8)	1.38(8)	3.45(7)

IODINES

Nuclide	$\bar{E}_\gamma$	$\bar{E}_\beta$	%					
			T = 0	T = 1 Hr	T = 4 Hr	T = 12 Hr	T = 48 Hr	T = 300 Hr
I-131	0.390	0.191	10.6	13.6	20.3	31.0	64.5	100
I-132	1.99	0.434	16.1	15.4	9.3	1.3	-	-
I-133	0.444	0.450	23.8	29.7	40.4	48.7	34.6	-
I-134	1.27	0.600	27.8	16.2	2.2	-	-	-
I-135	1.54	0.308	21.6	25.2	27.7	19.0	1.1	-
Total Curies = 50% Core Inventory MP2 (X 1) MP1 (X 0.75) CY (X 0.7)			3.19(8)	2.47(8)	1.65(8)	1.05(8)	4.42(7)	1.16(7)

Child Thyroid Dose Conv. Factor - (mrem/uCi Inhaled)	
I-131	4.39×10^3
I-132	5.23×10^1
I-133	1.04×10^3
I-134	1.37×10^1
I-135	2.14×10^2

Child Thyroid Avg. Dose Conv. Factor - (mrem/uCi Inhaled)	
T = 0	7.71×10^2
T = 1 Hr	9.70×10^2
T = 4 Hr	1.38×10^3
T = 12 Hr	1.91×10^3
T = 48 Hr	3.20×10^3
T = 300 Hr	4.39×10^3

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURES MANUAL

CONI-4.04

CALCULATION OF OFF-SITE DOSES FROM AIRBORNE RELEASES

APPROVED: R C Rodgers
Lead Manager, Radiological Consequence Assessment

REVISION: 0

DATE: August 1, 1981

CONCURRENCE: R C Rodgers
Corporate Nuclear Emergency Plan Coordinator

CALCULATION OF OFF-SITE DOSES FROM

AIRBORNE RELEASES

1.0 PURPOSE/APPLICABILITY

This procedure establishes a method for estimating off-site doses from unplanned airborne releases of radioactive noble gases and iodines from the Connecticut Yankee Nuclear Power Plant, the Millstone Point Unit One Nuclear Power Plant, or the Millstone Point Unit Two Nuclear Power Plant.

This procedure will assist the NUSCO Manager of Radiological Consequence Assessment in making refinements to off-site doses as initially estimated by the preliminary station procedures (CY-EP 1.5-16, MP-OP 501/2501-Appendix F).

2.0 APPLICABILITY

Not applicable.

3.0 REFERENCES

3.1 CONI-4.03.

4.0 DEFINITIONS

None.

5.0 RESPONSIBILITY

The NUSCO Manager Radiological Consequences Assessment and his designated alternates must be able to effectively use this procedure.

6.0 INSTRUCTIONS

6.1 Precautions

6.1.1 Meterological information used in this procedure is in metric terms. Care should be taken to ensure that wind speed and ΔT data from the control room is in metric terms before insertion into the procedure worksheet (control room usually reports data in terms of mph and $\Delta °F$; EDAN data is in terms of m/sec and $\Delta °C$). Use conversions at bottom of data sheets if necessary.

6.1.2 When using the EDAN System, be sure to subtract one hour from all release times during Daylight Savings Time (last Sunday in April to last Sunday in October) to convert all time intervals to Eastern Standard Time which is used by the EDAN System.

6.1.3 The time period represented by EDAN is the 15-minute period ending for the time shown, e.g., 1500 hours is the time buffer of 1445-1500 hours.

6.2 General

6.2.1 Complete worksheets for the appropriate release point(s) only. Green Worksheets (Attachment 8.1) are for Connecticut Yankee and Yellow Worksheets (Attachment 8.2) are for Millstone Point.

6.2.2 Information necessary to complete each line is indicated by a reference to information on the data sheets or CONI 4.03, a table or figure at the end of the attachment being used, or already completed information on the worksheet as indicated by a number in parentheses. Numbers in parentheses refers to that worksheet only unless otherwise noted.

6.2.3 Calculations are normally done for "nearest land" with "site boundary" reserved for special evaluations (Part 4 of worksheet Nos. 1, 2 or 3).

6.2.4 The finite land correction factor for 1 km should be used for all distances closer than 1 km.

6.2.5 Thyroid doses due to radioiodine may be calculated based upon I-131 or TOTAL Iodine. Be certain to use the proper calculational step. Results will normally be given in terms of I-131.

6.2.6 Based upon prior releases, an "age" of 5 hours may be used to calculate the default dose rate from a release of fresh fission gases.

6.2.7 Release involving charging release rates, wind speeds, wind directions, etc., may be analyzed by breaking down the release into several smaller release intervals and summing the individual doses for each period.

6.3 Data Sheets

6.3.1 Complete the appropriate Data Sheet section(s) (mixed or ground release for CY; elevated, ground or mixed release for MP) with information as provided by the NUSCO Nuclear Operations Duty Officer or Site Manager Radiological Consequences Assessment.

6.3.2 Wind speed, wind direction and delta "T" information may be obtained from the EDAN System. Call the Control Room for information only if necessary information is not otherwise available. (Necessary information includes release point location, wind speeds at various levels, wind direction, ΔT information, weather and sky conditions and time after shutdown of release or age of the gases).

6.3.3 Complete the appropriate worksheets as detailed by the data sheet.

6.4 Worksheet #1 Ground Release (Attachments 8.1 and 8.2)

Complete the appropriate worksheets as detailed being certain to sum all individual isotope dose rates on line 25 if isotopic data is available.

6.5 Worksheet #2 CY Mixed Releases (Attachment 8.1)

6.5.1 Complete all sections as detailed on the worksheet being certain to sum all individual isotope dose rates on line 34 if isotopic information is available.

6.5.2 Part 11.a. gives the dose per unit activity released from the elevated portion of a mixed release. Three time periods (0.25 hr., 12 hr. and 72 hr. decay) are given in this set of figures for each stability class. The dose given is a function of an assumed gas mix for the time shown. For other times the dose may be interpolated. The F stability figure may be assumed for G stability conditions.

6.5.3 Care should be taken to assure that the highest Xu/Q (when beyond the site boundary) is chosen for use in calculation of ground level radioiodine concentration. The location of the highest ground level concentration from an elevated release may not be at the site boundary but at some farther distance. The highest Xu/Qs are marked by an asterisk on Table 3.

6.6 Worksheet #2 MP Elevated Releases (Attachment 8.2)

6.6.1 Complete all sections as detailed on the worksheet.

6.6.2 Be certain to determine if fumigation conditions exist.

6.6.3 Care should be taken to assure that the highest Xu/Q (when beyond the site boundry) is chosen for use in calculation of ground level radioiodine cencentration. The location of the highest ground level concentration from an elevated release may not be at the site boundary, but at some farther distance. The highest Xu/Qs are marked by an asterisk on Tables 4 and 6.

6.6.4 Complete Parts 11. and 12.a. if isotopic information is available, being certain to sum all individual isotope dose rates on line 27.

6.6.5 Part 16 gives the dose per unit activity released from the 375 foot stack. Three time periods (0.25 hr., 12 hr. and 72 hr. decay) are given in this set of figures for each stability class. The dose given is a function of an assumed gas mix for the time shown. For other times the dose may be interpolated. The F stability figure may be assumed for G stability conditions.

6.7 Worksheet #3 MP Mixed Releases (Attachment 8.2)

6.7.1 Complete all sections as detailed on the worksheet.

6.7.2 Complete Part 7 for each applicable release point. Then complete Parts 8 through 11 separately for each release point. Be sure to indicate which release point is being considered in Step 10.h. The dose contribution from each release point must be summed to obtain the total whole body and thyroid doses.

6.7.3 Complete Parts 10.j. and 10.k. if isotopic information is available, being certain to sum all individual isotope dose rates on Line 38.

6.7.4 Part 11.a. gives the dose per unit activity released from the elevated portion of a mixed release. Three time periods (0.25 hr., 12 hr. and 72 hr. decay) are given in this set of figures for each stability class. The dose given is a function of an assumed gas mix for the time shown. For other times the dose may be interpolated. The F stability figure may be assumed for G stability conditions.

6.8 Worksheet #3 CY Dose Summary (Attachment 8.1) and Worksheet #4 MP Dose Summary (Attachment 8.2)

Complete these worksheets from the doses calculated on prior worksheets. Care should be taken to ensure that the MP mixed release dose (ground and elevated portions) is the sum of all mixed release points (MP-2 stack, S/G safeties and atmospheric steam dump).

6.9 Worksheet #4 CY Class A and B Whole Body Dose Lines (Attachment 8.1) and Worksheet #5 MP Class A and B Whole Body Dose Lines (Attachment 8.2)

6.9.1 Complete all sections as detailed on the worksheet.

6.9.2 The 1 and 5 rem lines are approximate only when multiple release heights are involved. Actual doses at the estimated distances should be calculated as a check if time permits.

6.10 Worksheet #5 CY Class A and Class B Thyroid Dose Lines (Attachment 8.1) and Worksheet #6 MP Class A and B Thyroid Dose Lines (Attachment 8.2)

6.10.1 Complete all sections as detailed on the worksheet.

6.10.2 This method will give approximate 5 and 25 rem lines only. The occurrence of precipitation may lessen distances subsubstantially due to washout. Actual doses at the estimated distances should be calculated as a check if time permits.

6.11 Figures 5 and 6 Connecticut Yankee (Attachment 8.1) and Figures 6 and 7 Millstone Point (Attachment 8.2)

These figures may be used to provide the Director of NUSCO Emergency Operations with a graphic summary of the off-site dose to the maximum individual and the extent to which whole body and thyroid class A and B conditions exist.

6.12 Recalculations

6.12.1 Doses should be recalculated when directed to by the NUSCO Manager, Radiological Consequences Assessment or NUSCO Director of Emergency Operations. This would typically result if:

6.12.1.1 Downwind sectors change, stability class changes, or wind speed changes by more than 2 m/sec.

6.12.1.2 Actual or estimated release rates change by more than a factor of 3.

6.12.1.3 The maximum levels measured by field monitoring teams indicate dose rates or iodine concentrations 3 times greater or 3 times less than the calculated values for comparable locations and times. In this case, the calculations should be rechecked for errors, and the field monitoring teams should expand their surveys and verify original measurements.

7.0 FIGURES

None.

8.0 ATTACHMENTS

8.1 CY data sheets and worksheets for dose estimates.

8.2 MP data sheets and worksheets for dose estimates.

CY DATA SHEET FOR DOSE ESTIMATES

A. Mixed Release (Main Stack) Worksheet #2

1. Wind Speed 196 Ft. Level ________ m/sec
2. Wind Direction (wind from) 196 Ft. Level ________ °
3. ΔT 196 Ft. Level ________ °C
4. Number of Ventilation Fans Operating ________
5. Wind Speed 33 Ft. Level ________ m/sec
6. Wind Direction (wind from) 33 Ft. Level ________ °
7. Time After Shutdown or Age of Gases ________ hrs.
8. Duration or Expected Duration of Release ________ min.
9. Weather Conditions (circle one)
   no precipitation   light rain   moderate rain or light snow
   heavy rain or moderate snow   heavy snow

10a. Noble Gas Isotopes Released (in units of %, Ci or uCi/ml in stack)

Ar-41	________	Xe-131m	________
Kr-83m	________	Xe-133m	________
Kr-85m	________	Xe-133	________
Kr-85	________	Xe-135m	________
Kr-87	________	Xe-135	________
Kr-88	________	Xe-137	________
Kr-89	________	Xe-138	________
Kr-90	________		
		Total	________

10b. Total Curies Released If Isotopic is Unknown ________

Ground Release (all release points other than the main stack) Worksheet #1

11. Wind Speed 33 Ft. Level ________ m/sec
12. Wind Direction (wind from) 33 Ft. Level ________ °
13. ΔT 196 Ft. Level ________ °C
14. Time After Shutdown or Age of Gases ________ hrs.
15. Duration or Expected Duration of Release ________ min.
16. Weather Conditions (circle one)
    no precipitation   light rain   moderate rain or light snow
    heavy rain or moderate snow   light snow
17. Noble Gas isotopes Released (in units of %, Ci or uCi/ml in stack)

Ar-41	________	Xe-131m	________
Kr-83m	________	Xe-133m	________
Kr-85m	________	Xe-133	________
Kr-85	________	Xe-135m	________
Kr-87	________	Xe-135	________
Kr-88	________	Xe-137	________
Kr-89	________	Xe-138	________
Kr-90	________		
		Total	________

18. Total Curies Released if Isotopic is Unknown ________

CONVERSION m/sec = mph/2.2 $\Delta°C = \Delta°F/1.8$

WORKSHEET #1

CY GROUND RELEASES

1. Windspeed @ 33 ft. level (#11 on data sheet) = ________ m/sec (Enter 0.5 if less than 0.5)
(1)

2. Wind Direction @ 33 ft. level (#12 on data sheet) = ________°
(2)

Downwind Direction = ________°+/-180° = ________° (must be 0-360°)
(2) (3)

3. Downwind Sector [Table 1 and (3)] = ________
(4)

4. Distance to Nearest Land or Site Boundary [Table 1 and (3)] = ________ m
(5)

5. ΔT 196 ft. level (#13 on data sheet) = ________°C

6. Stability Class

	Choose One
ΔT 196 ≤ -1.0°C	A
ΔT 196 = -0.9°C	B
ΔT 196 = -0.8°C	C
-0.7°C ≤ ΔT 196 ≤ -0.3°C	D
-0.2°C ≤ ΔT 196 ≤ +0.7°C	E
+0.8°C ≤ ΔT 196 ≤ +1.9°C	F
+2.0°C ≤ ΔT 196	G

Stability Class = ________
(6)

7. Xu/Q [Table 2, (5) and (6)] = ________ m^{-2}
(7)

8. Ground Release X/Q = ________ ÷ ________ = ________ sec/m^3
(7) (1) (8)

9. Ground Level Airborne Concentration from Noble Gas

________ Ci/sec X ________ = ________ Ci/m^2
Worksheet #10 of Release Rate Procedure CONI 4.03 (8) (9)

10. Fraction of Release Due to Specific Isotopes; see #17 on Data Sheet (skip if data unavilable)

Isotope   % x th ÷ 100   OR   Ci x th ÷ Total   OR   uCi/ml x th ÷ Total

Ar-41 = ________ (10)

Kr-83m = ________ (11)

Kr-85m = ________ (12)

Kr-85 = ________ (13)

Kr-87 = ________ (14)

Kr-88 = ________ (15)

Kr-89 = ________ (16)

Kr-90 = ________ (17)

Xe-131m = ________ (18)

Xe-133m = ________ (19)

Xe-133 = ________ (20)

Xe-135m = ________ (21)

Xe-135 = ________ (22)

Xe-137 = ________ (23)

Xe-138 = ________ (24)

11. Semi-infinite Cloud Whole Body Dose Rate (skip part a. if isotopic data unavailable)

a. Dose Rate Based Upon Isotopic Data

Isotope					Dose Factor			
Ar-41	________ (9)	Ci/m^3	X	________ (10)	X 1.68×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (a)	$\frac{mrem}{min}$
Kr-83m	________ (9)	Ci/m^3	X	________ (11)	X 1.44×10^{-1} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (b)	$\frac{mrem}{min}$
Kr-85m	________ (9)	Ci/m^3	X	________ (12)	X 2.23×10^3 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (c)	$\frac{mrem}{min}$
Kr-85	________ (9)	Ci/m^3	X	________ (13)	X 3.06×10^1 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (d)	$\frac{mrem}{min}$
Kr-87	________ (9)	Ci/m^3	X	________ (14)	X 1.13×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (e)	$\frac{mrem}{min}$
Kr-88	________ (9)	Ci/m^3	X	________ (15)	X 2.80×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (f)	$\frac{mrem}{min}$
Kr-89	________ (9)	Ci/m^3	X	________ (16)	X 3.16×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (g)	$\frac{mrem}{min}$
Kr-90	________ (9)	Ci/m^3	X	________ (17)	X 2.97×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (h)	$\frac{mrem}{min}$
Xe-131m	________ (9)	Ci/m^3	X	________ (18)	X 1.74×10^2 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (i)	$\frac{mrem}{min}$
Xe-133m	________ (9)	Ci/m^3	X	________ (19)	X 4.78×10^2 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (j)	$\frac{mrem}{min}$
Xe-133	________ (9)	Ci/m^3	X	________ (20)	X 5.59×10^2 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (k)	$\frac{mrem}{min}$
Xe-135m	________ (9)	Ci/m^3	X	________ (21)	X 5.94×10^3 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (l)	$\frac{mrem}{min}$
Xe-135	________ (9)	Ci/m^3	X	________ (22)	X 3.44×10^3 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (m)	$\frac{mrem}{min}$
Xe-137	________ (9)	Ci/m^3	X	________ (23)	X 2.70×10^3 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (n)	$\frac{mrem}{min}$
Xe-138	________ (9)	Ci/m^3	X	________ (24)	X 1.68×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$	=	________ (o)	$\frac{mrem}{min}$

Whole Body Dose Rate = $\sum_{a}^{o}$ mrem/min = ____________ (25) mrem/min

OR

b. Default Value if Isotopic Data Unavilable

Whole Body Dose Rate =

______ (9) Ci/m^3 X $10{,}500e^{-0.15T}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (25) mrem/min for T< 10 hrs.

______ (9) Ci/m^3 X $2{,}500e^{-0.031(T-10)}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (25) mrem/min for T = 10 to < 48 hrs.

______ (9) Ci/m^3 X $780e^{-0.007(T-48)}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (25) mrem/min for T = 48 to 96 hrs.

______ (9) Ci/m^3 X 559 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (25) mrem/min for T > 96 hrs.

Where "T" is time in hours after shutdown of the release or age of gases (#14 on data sheet)

12. Finite Cloud Correction Factor [Figure 1, (5) and (6)] = ______ (26)

13. Duration of Release (#15 on data sheet) = ______ (27) min
(Enter 600 if unknown and continuing)

14. Projected whole Body Dose Due to Ground Releases

______ (27) min X ______ (25) mrem/min ÷ ______ (26) = ______ (28) mrem

——— If no Iodine Releases go to Worksheet #3; Otherwise Continue ———

15. Iodine Depletion Correction Factor [Figure 2, (5) and #16 on Data Sheet] = ______ (29)

16. Ground Level Airborne Concentration from Radioiodine

______ Ci/sec X ______ (8) X ______ (29) = ______ (30 Ci/m^3
Worksheet #10
Release Rate
Procedure CONI-4.03

17. Total Iodine Decay Correction Factor [Figure 3 and #14 on Data Sheet] = ______ (31)

18. Projected Thyroid Dose (child[1])

a. For release rates based upon Total Radioiodine

$\underset{(31)}{\underline{\qquad\qquad}}$ X $\underset{(30)}{\underline{\qquad\qquad}}$ Ci/m^3 $\underset{(27)}{\underline{\qquad\qquad}}$ min X 1.1 X 10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(32)}{\underline{\qquad\qquad}}$ mrem

b. For release rates based upon I-131 or I-131 DEQ

$\underset{(30)}{\underline{\qquad\qquad}}$ Ci/m^3 X $\underset{(27)}{\underline{\qquad\qquad}}$ min X 2.7 X 10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(32)}{\underline{\qquad\qquad}}$ mrem

1 Child Dose approximately 2 times adult dose.

WORKSHEET #2

CY MIXED RELEASES

1. Windspeed @ 196 Ft. level (#1 on data sheet) = ______ m/sec (enter 0.5 if less than 0.5 m/sec)
   (1)

2. Wind Direction @ 196 Ft. level (#2 on data sheet) = ____________°
   (2)

   Downwind Direction = __________°+/- 180° = _________°(must be 0-360°)
   (2) (3)

3. Downwind Sector [Table 1 and (3)] = __________
   (4)

4. Distance to Nearest Land or Site Boundary [Table 1 and (3)] = ________ m
   (5)

5. ΔT 196 Ft. level (#3 on data sheet) = __________°C

6. Stability Class

	Choose one
ΔT 196 ≤ -1.0°C	A
ΔT 196 = -0.9°C	B
ΔT 196 = -0.8°C	C
-0.7°C ≤ ΔT 196 ≤ -0.3°C	D
-0.2°C ≤ ΔT 196 ≤ +0.7°C	E
+0.8°C ≤ ΔT 196 ≤ +1.9°C	F
+2.0°C ≤ ΔT 196	G

   Stability Class = _______________
   (6)

7. Stack Velocity to Wind Speed Ratio

   a. Release Rate Procedure CONI-4.03 Worksheet #1 Pg. 3 = ________ ft^3/min.
   (7)

   b. Ratio = _______ ÷ 5450 ÷ _______ = ________
   (7) (1) (8)

8. Release Mode Classification

   a. For (8) less than 1.0 we ground release meteorology - go to step 10

   b. For (8) greater than or equal to 5.0 use elevated release meteorology - go to step 11

   c. For all other values of (8) use mixed release meteorology - go to step 9

9. Mixed Release Fractions

a. Fraction of release assigned as ground release

For $1.0 \leq (8) \leq 1.5$ fraction = 2.58-(1.58 x $\underset{(8)}{\underline{\hspace{3em}}}$) = $\underset{(9)}{\underline{\hspace{3em}}}$

For $1.5 \leq (8) \leq 5.0$ fraction = 0.30-(0.06 x $\underset{(8)}{\underline{\hspace{3em}}}$) = $\underset{(9)}{\underline{\hspace{3em}}}$

b. Fraction of release assigned as elevated release = 1.00-$\underset{(9)}{\underline{\hspace{2em}}}$ = $\underset{(10)}{\underline{\hspace{3em}}}$

10. Ground Release Portion of Mixed Release

a. Wind Speed @ 33 ft. level (#5 on data sheet) = $\underset{(11)}{\underline{\hspace{3em}}}$ m/sec
(enter 0.5 if less than 0.5 m/sec)

b. Wind Direction @ 33 ft. level (#6 on data sheet) = $\underset{(12)}{\underline{\hspace{3em}}}$°

c. Downwind Direction = $\underset{(12)}{\underline{\hspace{3em}}}$°+/-180° = $\underset{(13)}{\underline{\hspace{3em}}}$° (must be 0-360°)

d. Downwind Sector [Table 1 and (12) or (13)] = $\underset{(14)}{\underline{\hspace{4em}}}$

e. Distance to nearest land or site boundary [Table 1 and (12) or (13)] = $\underset{(15)}{\underline{\hspace{3em}}}$ m

f. Xu/Q, [Table 2, (6) and (15)] = $\underset{(16)}{\underline{\hspace{4em}}}$ m^{-2}

g. Ground X/Q = $\underset{(16)}{\underline{\hspace{3em}}}$ ÷ $\underset{(11)}{\underline{\hspace{3em}}}$ = $\underset{(17)}{\underline{\hspace{3em}}}$ sec/m^3

h. Ground Level Airborne Concentration from Noble Gases

$\underline{\hspace{4em}}$Ci/sec x $\underset{(17)}{\underline{\hspace{3em}}}$ x $\underset{(9)*}{\underline{\hspace{2em}}}$ = $\underset{(18)}{\underline{\hspace{3em}}}$$Ci/m^3$
Worksheet #10
of Release
Rate Pro-
cedure CONI-4.03

i. Fraction of Release Due to Specific Isotopes; see 10a of Data Sheet (skip if data unavailable)

*Default Value of 1.0 if (9) is not completed.

Isotope	% x th ÷ 100 OR Ci x th ÷ Total OR uCi/ml x th ÷ Total
Ar-41 =	______ (19)
Kr-83m =	______ (20)
Kr-85m =	______ (21)
Kr-85 =	______ (22)
Kr-87 =	______ (23)
Kr-88 =	______ (24)
Kr-89 =	______ (25)
Kr-90 =	______ (26)
Xe-131m =	______ (27)
Xe-133m =	______ (28)
Xe-133 =	______ (29)
Xe-135m =	______ (30)
Xe-135 =	______ (31)
Xe-137 =	______ (32)
Xe-138 =	______ (33)

j. Semi-Infinite Cloud Whole Body Dose Rate (skip to part k if isotopic data unavailable)

Ar-41 ______ (18) Ci/m^3 X ______ (19) X 1.68×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (a) $\frac{mrem}{min}$

Kr-83m ______ (18) Ci/m^3 X ______ (20) X 1.44×10^{-1} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (b) $\frac{mrem}{min}$

Kr-85m ______ (18) Ci/m^3 X ______ (21) X 2.23×10^3 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (c) $\frac{mrem}{min}$

Kr-85 ______ (18) Ci/m^3 X ______ (22) X 3.06×10^1 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (d) $\frac{mrem}{min}$

Kr-87 ______ (18) Ci/m^3 X ______ (23) X 1.13×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (e) $\frac{mrem}{min}$

Kr-88 ______ (18) Ci/m^3 X ______ (24) X 2.80×10^4 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ______ (f) $\frac{mrem}{min}$

$$\text{Kr-89}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(25)}{\underline{\qquad\qquad}} \times 3.16 \times 10^{4}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(g)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Kr-90}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(26)}{\underline{\qquad\qquad}} \times 2.97 \times 10^{4}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(h)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-131m}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(27)}{\underline{\qquad\qquad}} \times 1.74 \times 10^{2}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(i)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-133m}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(28)}{\underline{\qquad\qquad}} \times 4.78 \times 10^{2}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(j)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-133}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(29)}{\underline{\qquad\qquad}} \times 5.59 \times 10^{2}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(k)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-135m}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(30)}{\underline{\qquad\qquad}} \times 5.94 \times 10^{3}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(l)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-135}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(31)}{\underline{\qquad\qquad}} \times 3.44 \times 10^{3}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(m)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-137}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(32)}{\underline{\qquad\qquad}} \times 2.70 \times 10^{3}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(n)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Xe-138}\quad \underset{(18)}{\underline{\qquad\qquad}}\ \text{Ci/m}^3 \times \underset{(33)}{\underline{\qquad\qquad}} \times 1.68 \times 10^{4}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(o)}{\underline{\qquad\qquad}}\ \frac{\text{mrem}}{\text{min}}$$

$$\text{Whole Body Dose Rate} = \sum_{a}^{o} \text{mrem/min} = \underset{(34)}{\underline{\qquad\qquad}}\ \text{mrem/min}$$

k. Default Value if Isotopic Data Unavailable

Whole Body Dose Rate =

$$\underset{(18)}{\underline{\qquad}}\ \text{Ci/m}^3 \times 13{,}500e^{-0.15T}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(34)}{\underline{\qquad\qquad}}\ \text{mrem/min for } T < 10 \text{ hrs}$$

$$\underset{(18)}{\underline{\qquad}}\ \text{Ci/m}^3 \times 2{,}500e^{-0.031(T-10)}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(34)}{\underline{\qquad\qquad}}\ \text{mrem/min for } T = 10 \text{ to } < 48 \text{ hrs}$$

$$\underset{(18)}{\underline{\qquad}}\ \text{Ci/m}^3 \times 780e^{-0.007(T-48)}\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(34)}{\underline{\qquad\qquad}}\ \text{mrem/min for } T = 48 \text{ to } 96 \text{ hrs}$$

$$\underset{(18)}{\underline{\qquad}}\ \text{Ci/m}^3 \times 559\ \frac{\text{mrem-m}^3}{\text{min-Ci}} = \underset{(34)}{\underline{\qquad\qquad}}\ \text{mrem/min for } T > 96 \text{ hrs}$$

Where T is time in hours after shutdown of the release or age of the gases (#7 on data sheet)

l. Finite Cloud Correction Factor [Figure 1, (6) and (15)] = $\underset{(35)}{\underline{\qquad\qquad}}$

m. Duration of Release (#8 on data sheet) = ________ min (Enter 600 if unknown and continuing)
(36)

n. Projected Whole Body Dose Due to Ground Portion of Mixed Release

________ min X ________ mrem/min ÷ ________ = ________ mrem
(36) (34) (35) (37)

———— If no Iodine Releases go to step 11; Otherwise continue ————

o. Iodine Depletion Correction Factor [Figure 2, #9 on data sheet, and (15)] = ________
(38)

p. Ground level Airborne Concentration of Radioiodine from Ground Release Point

________ Ci/sec X ________ X ________ X ________ = ________ Ci/m^3
Worksheet #10 of Related Rate Procedure CONI-4.03 (17) (9)* (38) (39)

q. Projected Thyroid Dose (Child[1]) Due to Ground Portion of Mixed Release

1. For release based upon I-131 or I-131 DEQ:

________ Ci/m^3 x ________ min X $2.7 \times 10^7 \frac{\text{mrem-m}^3}{\text{Ci-min}}$ = ________ mrem
(39) (36) (40)

OR

2. For release based upon Total Radioiodine

Total Iodine Decay Correction Factor [Figure 3 and #7 on data sheet] = ________
(41)

________ X ________ Ci/m^3 x ________ min X $1.1 \times 10^7 \frac{\text{mrem-m}^3}{\text{Ci-min}}$ = ________ mrem
(41) (39) (36) (40)

11. Elevated Release Portion of Mixed Release

a. CY Main Stack Dose Per Unit Activity Released [Figures 4a-4r, (1), (5), (6) and time after shutdown of release or age of gases (#7 on data sheet)] = ________ mrem/Ci
(42)

b. Duration of Release (#8 on data sheet) = ________ min
(Enter 600 if unknown and continuing) (43)

*Default Value of 1.0 if (9) or (10) are not completed
1 Child dose approximately 2 times adult dose

c. Projected Whole Body Dose Due to Elevated Portion of Mixed Release

_______ Ci/sec X _____ mrem/Ci X _______ X _____ min X 60 = _______ mrem
Worksheet #10 of Release Rate Procedure CONI-4.03 (42) (10)* (43) (44)

——— If No Iodine Releases go to Worksheet #3; Otherwise Continue ———

d. Maximum Offsite Xu/Q [Table 3 and Footnote at bottom, (5) and (6)]
= ________ m^{-2}
(45)

e. Maximum Offsite X/Q = _______ ÷ _______ = _______ sec/m^3
(45) (1) (46)

f. Iodine Depletion Correction Factor [Figure 2, #9 on data sheet, and (5)] or Distance Corresponding to Maximum Xu/Q (see step 11.d) = ________
(47)

g. Maximum Ground Level Airborne Concentration of Radioiodine

_______ Ci/sec X _______ X _______ X _______ = _______ Ci/m^3
Worksheet #10 of Release Rate Procedure CONI-4.03 (47) (46) (10)* (48)

h. Projected Thyroid Dose (Child)[1] Due to Elevated Portion of Mixed Release (Complete 1 or 2)

1. For release based upon I-131 or I-131 DEQ

_______ Ci/m^3 X _______ min. X 2.7 X 10^7 $\frac{\text{mrem-min}}{\text{Ci-min}}$ = _______ mrem
(48) (43) (49)

OR

2. For release based upon total Radioiodine

Total Iodine Decay Correction Factor [Figure 3 and #7 on data sheet] = _______
(50)

_______ X _______ Ci/m^3 X _______ min X 1.1 X 10^7 $\frac{\text{mrem-m}^3}{\text{Ci-min}}$ = _______ mrem
(50) (48) (43) (49)

*Default value of 1.0 if (10) is not completed
1 Child Dose approximately 2 times adult dose

WORKSHEET #3

CY DOSE SUMMARY

1. Total Projected Whole Body Doses

Source Point	Whole Body Dose	Sector	Distance
CY Ground Release	________ mrem (28) of Worksheet #1	________ (4) of Worksheet #1	________ m (5) of Worksheet #1
CY Mixed Release (Ground Portion)	________ mrem (37) of Worksheet #2	________ (14) of Worksheet #2	________ m (15) of Worksheet #2
CY Mixed Release (Elevated Portion)	________ mrem (44) of Worksheet #2	________ (4) of Worksheet #2	________ m (5) of Worksheet #2

Total Dose = ________ (28) + ________ (37) + ________ (44) = ________ (1) mrem

Distance [choose largest of distances shown] = ________ (2) m

Sector [choose sector corresponding to (2)] = ________ (3)

Total Projected Thyroid Doses (child[1])

Source Point	Thyroid Dose	Sector	Distance
CY Ground Release	________ mrem (32) of Worksheet #1	________ (4) of Worksheet #1	________ m (5) of Worksheet #1
CY Mixed Release (Ground Portion)	________ mrem (40) of Worksheet #2	________ (14) of Worksheet #2	________ m (15) of Worksheet #2
CY Mixed Release (Elevated Portion)	________ mrem (49) of Worksheet #2	________ (4) of Worksheet #2	________ m Distance Corresponding to (45) of Worksheet #2

Total Dose = ________ (32) + ________ (40) + ________ (49) = ________ (4) mrem

Distance [choose largest of distances shown] = ________ (5) m

Sector [choose sector corresponding to (5)] = ________ (6)

1 Child Dose = approximately 2 times adult dose

WORKSHEET #4

CY CLASS A AND B WHOLE BODY DOSE LINES

1. Projected Whole Body Dose [(1) of Worksheet #3] = ________ mrem
(1)

2. If Projected Whole Body Dose > 5000 mrem Continue; Otherwise skip to 3.

a. 5000 ÷ ______ = ________
(1) (2)

b. Determine if majority of dose is due to ground or elevated meteorology from Worksheet #3 and (28), (37), and (44) to (1) ratio.

c. Calculate approximate 5 rem line based upon either ground or elevated meteorology.

1. Ground meteorology: Use Figure 7 to find fractional reduction factors corresponding to distance (Worksheet #3) of majority of dose = ______
(3)

Then 5 rem line is distance (corresponding to fractional reduction factor of _____ X _____ = _____
(3) (2) (4)

Distance corresponding to (4) on Figure 7 is ______ meters
(5)

2. Elevated meteorology: Use ratio method to calculate 5 rem line using the appropriate Figure 4 for "estimated" distance so that

____________ mrem/Ci X ____________ = ____________ mrem/Ci
(42) of Worksheet #2 (2) (6)

Then, distance corresponding to (6) on appropriate Figure 4 is ______ meters
(5)

d. Class A exists to ______ ÷ 1600 = ______ miles
(5) (7)

3. If Projected Whole Body Dose > 1000 mrem continue; otherwise stop - no Class A or Class B Whole Body Doses offsite.

a. 1000 ÷ ______ = ______
(1) (8)

b. Calculate approximate 1 rem line based upon ground or elevated meteorology.

1. Ground Meteorology:

1 rem line is distance corresponding to fractional reduction factor of

______ (8) X ______ (3) = ______ (9)

Distance corresponding to (9) on Figure 7 is ______ (10) meters.

2. Elevated Meteorology:

______ (6) ÷ 5 = ______ (11) mrem/Ci

Distance corresponding to (11) on appropriate Figure 4 or 5 is ______ (10) meters.

c. Class B exists to ______ (10) ÷ 1600 = ______ (12) miles.

WORKSHEET #5

CY CLASS A AND B THYROID DOSE LINES

1. Projected Thyroid Dose [(4) of Worksheet #3] = ____________ mrem
   (1)

2. If Projected Thyroid Dose >25,000 mrem continue; Otherwise skip to 3

   a. 25,000 ÷ ________ = ____________
      (1) (2)

   b. Determine if majority of dose is due to ground or elevated meteorology from Worksheet #3 and (32), (40) and (49) to (4) ratio.

   c. Calculate approximate 25 rem line based upon either ground or elevated meteorology.

      1. Ground Meteorology: Use Figure 8 to find fractional reduction factor corresponding to distance (Worksheet #3) of majority of dose = ______.
         (3)

         Then 25 rem line is distance corresponding to fractional reduction factor of ______ X ______ = ______.
         (3) (2) (4)

         Distance corresponding to (4) on Figure 8 is ______ meters.
         (5)

      2. Elevated meteorology from main stack:

         Use Figure 9 and find distance corresponding to a dose reduction factor of (2). Then distance corresponding to (2) = ______ meters.
         (5)

   d. Class A exists to ______ ÷ 1600 = ______ miles.
      (5) (6)

3. If projected thyroid dose > 5000 mrem continue, otherwise stop - no Class A or Class B thyroid dose.

   a. 5000 ÷ ______ = ______
      (1) (7)

b. Calculate approximate 5 rem line based upon ground or elevated meteorology:

1. Ground meteorology: Use Figure 8 to find fractional reduction factor corresponding to distance of majority of dose = $\underset{(8)}{\underline{\hspace{3em}}}$.

   Then 5 rem line is distance corresponding to fractional reduction factor of $\underset{(7)}{\underline{\hspace{3em}}}$ X $\underset{(8)}{\underline{\hspace{3em}}}$ = $\underset{(9)}{\underline{\hspace{3em}}}$.

   Distance corresponding to (9) on Figure 8 is $\underset{(10)}{\underline{\hspace{3em}}}$ meters.

2. Elevated meteorology from main stack:

   Use Figure 9 and find distance corresponding to a dose reduction factor of (7). Distance corresponding to (7) = $\underset{(10)}{\underline{\hspace{3em}}}$ meters.

c. Class B exists to $\underset{(10)}{\underline{\hspace{3em}}}$ ÷ 1600 = $\underset{(11)}{\underline{\hspace{3em}}}$ miles.

TABLE 1

CY GROUND RELEASES AND MAIN STACK RELEASES
WIND DIRECTIONS + SECTORS

DIRECTION WIND IS FROM	DOWN WIND DIRECTION	DOWNWIND SECTOR	DISTANCE TO NEAREST LAND	DISTANCE TO NEAREST SITE BOUNDARY
169° - 191°	349° - 11°	A (N)	630 m	630 m
192° - 213°	12° - 33°	B (NNE)	690 m	690 m
214° - 236°	34° - 56°	C (NE)	710 m	710 m
237° - 258°	57° - 78°	D (ENE)	1240 m	1240 m
259° - 281°	79° - 101°	E (E)	1970 m	1510 m
282° - 303°	102° - 123°	F (ESE)	1970 m	1370 m
304° - 326°	124° - 146°	G (SE)	1300 m	340 m
327° - 348°	147° - 168°	H (SSE)	890 m	230 m
349° - 11°	169° - 191°	J (S)	740 m	150 m
12° - 33°	192° - 213°	K (SSW)	700 m	120 m
34° - 56°	214° - 236°	L (SW)	580 m	120 m
57° - 78°	237° - 258°	M (WSW)	580 m	130 m
79° - 101°	259° - 281°	N (W)	620 m	170 m
102° - 123°	282° - 303°	P (WNW)	550 m	310 m
124° - 146°	304° - 326°	Q (NW)	550 m	550 m
147° - 168°	327° - 348°	R (NNW)	510 m	510 m

NOTE: FOR "NEAREST LAND" SECTORS ON RIVERSIDE, THE DISTANCE TO THE OPPOSITE SIDE OF THE RIVER IS GIVEN

TABLE 2

CY GROUND Xu/Q FOR GIVEN STABILITY CLASS

Distance (meters)	A	B	C	D	E	F	G
120	3.58E-4	5.03E-4	6.70E-4	8.01E-4	8.50E-4	8.89E-4	9.07E-4
130	3.24E-4	4.70E-4	6.43E-4	7.85E-4	8.40E-4	8.84E-4	9.04E-4
150	2.68E-4	4.10E-4	5.90E-4	7.51E-4	8.19E-4	8.74E-4	8.99E-4
170	2.24E-4	3.58E-4	5.40E-4	7.18E-4	7.97E-4	8.63E-4	8.93E-4
230	1.36E-4	2.46E-4	4.14E-4	6.19E-4	7.28E-4	8.27E-4	8.74E-4
310	7.70E-5	1.58E-4	2.95E-4	5.04E-4	6.37E-4	7.74E-4	8.44E-4
340	6.33E-5	1.36E-4	2.62E-4	4.67E-4	6.06E-4	7.53E-4	8.32E-4
510	2.42E-5	6.78E-5	1.46E-4	3.10E-4	4.54E-4	6.38E-4	7.59E-4
550	1.94E-5	5.90E-5	1.30E-4	2.83E-4	4.25E-4	6.13E-4	7.40E-4
580	1.66E-5	5.34E-5	1.19E-4	2.66E-4	4.03E-4	5.93E-4	7.28E-4
620	1.36E-5	4.69E-5	1.07E-4	2.45E-4	3.79E-4	5.70E-4	7.08E-4
630	1.30E-5	4.54E-5	1.05E-4	2.40E-4	3.73E-4	5.64E-4	7.06E-4
690	9.91E-6	3.80E-5	8.99E-5	2.13E-4	3.41E-4	5.31E-4	6.80E-4
700	9.50E-6	3.69E-5	8.79E-5	2.09E-4	3.36E-4	5.26E-4	6.74E-4
710	9.11E-6	3.60E-5	8.58E-5	2.05E-4	3.31E-4	5.19E-4	6.70E-4
740	8.06E-6	3.32E-5	8.00E-5	1.94E-4	3.16E-4	5.04E-4	6.58E-4
890	5.20E-6	2.32E-5	5.85E-5	1.50E-4	2.58E-4	4.32E-4	5.98E-4
1240	2.72E-6	1.22E-5	3.26E-5	9.36E-5	1.70E-4	3.19E-4	4.83E-4
1300	2.48E-6	1.11E-5	3.00E-5	8.74E-5	1.60E-4	3.04E-4	4.67E-4
1970	1.38E-6	4.89E-6	1.42E-5	4.74E-5	9.07E-5	1.92E-4	3.30E-4
3000	7.40E-7	2.13E-6	6.69E-6	2.59E-5	5.30E-5	1.31E-4	2.84E-4
4000	5.70E-7	1.21E-6	3.95E-6	1.66E-5	3.46E-5	8.67E-5	1.92E-4
5000	4.70E-7	7.80E-7	2.63E-6	1.18E-5	2.50E-5	6.36E-5	1.43E-4
10000	2.60E-7	3.50E-7	7.55E-7	4.22E-6	9.48E-6	2.51E-5	5.97E-5

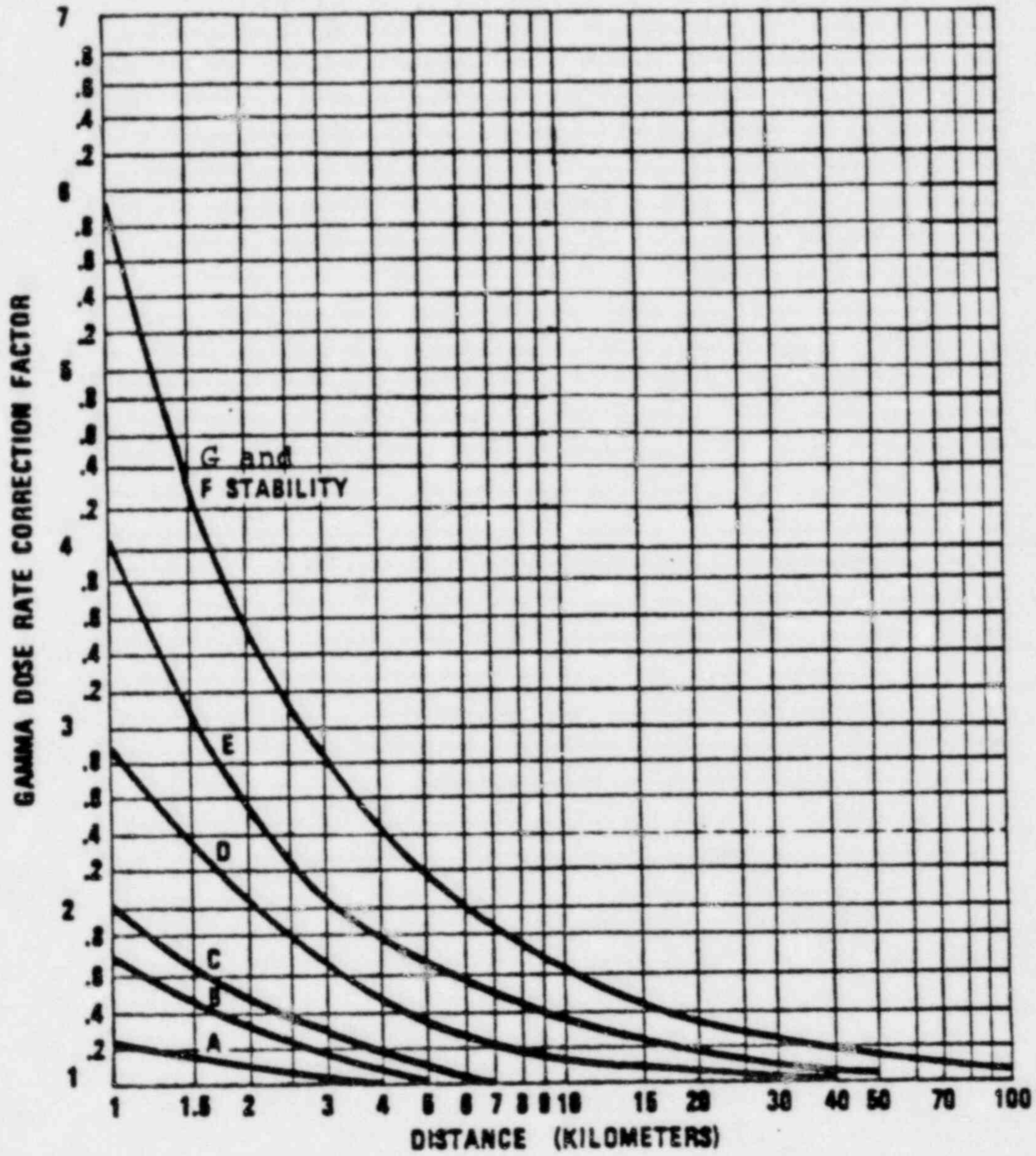
TABLE 3

CY ELEVATED Xu/Q FOR GIVEN STABILITY

Distance (meters)	A	B	C	D	E	F	G
120	4.55E-6	1.85E-7	2.54E-11	less than 1.00E-20	less than 1.00E-20	less than 1.00E-20	less than 1.00E-20
130	8.12E-6	5.21E-7	2.65E-10	1.37E-20	"	"	"
150	1.79E-5	2.27E-6	8.04E-9	9.52E-17	"	"	"
170	2.89E-5	5.98E-6	7.81E-8	3.79E-14	"	"	"
230	4.96E-5*	2.52E-5	2.78E-6	6.20E-10	2.96E-15	"	"
310	4.84E-5	4.49E-5	1.69E-5	1.35E-7	6.82E-11	"	"
340	4.44E-5	4.80E-5*	2.37E-5	4.11E-7	5.80E-10	3.90E-19	"
510	2.21E-5	4.31E-5	4.70E-5	8.47E-6	2.92E-7	6.82E-12	2.21E-19
550	1.82E-5	4.01E-5	4.84E-5	1.17E-5	6.07E-7	5.17E-11	1.00E-17
580	1.58E-5	3.79E-5	4.88E-5*	1.42E-5	9.55E-7	1.88E-10	1.17E-16
620	1.31E-5	3.50E-5	4.86E-5	1.75E-5	1.60E-6	7.94E-10	1.78E-15
630	1.25E-5	3.43E-5	4.84E-5	1.84E-5	1.78E-6	1.09E-9	3.24E-15
690	9.70E-6	3.02E-5	4.69E-5	2.29E-5	3.19E-6	6.00E-9	8.56E-14
700	9.31E-6	2.96E-5	4.67E-5	2.37E-5	3.45E-6	7.68E-9	1.38E-13
710	8.94E-6	2.90E-5	4.62E-5	2.43E-5	3.73E-6	9.73E-9	2.18E-13
740	7.93E-6	2.73E-5	4.51E-5	2.63E-5	4.64E-6	1.86E-8	7.53E-13
890	4.63E-6	2.04E-5	3.88E-5	3.32E-5	1.01E-5	1.67E-7	8.14E-11
1240	1.73E-6	1.15E-5	2.59E-5	3.63E-5*	2.07E-5	1.82E-6	1.50E-8
1300	1.51E-6	1.05E-5	2.45E-5	3.59E-5	2.21E-5	2.30E-6	2.48E-8
1970	1.00E-6	4.81E-6	1.29E-5	2.83E-5	2.77E-5*	9.45E-6	5.91E-7
3000	7.40E-7	2.11E-6	6.34E-6	1.86E-5	2.41E-5	1.70E-5	3.50E-6
4000	5.00E-7	1.20E-6	3.83E-6	1.32E-5	1.95E-5	1.91E-5*	6.52E-6
5000	4.70E-7	7.77E-7	2.58E-6	9.95E-6	1.60E-5	1.88E-5	8.72E-6
10000	2.60E-7	3.50E-7	7.51E-7	3.91E-6	7.57E-6	1.30E-5	1.12E-5*

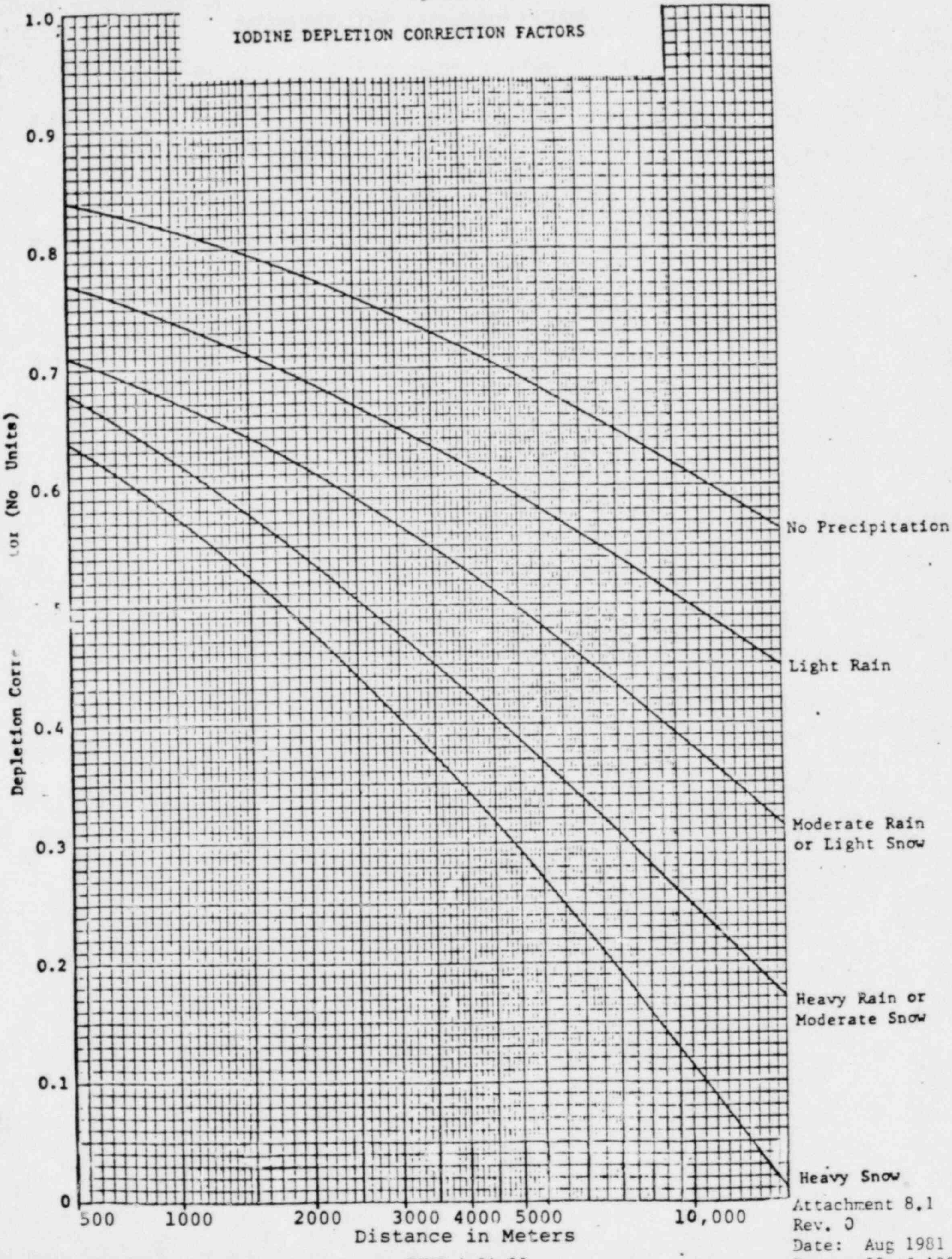
*Denotes Maximum Ground Xu/Q for use in Ground Level Radioiodine Airborne Concentrations if Beyond Site Boundary.

Figure 1



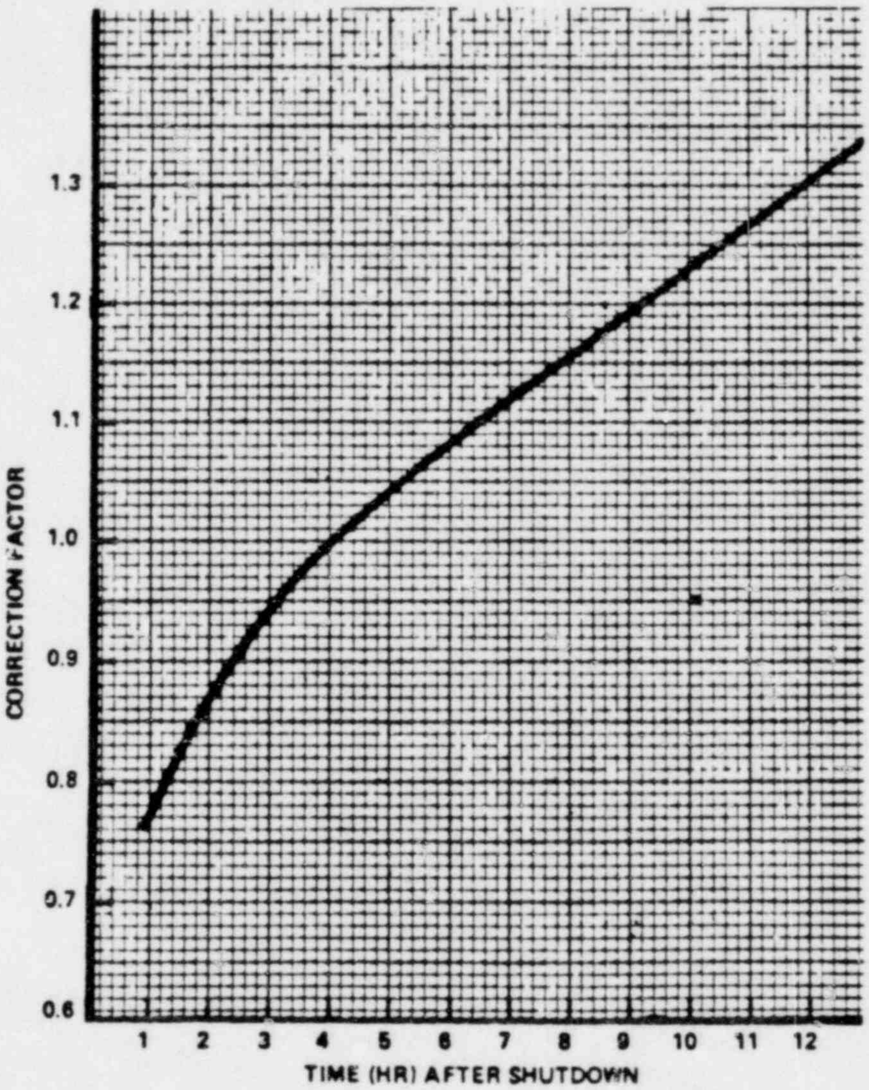
Gamma Exposure Rate Finite Cloud Correction Factor

Figure 2



IODINE DEPLETION CORRECTION FACTORS
1.0
0.9
0.8
0.7
0.6
0.4
0.3
0.2
0.1
0
Depletion Corr
or (No Units)
500
1000
2000
3000
4000
5000
10,000
Distance in Meters
No Precipitation
Light Rain
Moderate Rain or Light Snow
Heavy Rain or Moderate Snow
Heavy Snow

Figure 3



Correction Factors for Thyroid Inhalation Dose as a Function of Time After Reactor Shutdown That Radioiodine Concentration is Measured

Figure 4-a

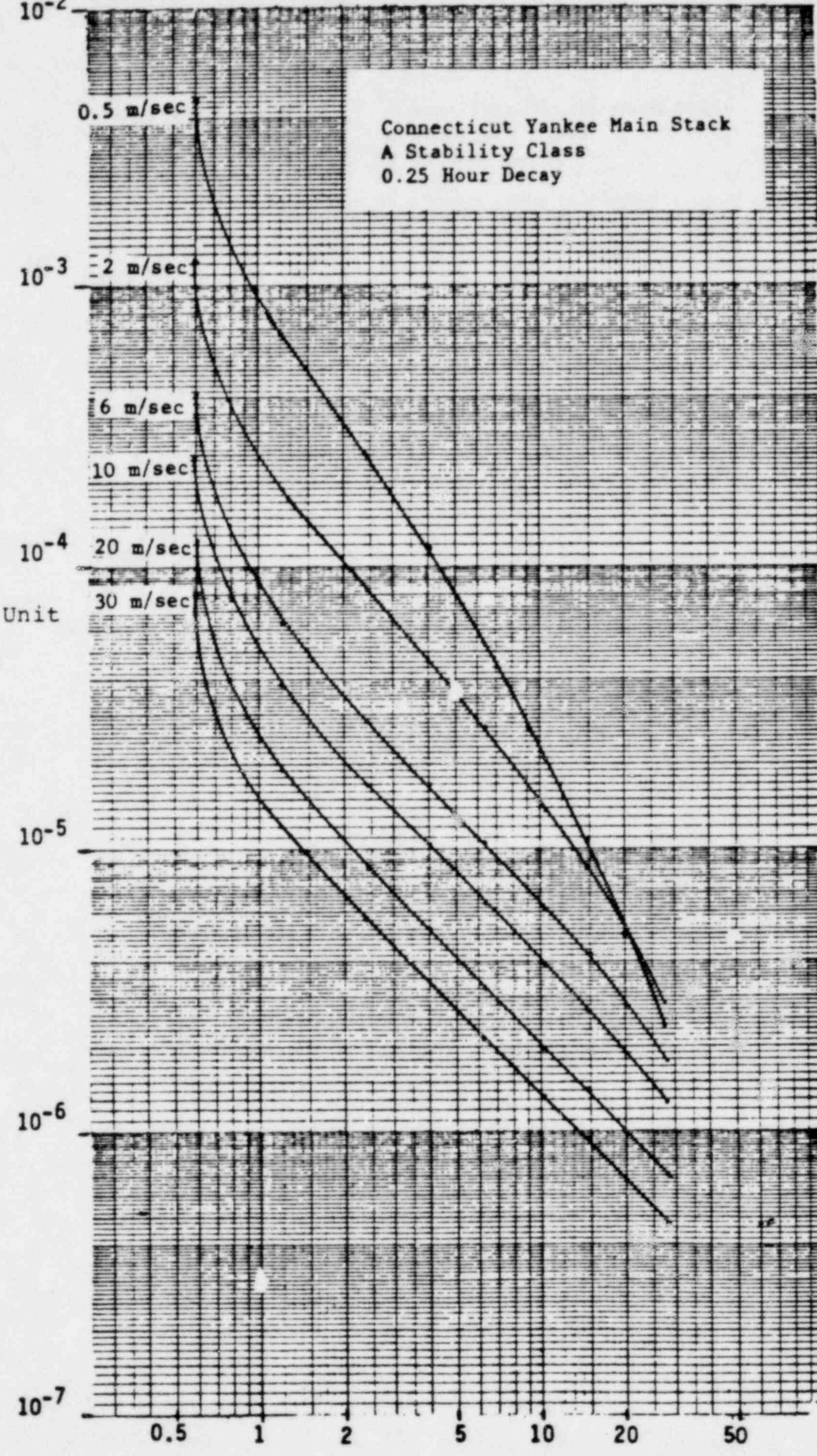


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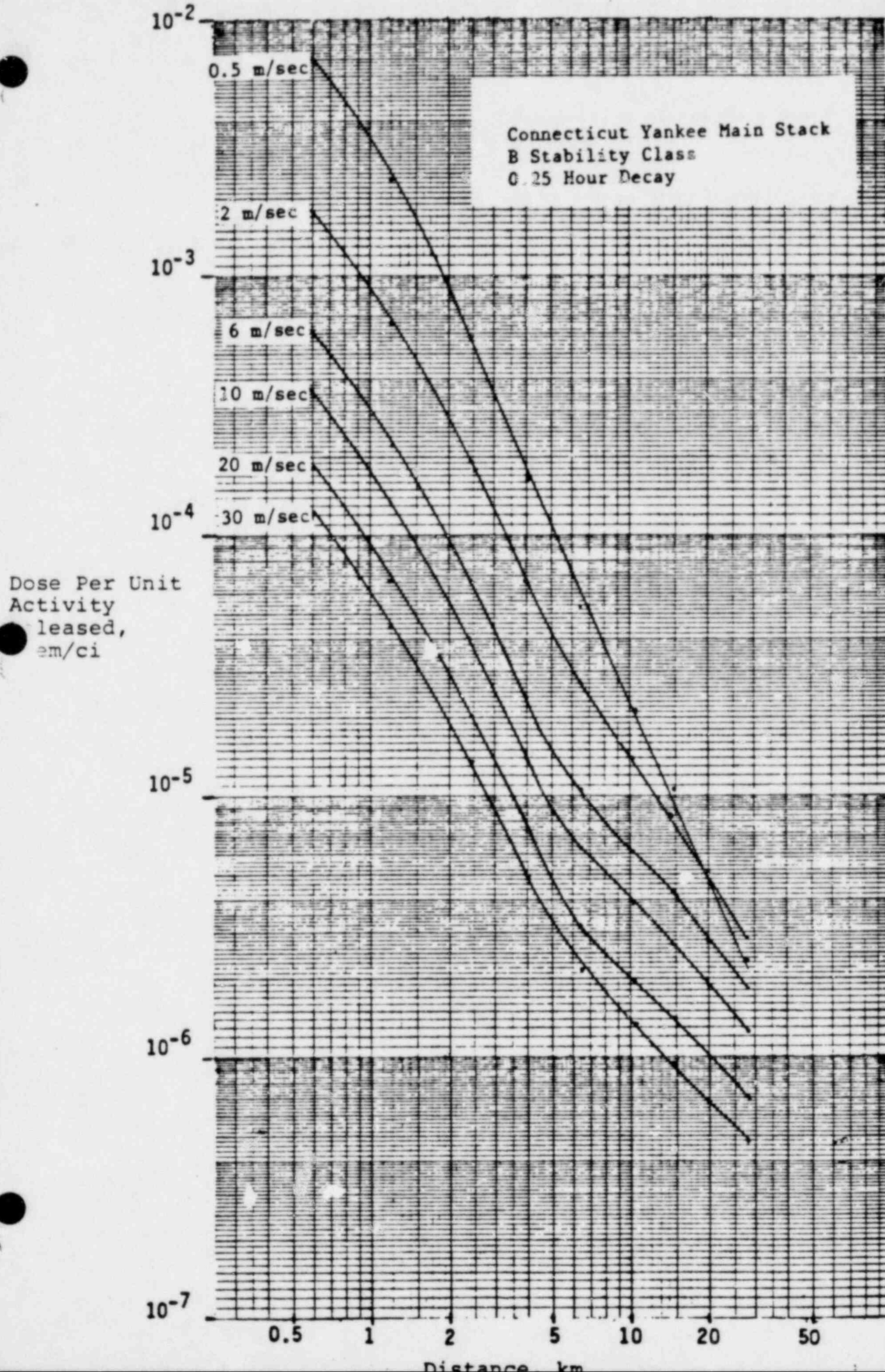
Figure 4-b



Connecticut Yankee Main Stack
B Stability Class
0.25 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-c

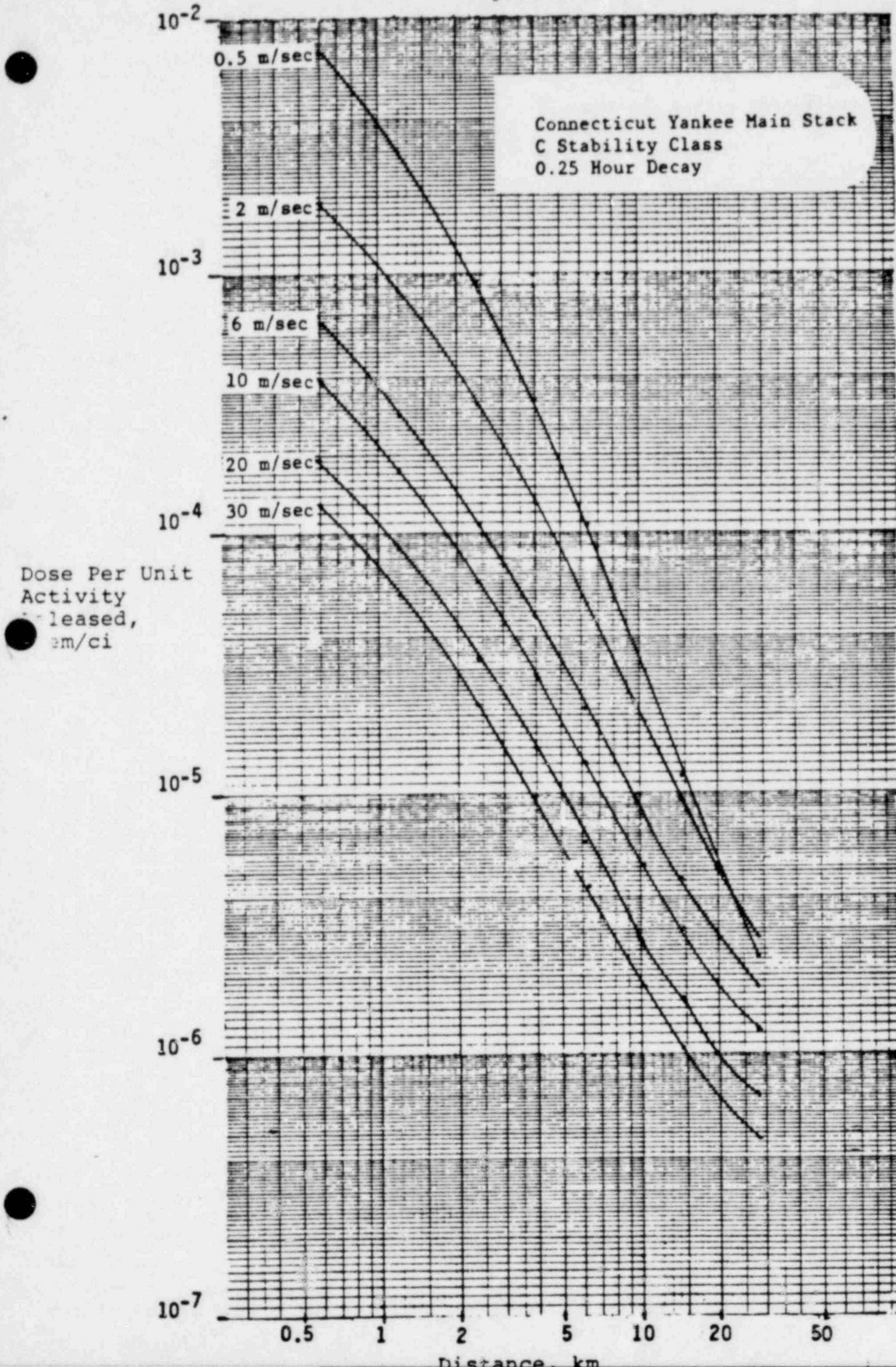


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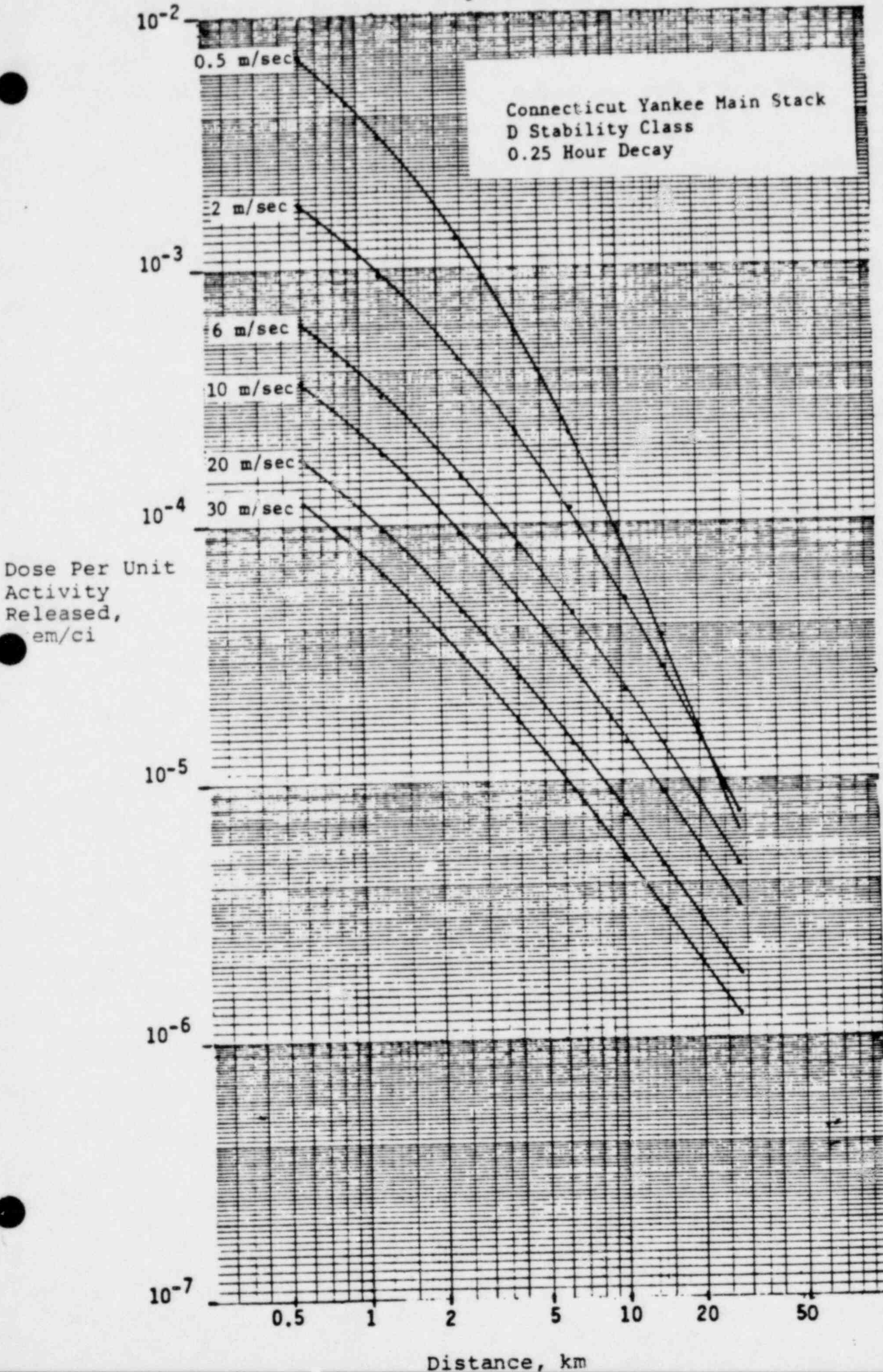
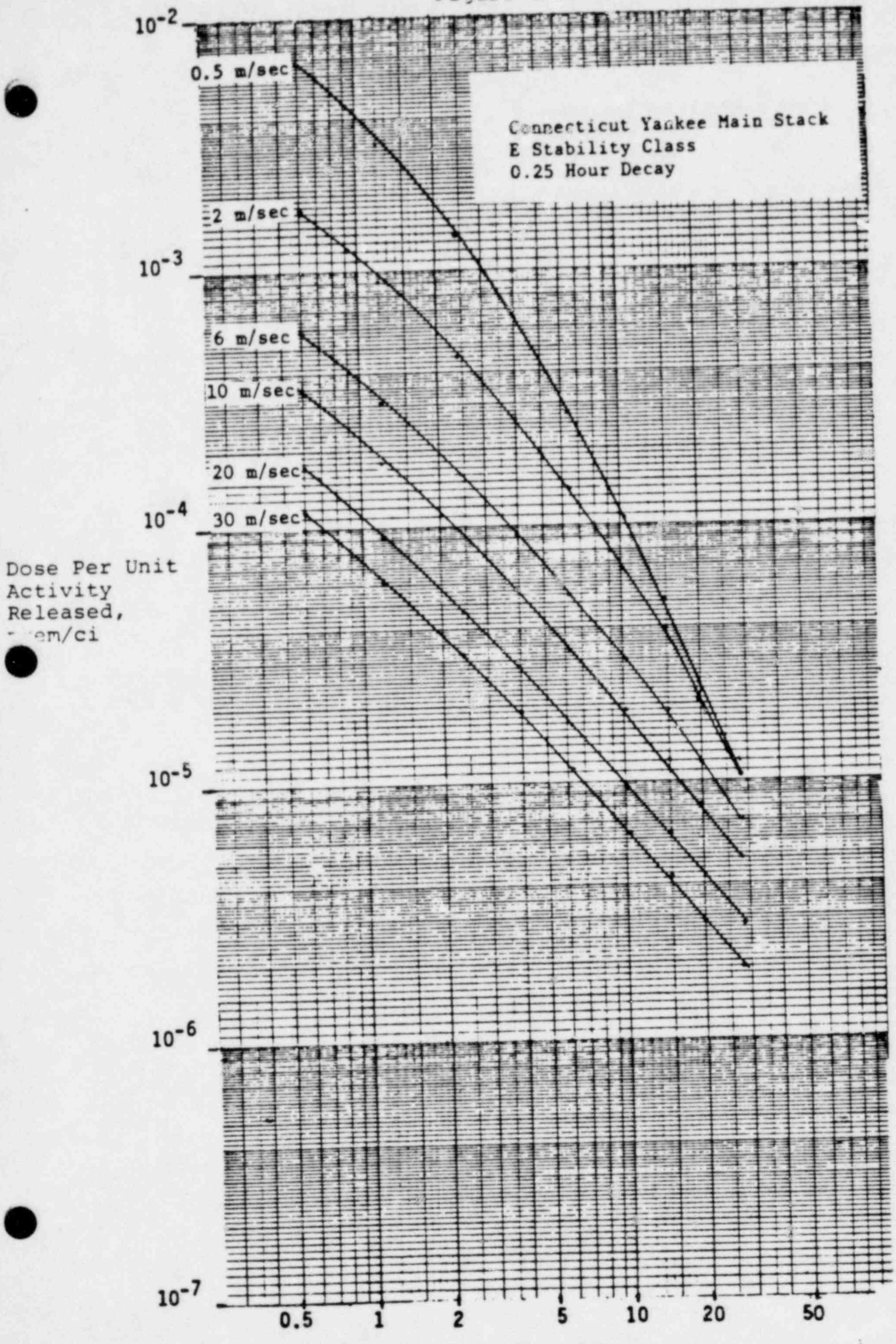
Figure 4-d



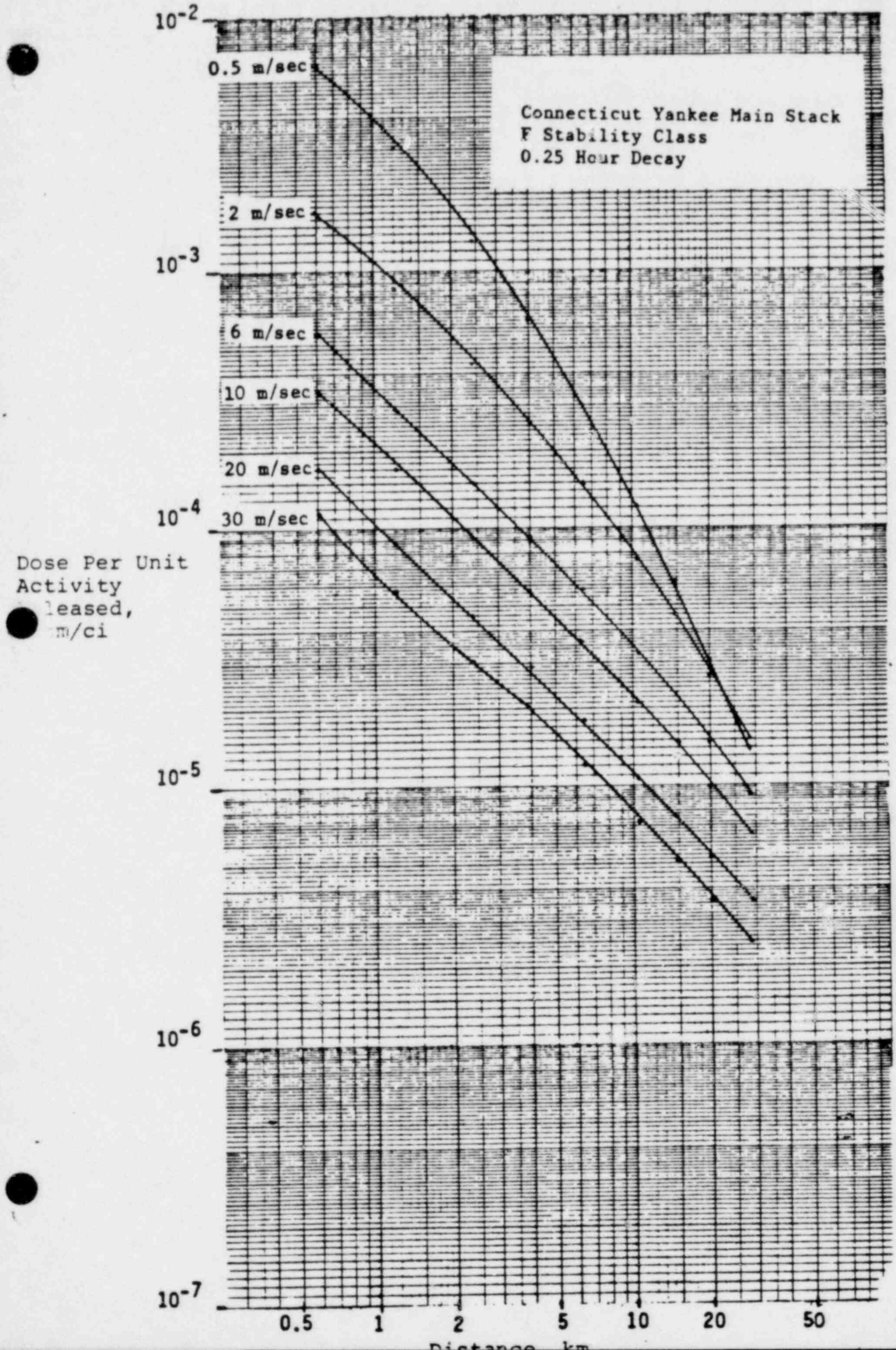
Connecticut Yankee Main Stack
D Stability Class
0.25 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-e



10-2
10-3
10-4
10-5
10-6
10-7
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
Connecticut Yankee Main Stack
E Stability Class
0.25 Hour Decay
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-f



Attachment 8.1
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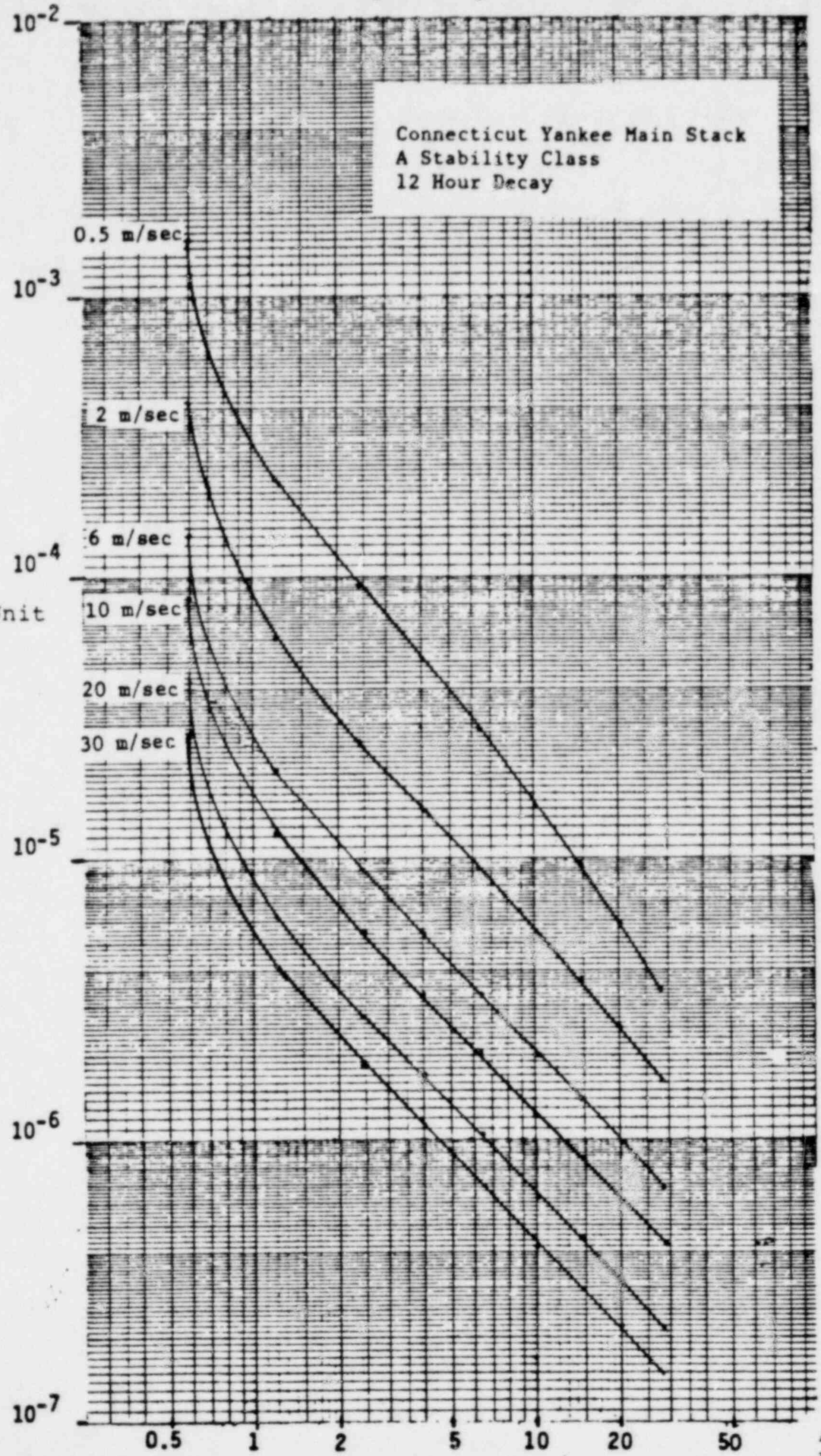
Figure 4-g

Dose Per Unit Activity Released, mrem/ci



Distance, km

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Figure 4-h

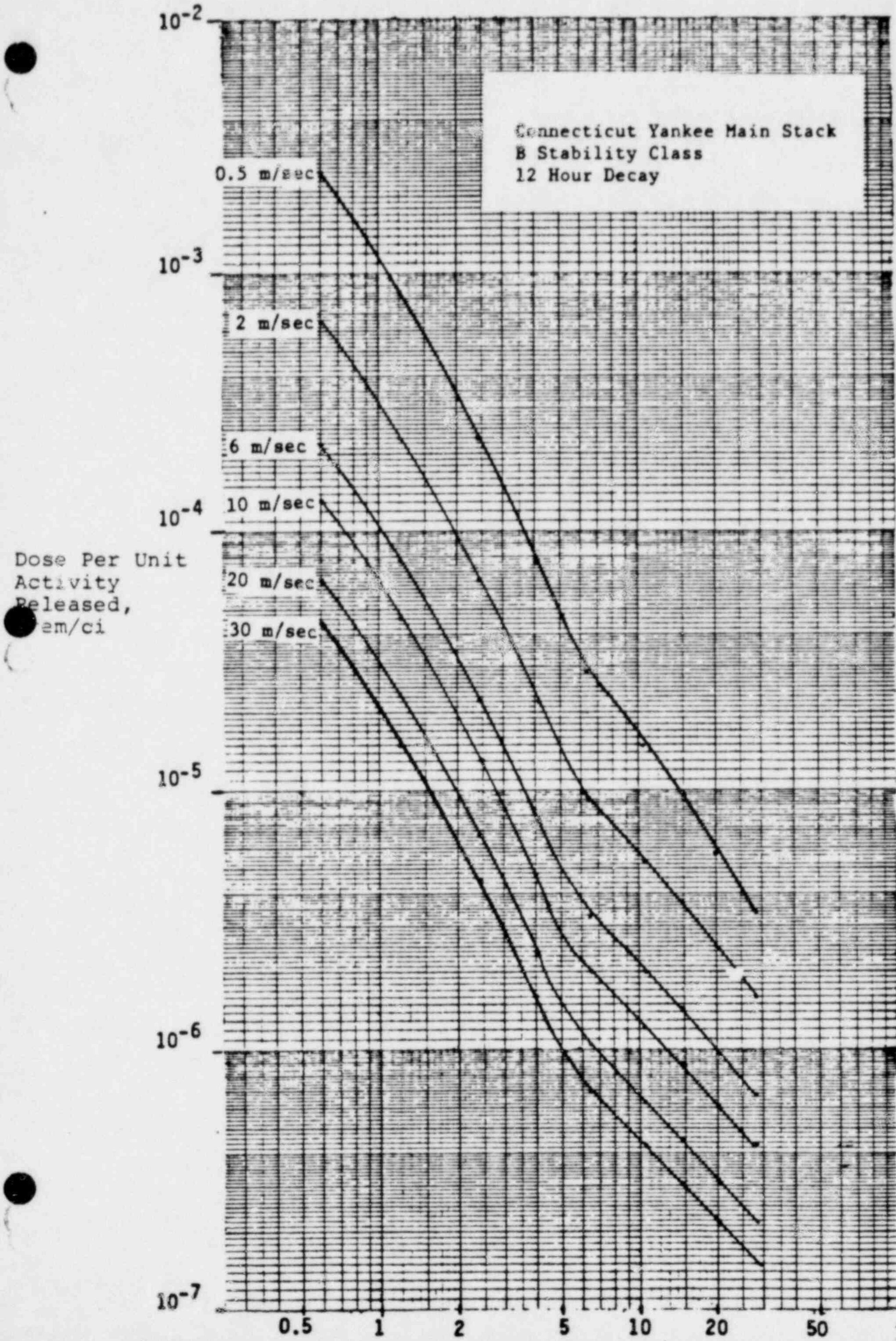
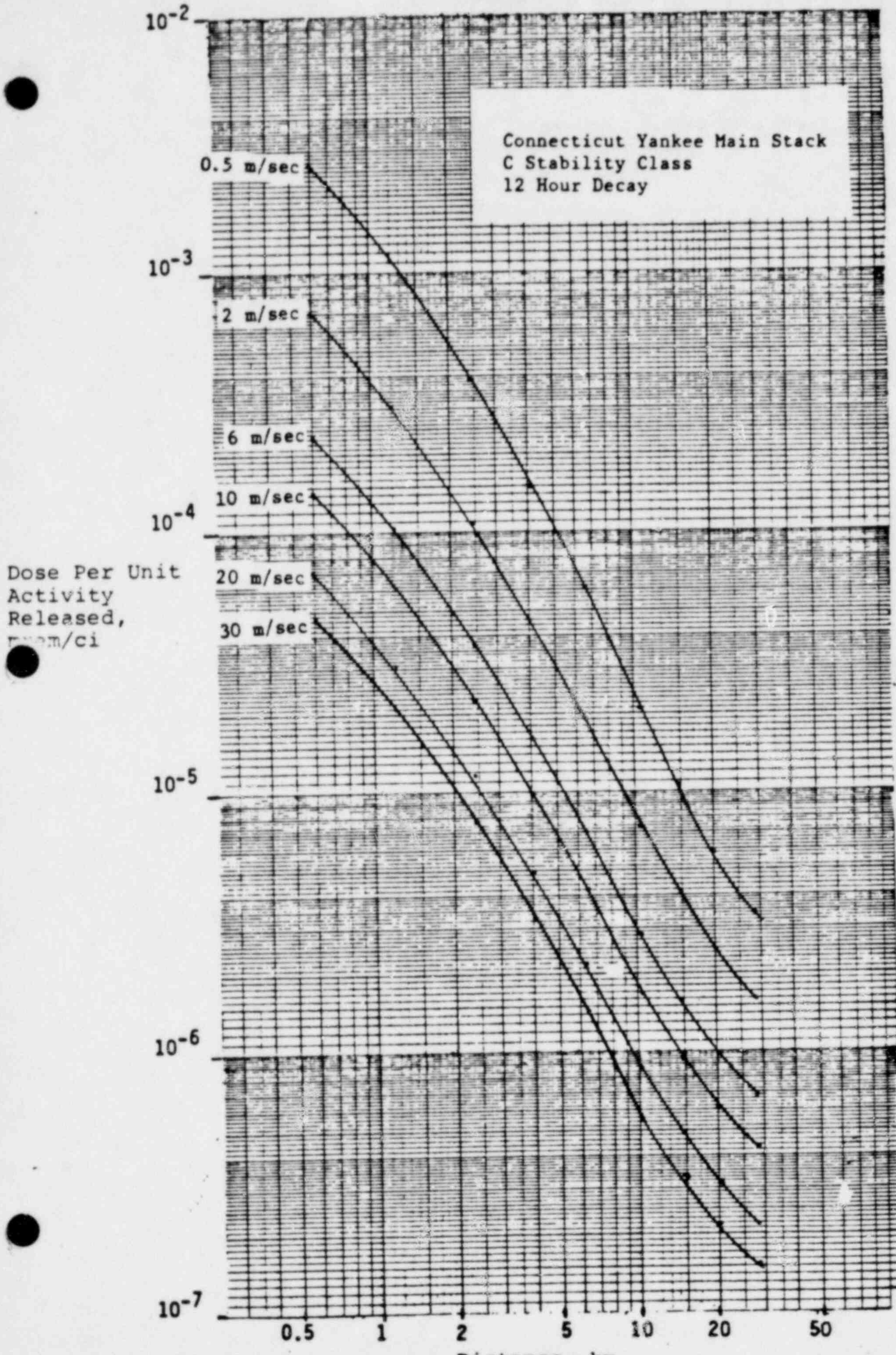
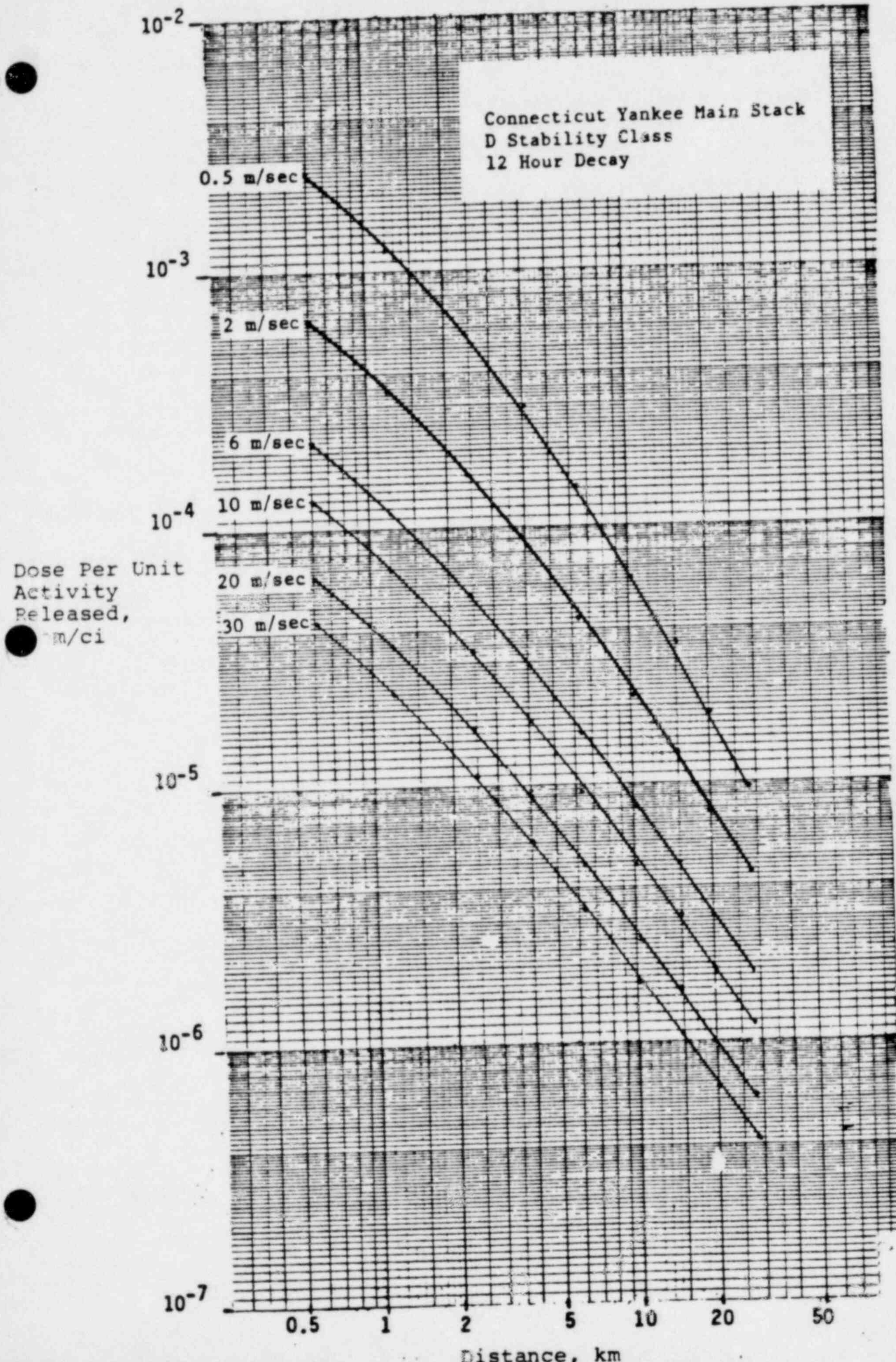

Connecticut Yankee Main Stack
B Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10-2
10-3
10-4
10-5
10-6
10-7
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50

Figure 4-i



10-2
10-3
10-4
10-5
10-6
10-7
Connecticut Yankee Main Stack
C Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
Dose Per Unit Activity Released, mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-j



Connecticut Yankee Main Stack
D Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, m/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-k

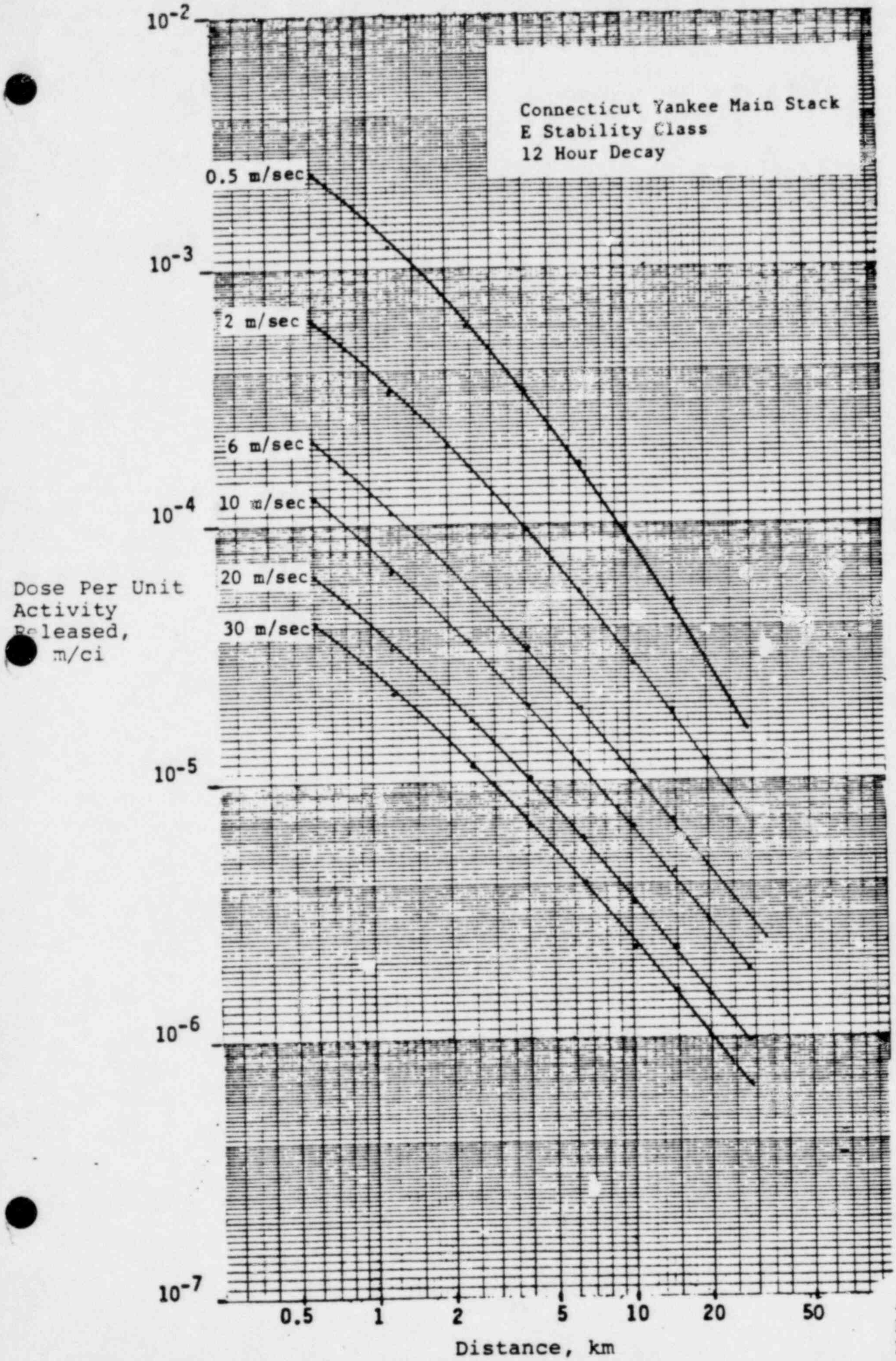
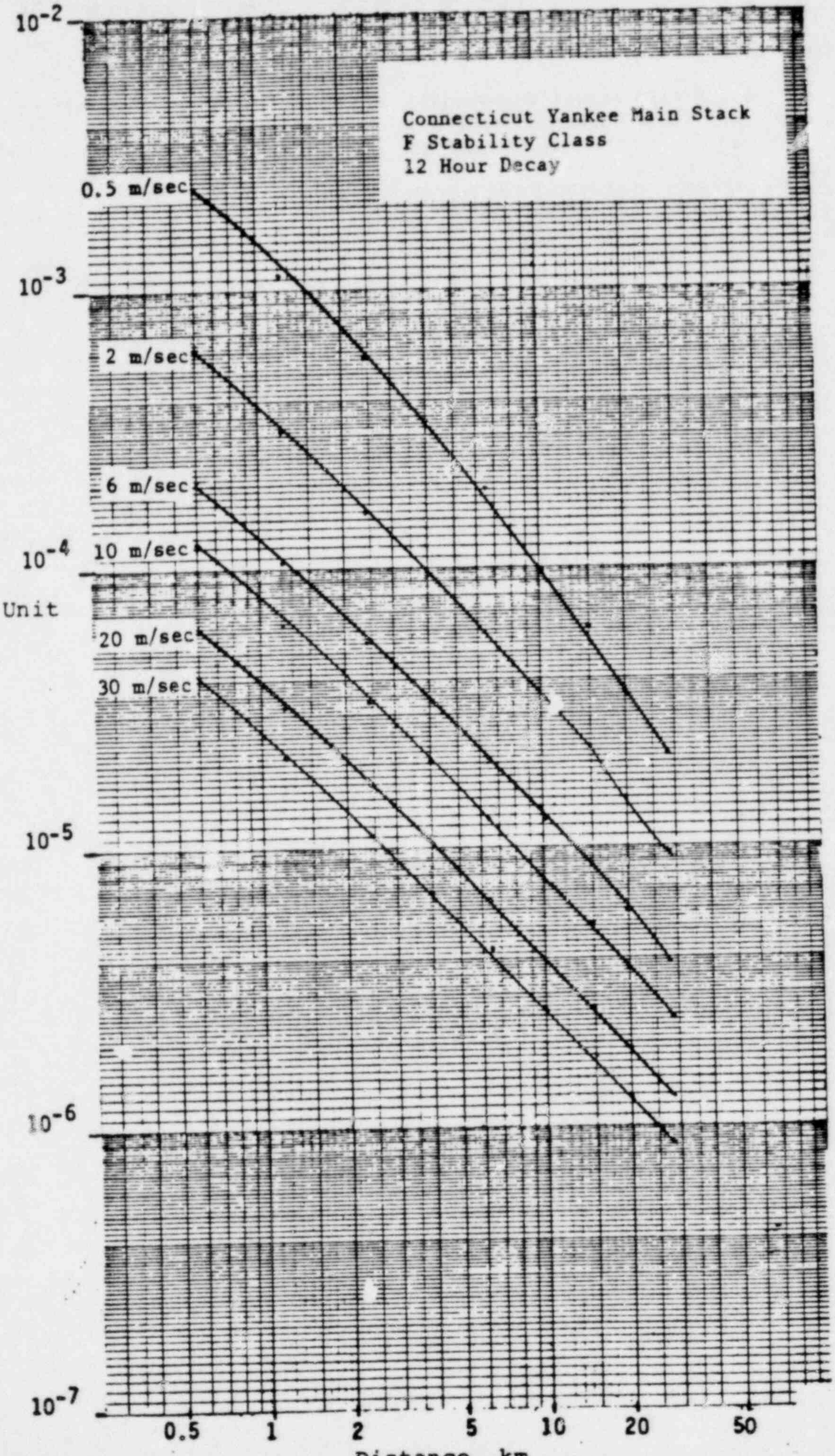
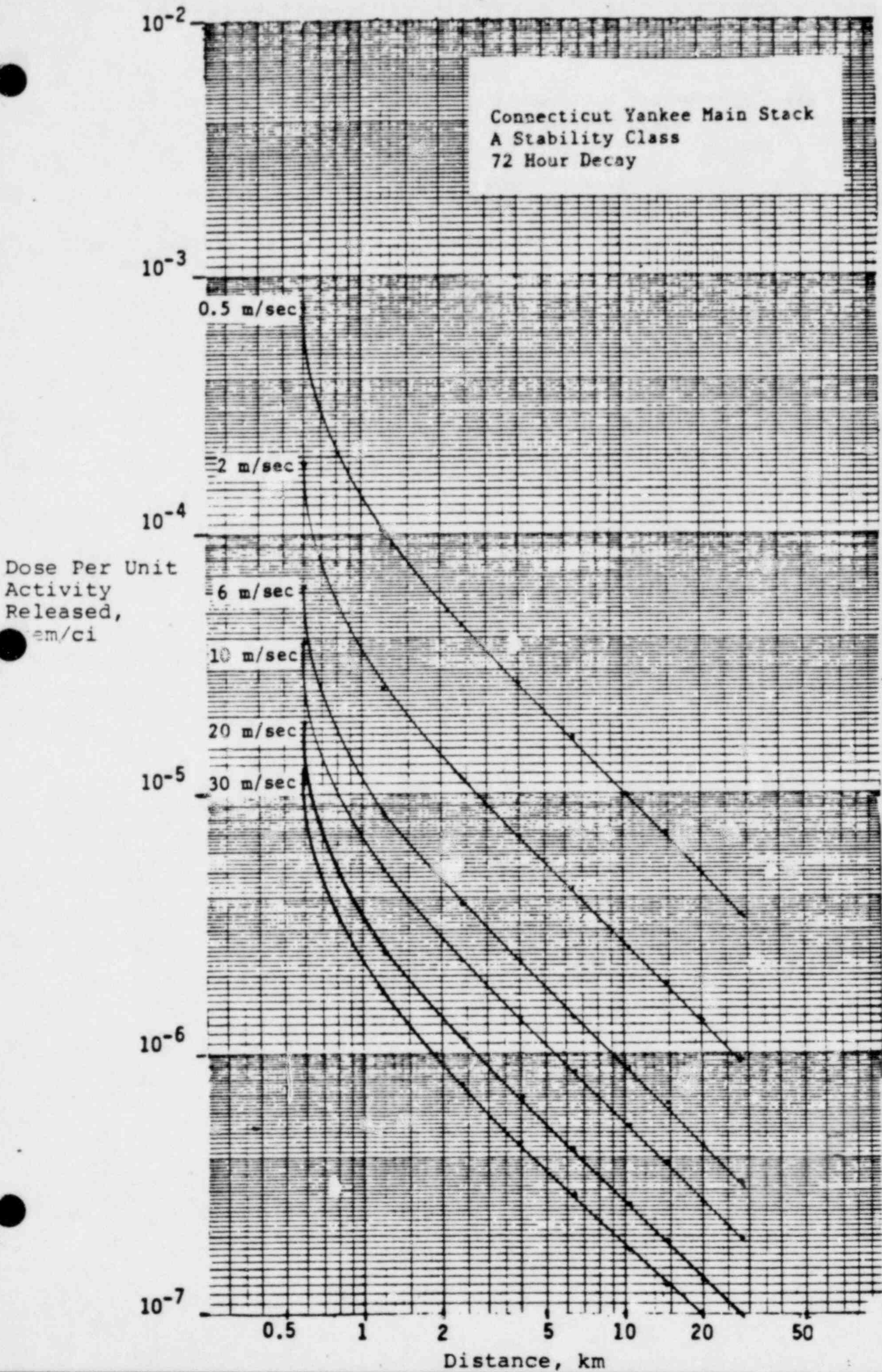

Connecticut Yankee Main Stack
E Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
0.5
1
2
5
10
20
50
Dose Per Unit
Activity
Released,
m/ci
Distance, km

Figure 4-1



Connecticut Yankee Main Stack
F Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10-2
10-3
10-4
10-5
10-6
10-7
Dose Per Unit Activity Released, mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-m



Connecticut Yankee Main Stack
A Stability Class
72 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-n

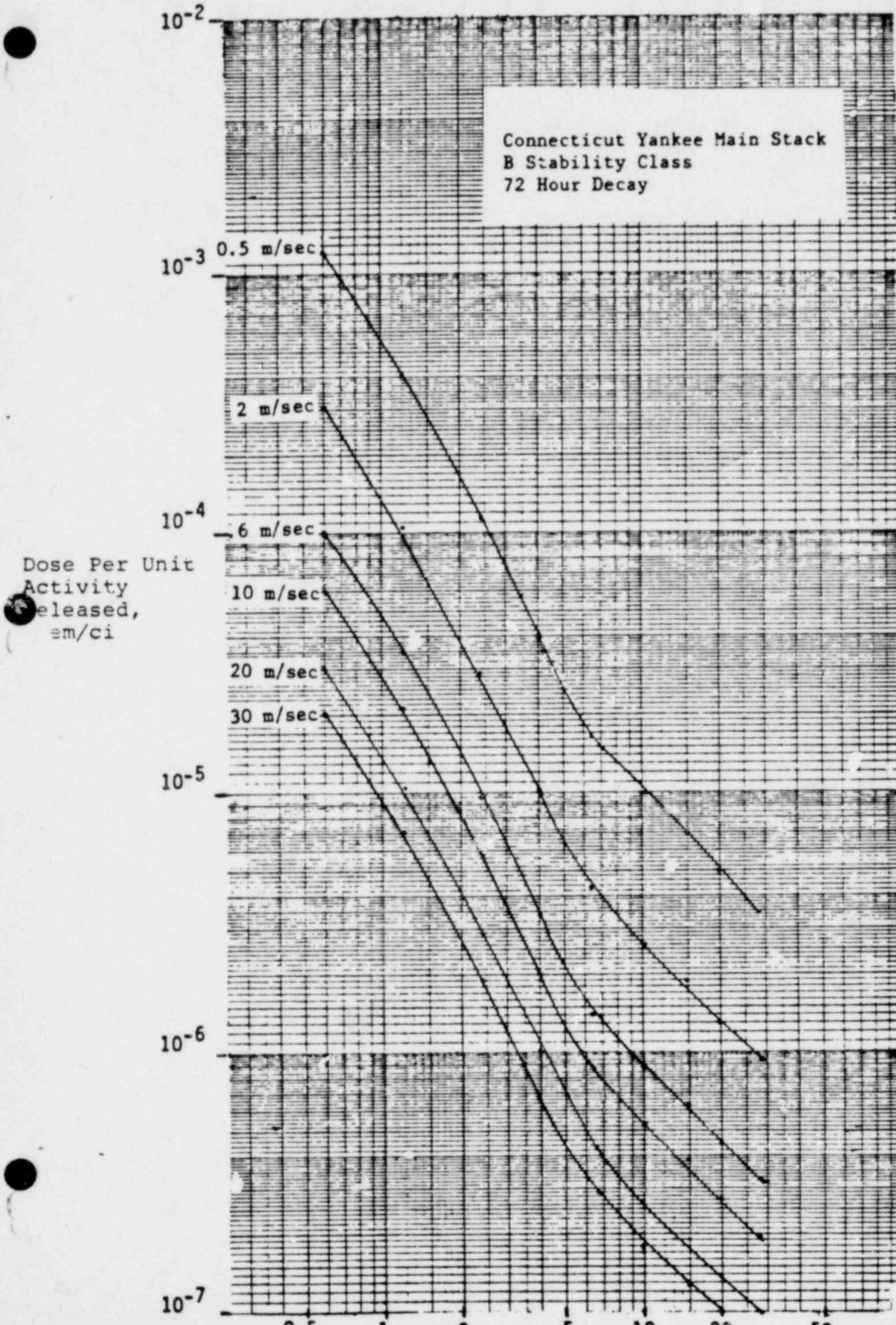
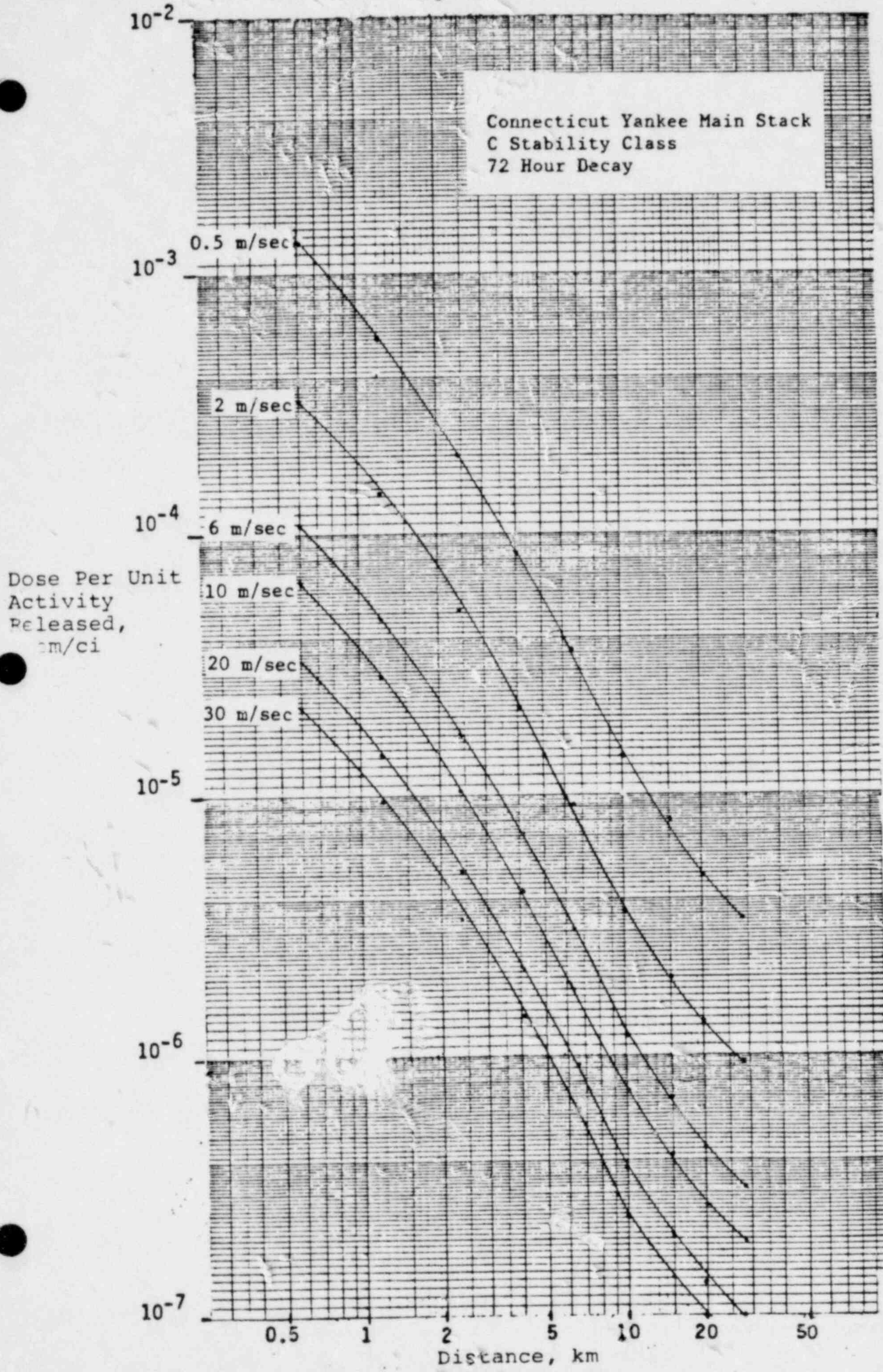

Connecticut Yankee Main Stack
B Stability Class
72 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit
Activity
Released,
em/ci
0.5
1
2
5
10
20
50

Figure 4-o



Connecticut Yankee Main Stack
C Stability Class
72 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-p

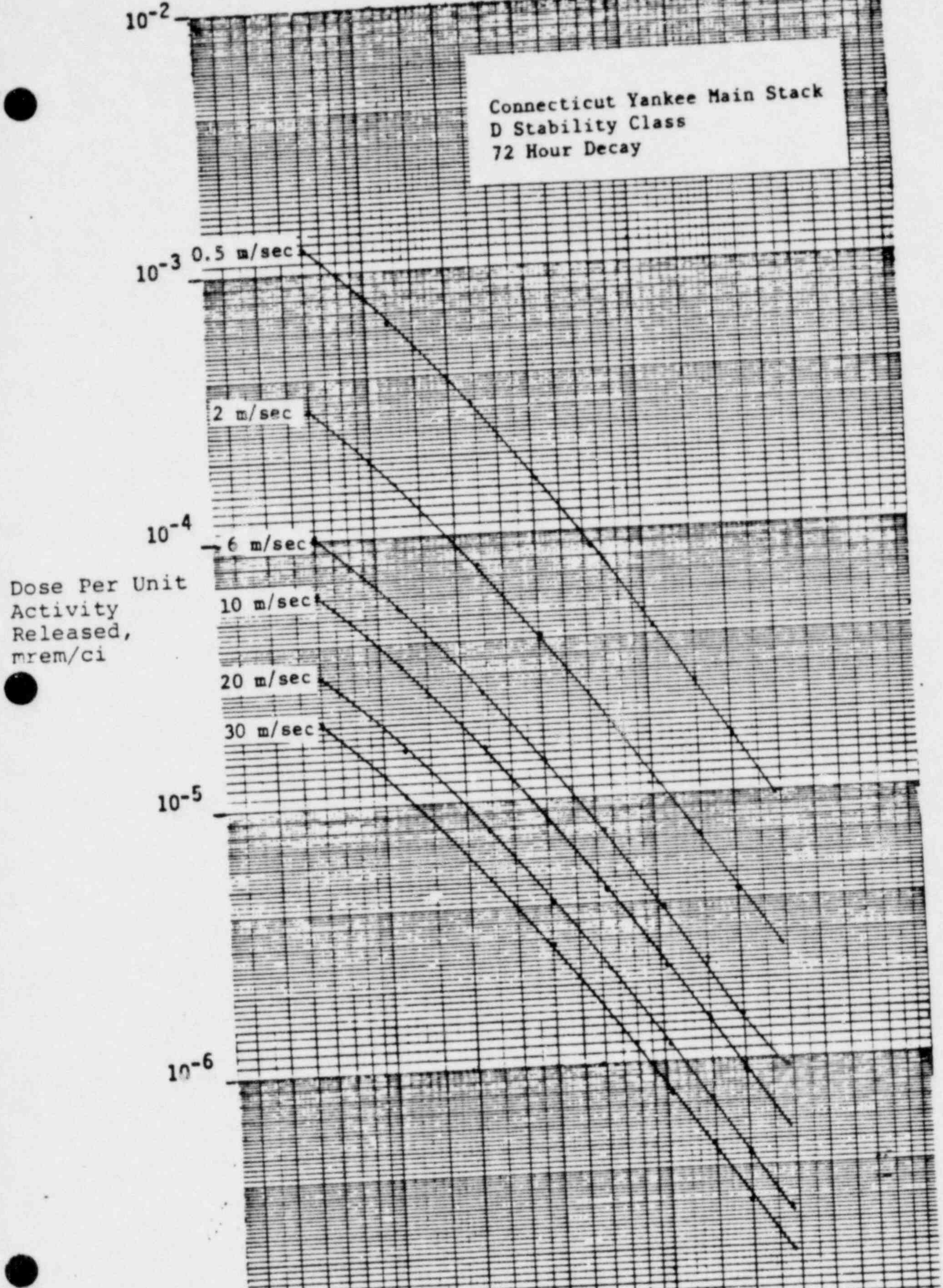


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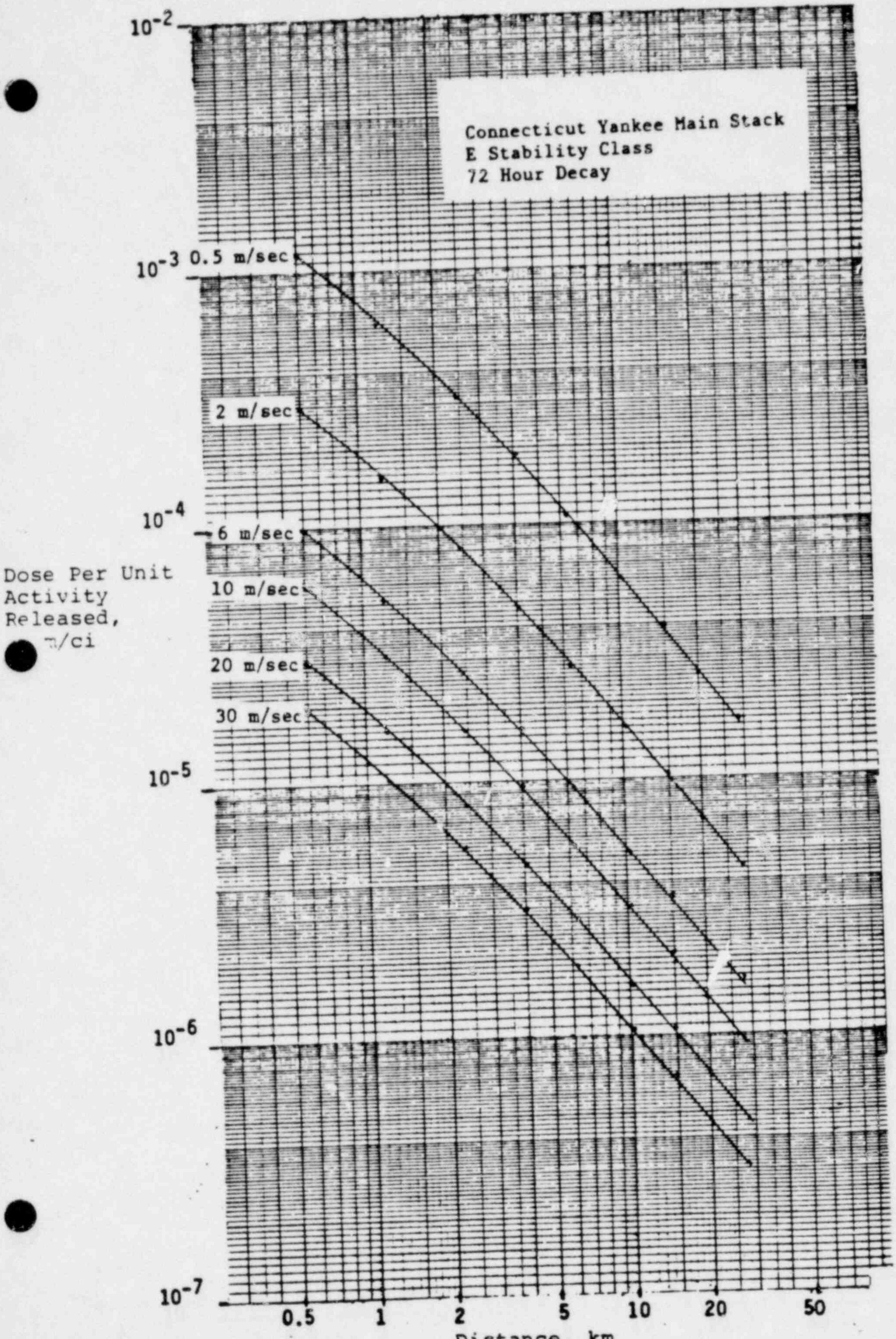
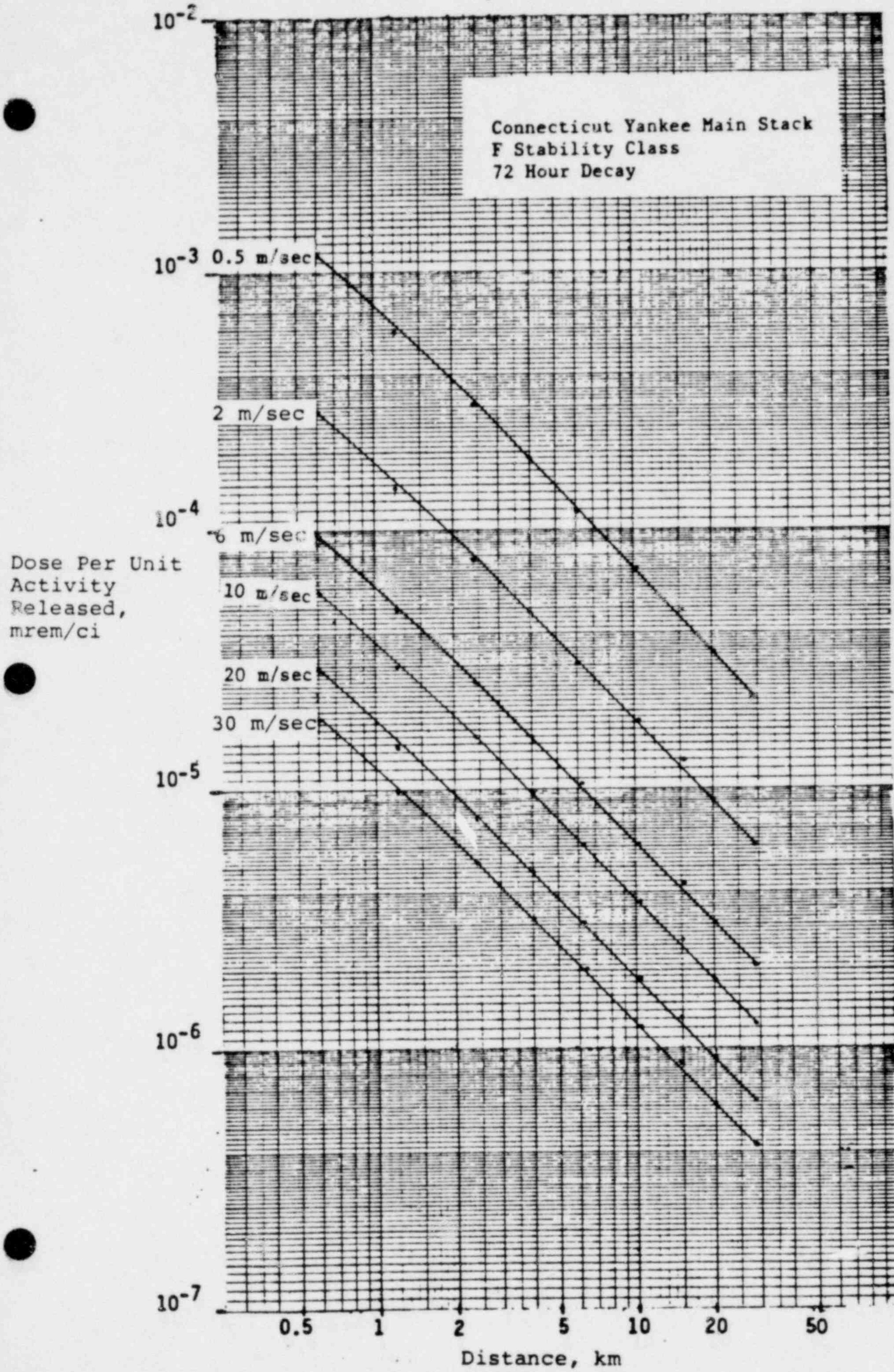
Figure 4-q



CONI-4.04-51

Figure 4-r



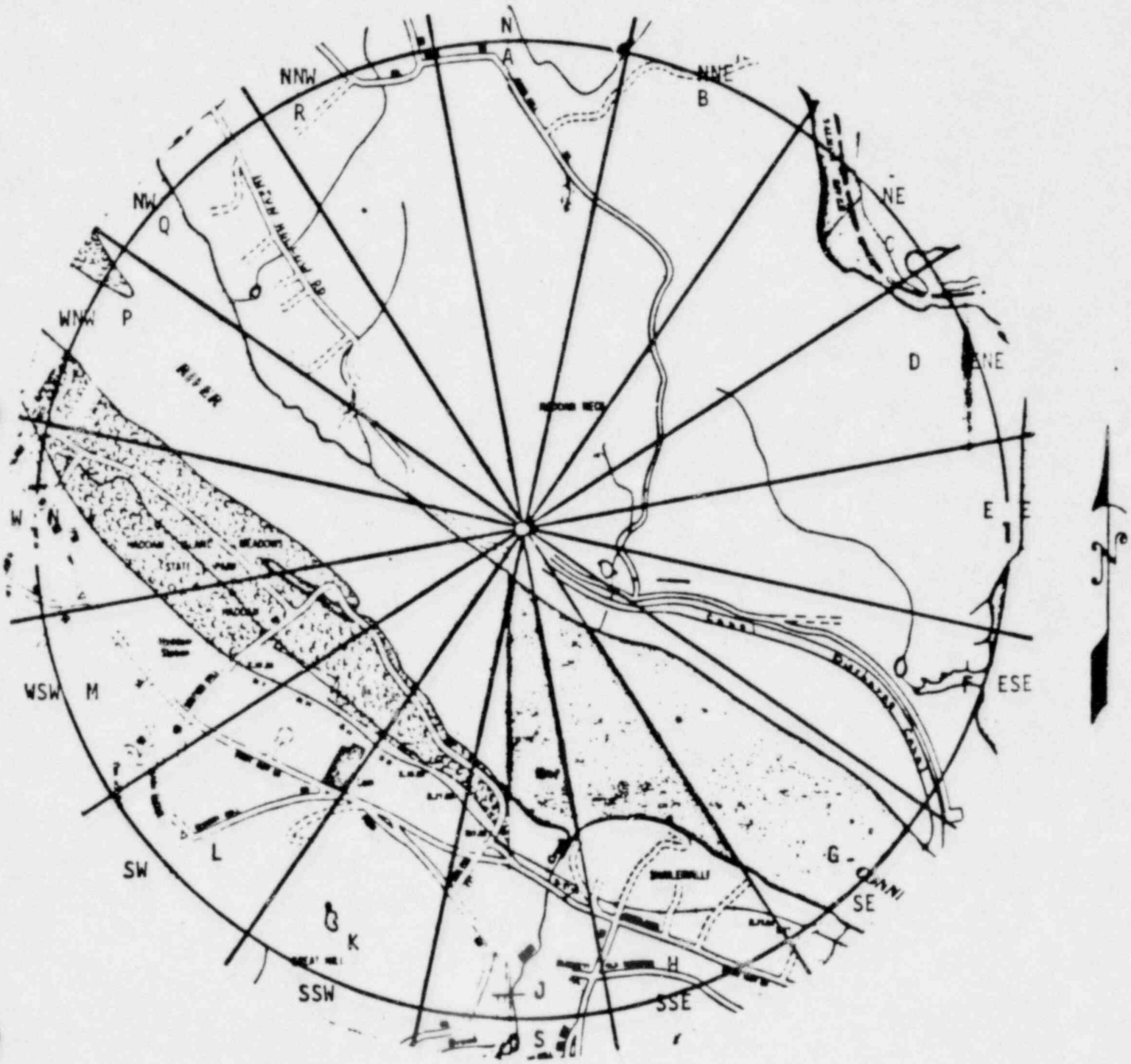
CONI-4.04-52

Figure 5

CONNECTICUT YANKEE

DATE ____________ TIME ____________ INITIALS __________

Distance	Sector	Dose		
________ meters	______	Whole Body	____________mrem	Actual or
________ meters	______	Thyroid	____________mrem	Projected
				(circle one)



SCALE 1 INCH = 1600 FEET
or approximately 500 meters

0 feet 1600 3200 4800 5280

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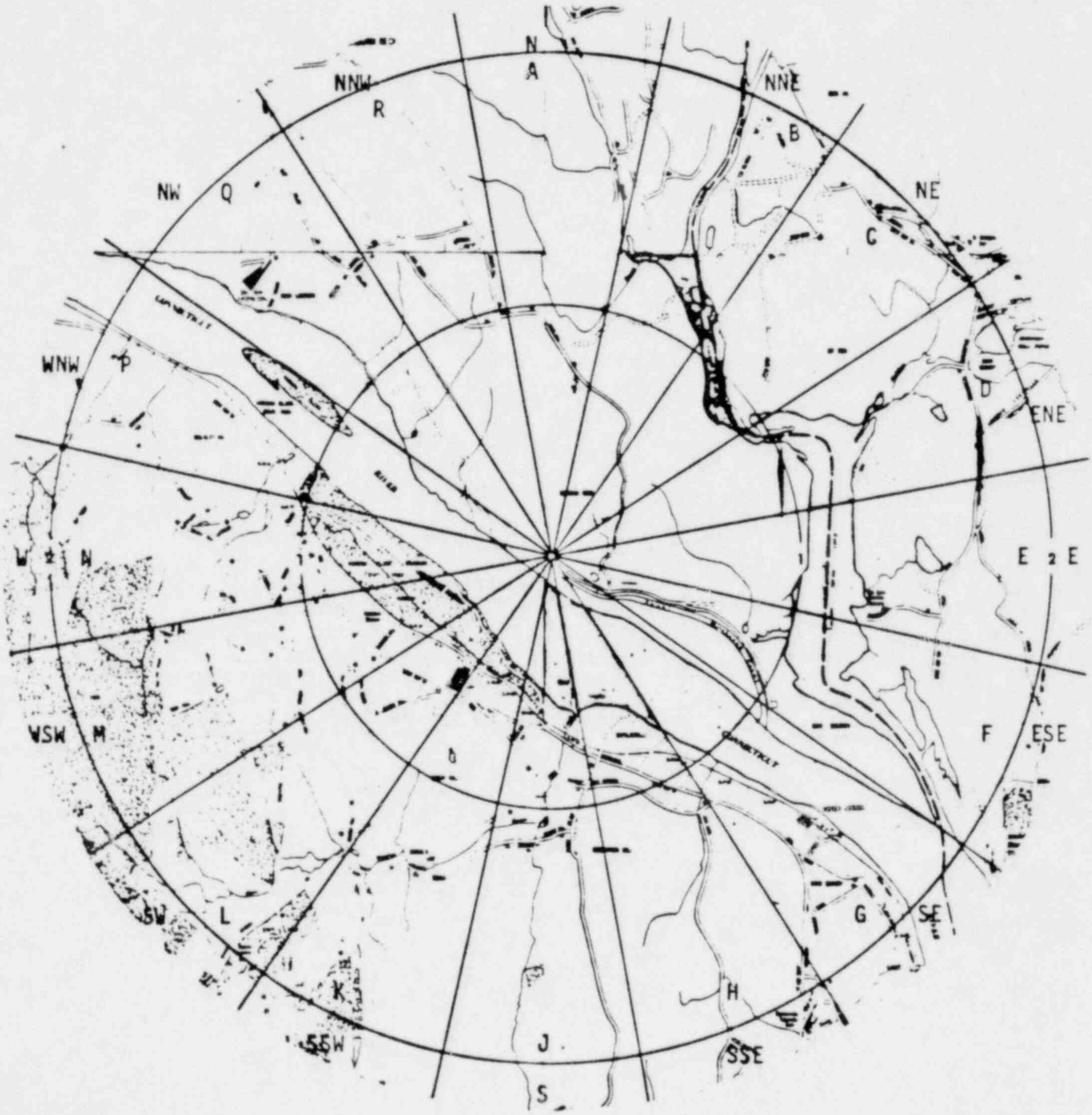
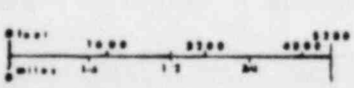
Figure 6
CONNECTICUT YANKEE

DATE ____________ TIME ____________ INITIALS ____________

Distance	Sector	Dose		
________ meters	______	Whole Body	________ mrem	Actual or
________ meters	______	Thyroid	________ mrem	Projected (circle one)

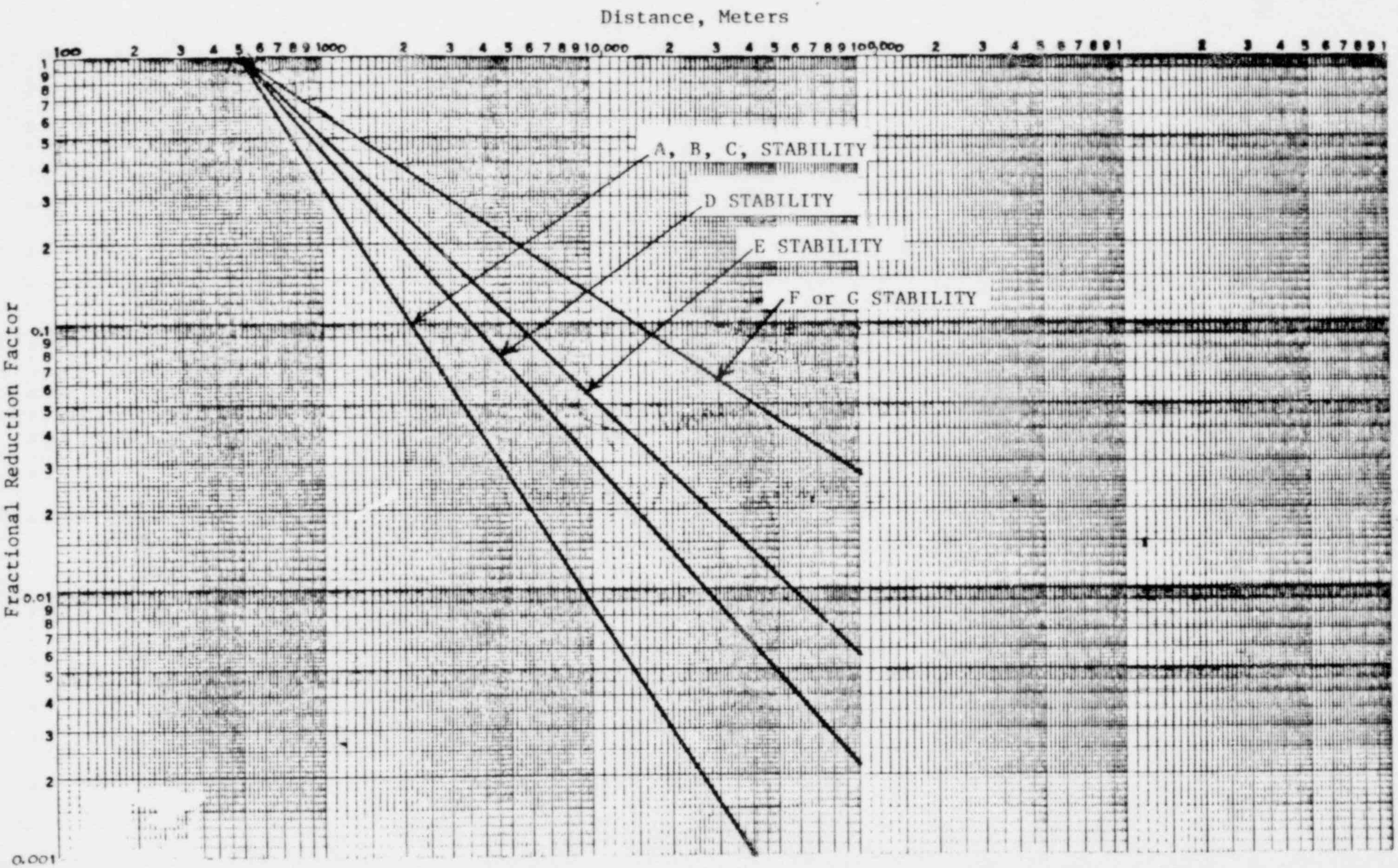


Scale: 1 inch = approx. 1000 meters



FIGUR

CY GROUND RELEASE γ DOSE REDUCTION



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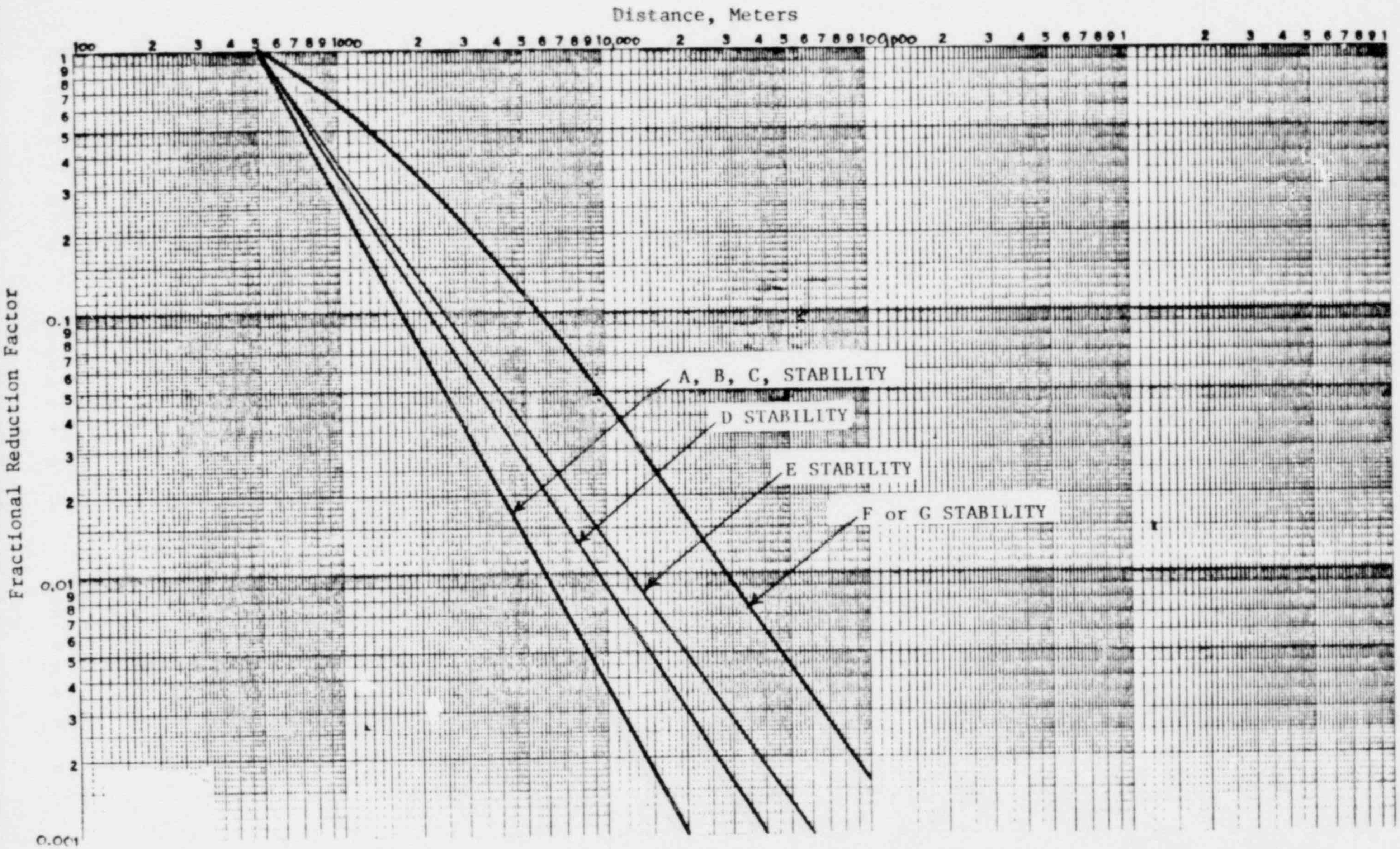
FIGU

CY GROUND RELEASE IODINE DOSE REDUCTION



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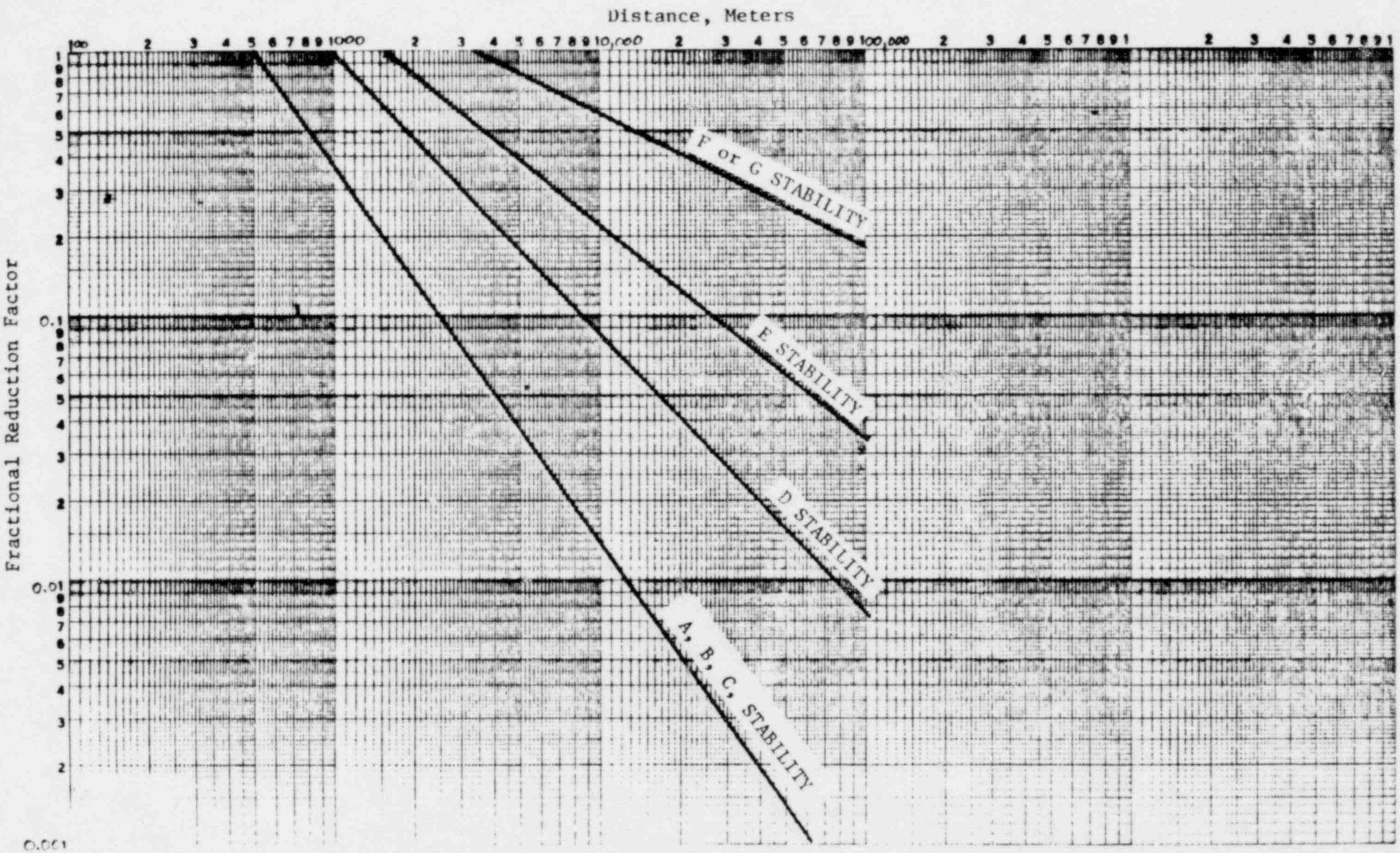
CY ELEVATED RELEASE IODINE DOSE REDUCTION



MP DATA SHEET FOR DOSE ESTIMATES

A. Elevated Releases (Unit One Stack) Worksheet #2

1. Wind Speed 374 Ft. Level __________ m/sec.
2. Wind Direction (wind from) 374 Ft. Level __________ °
3. Δ T 374 Ft. Level __________ °C
4. Sky Conditions - Clear or Partly Cloudy Yes or No (circle one)
5. Weather Conditions (circle one)
   no precipitation   light rain   moderate rain or light snow
   heavy rain or moderate snow   heavy snow
6. Duration or Expected Duration of Release __________ min.
7. Time After Shutdown of Release or Age of Gases __________ hrs.

8a. Noble Gas Isotopes Released

Ar-41	__________	Xe-131m	__________
Kr-83m	__________	Xe-133m	__________
Kr-85m	__________	Xe-133	__________
Kr-85	__________	Xe-135m	__________
Kr-87	__________	Xe-135	__________
Kr-88	__________	Xe-137	__________
Kr-89	__________	Xe-138	__________
Kr-90	__________		
		Total	__________

8b. Total Curies Released if Isotopic is Unknown __________

B. Mixed Releases (Unit 2 Stack, Unit 2 Steam Dumps, Unit 2 Safeties) Worksheet #3

9. Wind Speed 142 Ft. Level ________ m/sec
10. Wind Direction (wind from) 142 Ft. Level ________ °
11. Δ T 142 Ft. Level ________ °C
12. Number of Ventilation Fans Operating ________
13. Wind Speed 33 Ft. Level ________ m/sec
14. Wind Direction (wind from) 33 Ft. Level ________ °
15. Time After Shutdown or Age of Gases ________ hrs.
16. Duration or Expected Duration of Release ________ min.
17. Weather Conditions (circle one)
    no precipitation   light rain   moderate rain or light snow
    heavy rain or moderate snow   heavy snow

18a. Noble Gas Isotopes Released (in units of %, Ci or uCi/ml in stack)

Ar-41	__________	Xe-131m	__________
Kr-83m	__________	Xe-133m	__________
Kr-85m	__________	Xe-133	__________
Kr-85	__________	Xe-135m	__________
Kr-87	__________	Xe-135	__________
Kr-88	__________	Xe-137	__________
Kr-89	__________	Xe-138	__________
Kr-90	__________		
		Total	__________

18b. Total Curies Released If Isotopic is Unknown ________

CONVERSION m/sec = mph/2.2 Δ°C = Δ°F/1.8

C. Ground Release (all release points not listed in A or B) Worksheet #1

19. Wind Speed 33 Ft. Level ________ m/sec
20. Wind Direction (wind from) 33 Ft. Level ________°
21. ΔT 142 Ft. Level ________°C
22. Time After Shutdown or Age of Gases ________ hrs.
23. Duration or Expected Duration of Release ________ min.
24. Weather Conditions (circle one)
    no precipitation   light rain   moderate rain or light snow
    heavy rain or moderate snow   light snow
25a. Noble Gas isotopes Released (in units of %, Ci or uCi/ml in stack)

Ar-41	________	Xe-131m	________
Kr-83m	________	Xe-133m	________
Kr-85m	________	Xe-133	________
Kr-85	________	Xe-135m	________
Kr-87	________	Xe-135	________
Kr-88	________	Xe-137	________
Kr-89	________	Xe-138	________
Kr-90	________		
		Total	________

25b. Total Curies Released if Isotopic is Unknown ________

CONVERSION m/sec = mph/2.2   Δ°C = Δ°F/1.8

WORKSHEET #1

MP GROUND RELEASES

1. Windspeed @ 33 ft. level (#19 on data sheet) = __________ m/sec (Enter 0.5 if less than 0.5)
(1)

2. Wind Direction @ 33 ft. level (#20 on data sheet) = __________ °
(2)

Downwind Direction = ________ °+/-180° = ________ ° (must be 0-360°)
(2) (3)

3. Downwind Sector [Table 1 and (3)] = __________
(4)

4. Distance to Nearest Land or Site Boundary [Table 1 and (3)] = __________ m
(5)

5. ΔT 142 ft. level (#21 on data sheet) = __________ °C

6. Stability Class

	Choose One
$\Delta T\ 142 \leq -0.7°C$	A
$\Delta T\ 142 = -0.6°C$	B
$\Delta T\ 142 = -0.5°C$	C
$-0.4°C \leq \Delta T\ 142 \leq -0.2°C$	D
$-0.1°C \leq \Delta T\ 142 \leq +0.4°C$	E
$+0.5°C \leq \Delta T\ 142 \leq +1.3°C$	F
$+1.4°C \leq \Delta T\ 142$	G

Stability Class = __________
(6)

7. Xu/Q [Table 2, (5) and (6)] = __________ m^{-2}
(7)

8. Ground Release X/Q = __________ ÷ __________ = __________ sec/m^2
(7) (1) (8)

9. Ground Level Airborne Concentration from Noble Gas

__________ Ci/sec X __________ = __________ Ci/m^3
Worksheet #10 of Release Rate Procedure CONI-4.03 (8) (9)

10. Fraction of Release Due to Specific Isotopes; See #25a on Data Sheet (skip if data unavilable)

Worksheet #1 (Cont'd)

Isotope	% x th ÷ 100	OR	Ci x th ÷ Total	OR	uCi/ml x th ÷ Total

Ar-41 = ________ (10)

Kr-83m = ________ (11)

Kr-85m = ________ (12)

Kr-85 = ________ (13)

Kr-87 = ________ (14)

Kr-88 = ________ (15)

Kr-89 = ________ (16)

Kr-90 = ________ (17)

Xe-131m = ________ (18)

Xe-133m = ________ (19)

Xe-133 = ________ (20)

Xe-135m = ________ (21)

Xe-135 = ________ (22)

Xe-137 = ________ (23)

Xe-138 = ________ (24)

11. Semi-infinite Cloud Whole Body Dose Rate (skip part a. if isotopic data unavailable)

a. Dose Rate Based Upon Isotopic Data

Ar-41 $\underset{(9)}{\underline{\qquad\qquad}}$ Ci/m^3 X $\underset{(10)}{\underline{\qquad\qquad}}$ X $\underline{1.68 \text{ X } 10^4}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = $\underset{(a)}{\underline{\qquad\qquad}}$ $\frac{mrem}{min}$

Isotope	Concentration		Factor	Dose conversion factor		Result	
Kr-83m	________ (9)	Ci/m^3 X	________ (11)	X 1.44×10^{-1}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (b)	$\frac{mrem}{min}$
Kr-85m	________ (9)	Ci/m^3 X	________ (12)	X 2.23×10^{3}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (c)	$\frac{mrem}{min}$
Kr-85	________ (9)	Ci/m^3 X	________ (13)	X 3.06×10^{1}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (d)	$\frac{mrem}{min}$
Kr-87	________ (9)	Ci/m^3 X	________ (14)	X 1.13×10^{4}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (e)	$\frac{mrem}{min}$
Kr-88	________ (9)	Ci/m^3 X	________ (15)	X 2.80×10^{4}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (f)	$\frac{mrem}{min}$
Kr-89	________ (9)	Ci/m^3 X	________ (16)	X 3.16×10^{4}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (g)	$\frac{mrem}{min}$
Kr-90	________ (9)	Ci/m^3 X	________ (17)	X 2.97×10^{4}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (h)	$\frac{mrem}{min}$
Xe-131m	________ (9)	Ci/m^3 X	________ (18)	X 1.74×10^{2}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (i)	$\frac{mrem}{min}$
Xe-133m	________ (9)	Ci/m^3 X	________ (19)	X 4.78×10^{2}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (j)	$\frac{mrem}{min}$
Xe-133	________ (9)	Ci/m^3 X	________ (20)	X 5.59×10^{2}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (k)	$\frac{mrem}{min}$
Xe-135m	________ (9)	Ci/m^3 X	________ (21)	X 5.94×10^{3}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (l)	$\frac{mrem}{min}$
Xe-135	________ (9)	Ci/m^3 X	________ (22)	X 3.44×10^{3}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (m)	$\frac{mrem}{min}$
Xe-137	________ (9)	Ci/m^3 X	________ (23)	X 2.70×10^{3}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (n)	$\frac{mrem}{min}$
Xe-138	________ (9)	Ci/m^3 X	________ (24)	X 1.68×10^{4}	$\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (o)	$\frac{mrem}{min}$

Whole Body Dose Rate = $\sum_{a}^{o}$ mrem/min = ____________ (25) mrem/min

OR

b. Default Value if Isotopic Data Unavilable

Whole Body Dose Rate =

________ (9) $Ci/m^3 \times 10{,}500e^{-0.15T}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ (25) mrem/min for T <10 hrs

$\underset{(9)}{\underline{\qquad}}$ Ci/m^3 X $2{,}500e^{-0.031(T-10)}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = $\underset{(25)}{\underline{\qquad}}$ mrem/min for T = 10 to < 48 hrs

$\underset{(9)}{\underline{\qquad}}$ Ci/m^3 X $780e^{-0.007(T-48)}$ $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = $\underset{(25)}{\underline{\qquad}}$ mrem/min for T = 48 to 96 hrs

$\underset{(9)}{\underline{\qquad}}$ Ci/m^3 X 559 $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ = $\underset{(25)}{\underline{\qquad}}$ mrem/min for T > 96 hrs

Where "T" is time in hours after shutdown of the release or age of gases (#22 on data sheet)

12. Finite Cloud Correction Factor [Figure 1, (5) and (6)] = $\underset{(26)}{\underline{\qquad}}$

13. Duration of Release (#23 on data sheet) = $\underset{(27)}{\underline{\qquad}}$ min
(Enter 600 if unknown and continuing)

14. Projected whole Body Dose Due to Ground Releases

$\underset{(27)}{\underline{\qquad}}$ min X $\underset{(25)}{\underline{\qquad}}$ mrem/min ÷ $\underset{(26)}{\underline{\qquad}}$ = $\underset{(28)}{\underline{\qquad}}$ mrem

——— If no Iodine Releases go to Worksheet #4; Otherwise Continue ———

15. Iodine Depletion Correction Factor [Figure 2, (5) and #24 on Data Sheet] = $\underset{(29)}{\underline{\qquad}}$

16. Ground Level Airborne Concentration from Radioiodine

$\underline{\qquad}$ Ci/sec X $\underset{(8)}{\underline{\qquad}}$ X $\underset{(29)}{\underline{\qquad}}$ = $\underset{(30)}{\underline{\qquad}}$ ci/m^3
Worksheet #10
Release Rate
Procedure CONI-4.03

17. Total Iodine Decay Correction Factor [Figure 3 and #22 on Data Sheet] = $\underset{(31)}{\underline{\qquad}}$

18. Projected Thyroid Dose (child[1])

a. For release rates based upon Total Radioiodine:

$\underset{(31)}{\underline{\qquad}}$ X $\underset{(30)}{\underline{\qquad}}$ Ci/m^3 $\underset{(27)}{\underline{\qquad}}$ min X 1.1×10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(32)}{\underline{\qquad}}$ mrem

b. For release rates based upon I-131 or I-131 DEQ:

$\underset{(30)}{\underline{\qquad}}$ Ci/m^3 X $\underset{(27)}{\underline{\qquad}}$ min X 2.7×10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(32)}{\underline{\qquad}}$ mrem

[1]Child Dose approximately 2 times adult dose.

WORKSHEET #2

MP ELEVATED RELEASES

1. Windspeed @ 374 ft. level (#1 on data sheet) = ________ m/sec (Enter 0.5 if less than 0.5)
(1)

2. Wind Direction @ 374 ft. level (#2 on data sheet) = ________°
(2)

Downwind Direction = ________°+/-180° = ________° (must be 0-360°)
(2) (3)

3. Downwind Sector [Table 3 and (3)] = ________
(4)

4. Distance to Nearest Land or Site Boundary [Table 3 and (3)] = ________ m
(5)

5. Δ T 374 ft. level (#3 on data sheet) = ________°C

6. Stability Class

	Choose One
ΔT 374 ≤ -2.0°C	A
-1.9°C ≤ ΔT 374 ≤ -1.8°C	B
-1.7°C ≤ ΔT 374 = -1.6°C	C
-1.5°C ≤ ΔT 374 ≤ -0.6°C	D
-0.5°C ≤ ΔT 374 ≤ +1.5°C	E
+1.6°C ≤ ΔT 374 ≤ +4.1°C	F
+4.2°C ≤ ΔT 374	G

Stability Class = ________
(6)

7. Determination of Fumigation Potential

		Circle One	
a.	Is month April, May, June, July, August, or September?	Yes	No
b.	Is time between 0900-1600 EST (1000-1700 EDT)?	Yes	No
c.	Is wind on-shore into Sectors P, Q, R, A, B, C, or D (4)?	Yes	No
d.	Is stability Class E, F, or G (6)?	Yes	No
e.	Is sky clear or partly cloudy (#4 on data sheet)?	Yes	No

If answer to <u>all</u> above is <u>yes</u>, then fumigation potential exists - skip Part 8 and calculate fumigation X/Q_f (Part 9). Complete parts 10-15, skip part 16.

If answer to <u>any</u> of the above is <u>no</u>, then fumigation potential does not apply - calculate X/Q in Part 8 and skip Parts 9-15.

8. Maximum Xu/Q [Table 4 and footnote at bottom, (5) and (6)] = ________m^{-2}
(7)

Distance corresponding to (7) = ________ meters

X/Q = ________ ÷ ________ = ________ sec/m^3
(7) (1) (8)

9. Xu/Q_f [Table 5, (5) and (6)] = ________ m^{-2} Distance Corresponding to (9) ___ meter
(9)

X/Q_f = ________ ÷ ________ = ________ sec/m^3
(9) (1) (10)

10. Ground Level Airborne Concentration of Noble Gas for Fumigation Conditions. (Complete 10-15 ONLY if all answers in Part 7 are Yes; otherwise skip to 16.)

________ Ci/sec. x ________ = ________ Ci/m^3
Worksheet #10 of Release Rate Procedure CONI-4.03 (10) (11)

11. Fraction of Release Due to Specific Isotopes; See #8a on Data Sheet (skip if data unavilable)

Isotope % ÷ 100 OR Ci x^{th} ÷ Total OR uCi/ml xth ÷ Total

Ar-41 = ________ (12)

Kr-83m = ________ (13)

Kr-85m = ________ (14)

Kr-85 = ________ (15)

Kr-87 = ________ (16)

Kr-88 = ________ (17)

Kr-89 = ________ (18)

Kr-90 = ________ (19)

Xe-131m = ________ (20)

Xe-133m = ________ (21)

Xe-133 = ____________ (22)

Xe-135m = ____________ (23)

Xe-135 = ____________ (24)

Xe-137 = ____________ (25)

Xe-138 = ____________ (26)

12. Semi-infinite Cloud Whole Body Dose Rate (skip part a. if isotopic data unavailable)

a. Dose Rate Based Upon Isotopic Data

Ar-41	________ (11) Ci/m^3 X	________ (12)	X 1.68×10^{4} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (a) $\frac{mrem}{min}$
Kr-83m	________ (11) Ci/m^3 X	________ (13)	X 1.44×10^{-1} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (b) $\frac{mrem}{min}$
Kr-85m	________ (11) Ci/m^3 X	________ (14)	X 2.23×10^{3} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (c) $\frac{mrem}{min}$
Kr-85	________ (11) Ci/m^3 X	________ (15)	X 3.06×10^{1} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (d) $\frac{mrem}{min}$
Kr-87	________ (11) Ci/m^3 X	________ (16)	X 1.13×10^{4} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (e) $\frac{mrem}{min}$
Kr-88	________ (11) Ci/m^3 X	________ (17)	X 2.80×10^{4} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (f) $\frac{mrem}{min}$
Kr-89	________ (11) Ci/m^3 X	________ (18)	X 3.16×10^{4} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (g) $\frac{mrem}{min}$
Kr-90	________ (11) Ci/m^3 X	________ (19)	X 2.97×10^{4} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (h) $\frac{mrem}{min}$
Xe-131m	________ (11) Ci/m^3 X	________ (20)	X 1.74×10^{2} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (i) $\frac{mrem}{min}$
Xe-133m	________ (11) Ci/m^3 X	________ (21)	X 4.78×10^{2} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (j) $\frac{mrem}{min}$
Xe-133	________ (11) Ci/m^3 X	________ (22)	X 5.59×10^{2} $\frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	________ (k) $\frac{mrem}{min}$

Xe-135m ________ Ci/m^3 X ________ X $5.94 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ $\frac{mrem}{min}$
(11) (23) (l)

Xe-135 ________ Ci/m^3 X ________ X $3.44 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ $\frac{mrem}{min}$
(11) (24) (m)

Xe-137 ________ Ci/m^3 X ________ X $2.70 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ $\frac{mrem}{min}$
(11) (25) (n)

Xe-138 ________ Ci/m^3 X ________ X $1.68 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ $\frac{mrem}{min}$
(11) (26) (o)

Whole Body Dose Rate = $\sum_{a}^{o}$ mrem/min = ________ mrem/min
(27)

OR

b. Default Value if Isotopic Data Unavailable

Whole Body Dose Rate =

________ Ci/m^3 X $10{,}500e^{-0.15T} \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ mrem/min for T < 10 hrs
(11) (27)

________ Ci/m^3 X $2{,}500e^{-0.031(T-10)} \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ mrem/min for T = 10 to < 48 hrs
(11) (27)

________ Ci/m^3 X $780e^{-0.007(T-48)} \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ mrem/min for T = 48 to 96 hrs
(11) (27)

________ Ci/m^3 X $559 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ = ________ mrem/min for T > 96 hrs
(11) (27)

Where "T" is time in hours after shutdown of the release or age of gases (#7 on data sheet)

13. Finite Cloud Correction Factor [Figure 1, (5) and (6)] = ________
(28)

14. Duration of Release (#6 on data sheet) = ________ min
(Enter 600 if unknown and continuing) (29)

15. Projected whole Body Dose Due to Elevated Releases with Fumigation

________ min X ________ mrem/min ÷ ________ = ________ mrem
(29) (27) (28) (30)

16. Projected Whole Body Dose due to Elevated Releases (No Fumigation).

a. Dose per unit activity released [Figures 5a-5r, (1), (5), (6) and time after shutdown of release (#7 data sheet) or age of the gases].

= ________ mrem/ci
(31)

b. Whole Body Dose

____________ Ci/sec X ________ mrem/Ci X ________ min. x 60 = ________ mrem
Work Sheet #10 of Release Rate Procedure CONI-4.03 — (31) — (29) — (32)

——— If no Iodine Releases go to Worksheet #4; Otherwise Continue ———

17. Iodine Depletion Correction Factor [Figure 2, #5 on Data Sheet and (5) or Distance Corresponding to Maximum Offsite Xu/Q or Xu/Q_f (see Steps 8 and 9)] = ________.
(33)

18. Ground Level Airborne Concentration of Radioiodine from Elevated Release

____________ Ci/sec X ________ X ________ = ________ ci/m^3
Worksheet #10 Release Rate Procedure CONI-4.03 — (33) — (8) or (10) — (34)

19. Total Iodine Decay Correction Factor [Figure 3 and #7 on Data Sheet] = ________
(35)

20. Projected Thyroid Dose (child[1])

a. For release rates based upon TOTAL Radioiodine:

$\underset{(35)}{\underline{\qquad}}$ X $\underset{(34)}{\underline{\qquad}}$ Ci/m^3 $\underset{(29)}{\underline{\qquad}}$ min X 1.1×10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(36)}{\underline{\qquad}}$ mrem

b. For release rates based upon I-131 or I-131 DEQ:

$\underset{(34)}{\underline{\qquad}}$ Ci/m^3 X $\underset{(29)}{\underline{\qquad}}$ min X 2.7×10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(36)}{\underline{\qquad}}$ mrem

[1] Child Dose approximately 2 times adult dose.

WORKSHEET #3

MP MIXED RELEASES

1. Windspeed @ 142 Ft. level (#9 on data sheet) = ______ m/sec (enter 0.5 if less than 0.5 m/sec)
(1)

2. Wind Direction @ 142 Ft. level (#10 on data sheet) = ____________°
(2)

Downwind Direction = __________°+/- 180° = __________°(must be 0360°)
(2) (3)

3. Downwind Sector [Table 1 and (3)] = __________
(4)

4. Distance to Nearest Land or Site Boundary [Table 1 and (3)] = ________ m
(5)

5. T 142 Ft. level (#11 on data sheet) = __________°C

6. Stability Class

	Choose one
$\Delta T\ 142 \leq -0.7°C$	A
$\Delta T\ 142 = -0.6°C$	B
$\Delta T\ 142 = -0.5°C$	C
$-0.4°C \leq \Delta T\ 142 \leq -0.2°C$	D
$-0.1°C \leq \Delta T\ 142 \leq +0.4°C$	E
$+0.5°C \leq \Delta T\ 142 \leq +1.3°C$	F
$+1.4°C \leq \Delta T\ 142$	G

Stability Class = _______________
(6)

7. Stack Velocity to Wind Speed Ratio (complete separately for each applicable release point)

a. For MP2 Stack as Release Point.

1. Release Rate Procedure CONI-4.03 Worksheet #5, Page 3 = _______ ft^3/min
(7)

2. Ratio = __________ ÷ 7440 ÷ __________ = __________
(7) (1) (8)

b. For MP2 Atmospheric Steam Dumps as Release Point

1. Release Rate Procedure CONI-4.03 Worksheet #6, Page 3 = __________ ft^3/min
(9)

2. Ratio = __________ ÷ 430 ÷ __________ = __________
(9) (1) (10)

c. For MP2 S/G Safety Relief Valves as Release Point

1. Release Rate Procedure CONI-4.03 Worksheet #6, Page 3 = $\underset{(11)}{\underline{\qquad\qquad}}$ ft^3/min

2. Ratio = $\underset{(11)}{\underline{\qquad\qquad}}$ ÷ 2780 ÷ $\underset{(1)}{\underline{\qquad\qquad}}$ = $\underset{(12)}{\underline{\qquad\qquad}}$

8. Release Mode Classification (repeat Steps 8 through 11 for each release point above)

a. For (8), (10) or (12) less than 1.0 use ground release meteorology - go to step 10

b. For (8), (10) or (12) greater than or equal to 5.0 use elevated release meteorology - go to step 11

c. For all other values of (8), (10) or (12) use mixed release meteorology - go to step 9

9. Mixed Release Fractions

a. Fraction of release assigned as ground release

For 1.0 ≤ (8), (10) or (12) ≤ 1.5 fraction = 2.58-(1.58 x $\underset{(8),(10)or(12)}{\underline{\qquad\qquad}}$) = $\underset{(13)}{\underline{\qquad\qquad}}$.

For 1.5 < (8), (10) or (12) < 5.0 fraction = 0.30-(0.06 x $\underset{(8),(10)or(12)}{\underline{\qquad\qquad}}$) = $\underset{(13)}{\underline{\qquad\qquad}}$

b. Fraction of release assigned as elevated release = 1.00-$\underset{(13)}{\underline{\qquad\qquad}}$ = $\underset{(14)}{\underline{\qquad\qquad}}$

10. Ground Release Portion of Mixed Release

a. Wind Speed @ 33 ft. level (#13 on data sheet) = $\underset{(15)}{\underline{\qquad\qquad}}$ m/sec
(enter 0.5 if less than 0.5 m/sec)

b. Wind Direction @ 33 ft. level (#14 on data sheet) = $\underset{(16)}{\underline{\qquad\qquad}}$°

c. Downwind Direction = $\underset{(16)}{\underline{\qquad\qquad}}$°+/-180° = $\underset{(17)}{\underline{\qquad\qquad}}$°(must be 0-360°)

d. Downwind Sector [Table 1 and (17)] = $\underset{(18)}{\underline{\qquad\qquad}}$

e. Distance to Nearest Land or Site Boundary [Table 1 and or (17)] = $\underset{(19)}{\underline{\qquad\qquad}}$ m

f. Xu/Q, [Table 2, (6) and (19)] = $\underset{(20)}{\underline{\qquad\qquad}}$ m^{-2}

g. Ground X/Q = ________ ÷ ________ = ________ sec/m^3
(20) (15) (21)

h. Indicate Which Release Point is Being Considered:
MP2 Stack Steam Dumps S/G Safeties

i. Ground Level Airborne Concentration from Noble Gases

________Ci/sec x ________ x ________ = ________Ci/m^3
Worksheet #10 (21) (13)* (22)
of Release
Rate Procedure CONI-4.03

j. Fraction of Release Due to Specific Isotopes; see #18a on Data Sheet (skip if data unavailable)

Isotope % ÷ 100 OR Ci x^{th} ÷ Total OR uCi/ml x^{th} ÷ Total

Ar-41 = ________
(23)
Kr-83m = ________
(24)
Kr-85m = ________
(25)
Kr-85 = ________
(26)
Kr-87 = ________
(27)
Kr-88 = ________
(28)
Kr-89 = ________
(29)
Kr-90 = ________
(30)
Xe-131m = ________
(31)
Xe-133m = ________
(32)
Xe-133 = ________
(33)
Xe-135m = ________
(34)
Xe-135 = ________
(35)
Xe-137 = ________
(36)
Xe-138 = ________
(37)

*Default Value of 1.0 if (13) is not completed.

k. Semi-Infinite Cloud Whole Body Dose Rate (skip to part 1 if isotopic data unavailable)

Ar-41	______ (22) Ci/m^3 X	______ (23)	X $1.68 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (a)	$\frac{mrem}{min}$
Kr-83m	______ (22) Ci/m^3 X	______ (24)	X $1.44 \times 10^{-1} \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (b)	$\frac{mrem}{min}$
Kr-85m	______ (22) Ci/m^3 X	______ (25)	X $2.23 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (c)	$\frac{mrem}{min}$
Kr-85	______ (22) Ci/m^3 X	______ (26)	X $3.06 \times 10^1 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (d)	$\frac{mrem}{min}$
Kr-87	______ (22) Ci/m^3 X	______ (27)	X $1.13 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (e)	$\frac{mrem}{min}$
Kr-88	______ (22) Ci/m^3 X	______ (28)	X $2.80 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (f)	$\frac{mrem}{min}$
Kr-89	______ (22) Ci/m^3 X	______ (29)	X $3.16 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (g)	$\frac{mrem}{min}$
Kr-90	______ (22) Ci/m^3 X	______ (30)	X $2.97 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (h)	$\frac{mrem}{min}$
XE-131m	______ (22) Ci/m^3 X	______ (31)	X $1.74 \times 10^2 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (i)	$\frac{mrem}{min}$
Xe-133m	______ (22) Ci/m^3 X	______ (32)	X $4.78 \times 10^2 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (j)	mrem
Xe-133	______ (22) Ci/m^3 X	______ (33)	X $5.59 \times 10^2 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (k)	$\frac{mrem}{min}$
Xe-135m	______ (22) Ci/m^3 X	______ (34)	X $5.94 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (l)	$\frac{mrem}{min}$
Xe-135	______ (22) Ci/m^3 X	______ (35)	X $3.44 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (m)	$\frac{mrem}{min}$
Xe-137	______ (22) Ci/m^3 X	______ (36)	X $2.70 \times 10^3 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (n)	$\frac{mrem}{min}$
Xe-138	______ (22) Ci/m^3 X	______ (37)	X $1.68 \times 10^4 \frac{mrem\text{-}m^3}{min\text{-}Ci}$ =	______ (o)	$\frac{mrem}{min}$

Whole Body Dose Rate = $\sum_{a}^{o}$ mrem/min = ______ (38) mrem/min

Attachment 8.2
Rev. 0
Date: August 1981

1. Default Value if Isotopic Data Unavailable

Whole Body Dose Rate =

$\underset{(22)}{\underline{\qquad}}$ Ci/m^3 X $10{,}500e^{-0.15T}$ $\frac{\text{mrem-m}^3}{\text{min-Ci}}$ = $\underset{(38)}{\underline{\qquad\qquad}}$ mrem/min for T < 10 hrs.

$\underset{(22)}{\underline{\qquad}}$ Ci/m^3 x $2{,}500e^{-0.031(T-10)}$ $\frac{\text{mrem-m}^3}{\text{min-Ci}}$ = $\underset{(38)}{\underline{\qquad\qquad}}$ mrem/min for T = 10 to < 48 hrs.

$\underset{(22)}{\underline{\qquad}}$ Ci/m^3 x $780e^{-0.007(T-48)}$ $\frac{\text{mrem-m}^3}{\text{min-Ci}}$ = $\underset{(38)}{\underline{\qquad\qquad}}$ mrem/min for T = 48 to 96 hrs.

$\underset{(22)}{\underline{\qquad}}$ Ci/m^3 x 559 $\frac{\text{mrem-m}^3}{\text{min-Ci}}$ = $\underset{(38)}{\underline{\qquad\qquad}}$ mrem/min for T >96 hrs.

Where T is time in hours after shutdown of the release or age of the gases (#15 on data sheet)

m. Finite Cloud Correction Factor [Figure 1, (6) and (19)] = $\underset{(39)}{\underline{\qquad\qquad}}$

n. Duration of Release (#16 on data sheet) = $\underset{(40)}{\underline{\qquad\qquad}}$ min (Enter 600 if unknown and continuing)

o. Projected Whole Body Dose Due to Ground Portion of Mixed Release

$\underset{(40)}{\underline{\qquad\qquad}}$ min X $\underset{(38)}{\underline{\qquad\qquad}}$ mrem/min ÷ $\underset{(39)}{\underline{\qquad\qquad}}$ = $\underset{(41)}{\underline{\qquad\qquad}}$ mrem

——— If no Iodine Releases go to step 11; Otherwise continue ———

p. Iodine Depletion Correction Factor [Figure 2, #17 on data sheet, and (19)] = $\underset{(42)}{\underline{\qquad\qquad}}$

q. Ground level Airborne Concentration of Radioiodine from Ground Release Point

______________ Ci/sec X $\underset{(21)}{\underline{\qquad\qquad}}$ X $\underset{(13)^*}{\underline{\qquad\qquad}}$ X $\underset{(42)}{\underline{\qquad\qquad}}$ = $\underset{(43)}{\underline{\qquad\qquad}}$ Ci/m^3
Worksheet #10
of Release Rate
Procedure CONI-4.-03

*Default Value of 1.0 if (13) is not completed
1 Child dose approximately 2 times adult dose

r. Projected Thyroid Dose (Child[1]) Due to Ground Portion of Mixed Release (complete 1 or 2)

1. For release based upon I-131 or I-131 DEQ:

$\underset{(43)}{\_\_\_\_\_\_}$ Ci/m^3 X $\underset{(40)}{\_\_\_\_\_\_}$ min X 2.7 X 10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(44)}{\_\_\_\_\_\_}$ mrem

OR

2. For release based upon TOTAL Radioiodine

Total Iodine Decay Correction Factor [Figure 3 and #15 on data sheet] = $\underset{(45)}{\_\_\_\_\_\_}$

$\underset{(45)}{\_\_\_\_\_\_}$ X $\underset{(43)}{\_\_\_\_\_\_}$ Ci/m^3 X $\underset{(40)}{\_\_\_\_\_\_}$ min X 1.1 X 10^7 $\frac{mrem\text{-}m^3}{Ci\text{-}min}$ = $\underset{(44)}{\_\_\_\_\_\_}$ mrem

11. Elevated Release Portion of Mixed Release

a. MP2 Stack, Steam Dumps or S/G Safety Dose Per Unit Activity Released [Figures 4a-4r, (1), (5), (6) and time after shutdown of release or age of gases (#15 on data sheet)] = $\underset{(45)}{\_\_\_\_\_\_}$ mrem/Ci

b. Duration of Release (#16 on data sheet) = $\underset{(46)}{\_\_\_\_\_\_}$ min
(Enter 600 if unknown and continuing)

c. Projected Whole Body Dose Due to Elevated Portion of Mixed Release

$\underset{\text{Worksheet \#10 of Release Rate Procedure CONI-4.03}}{\_\_\_\_\_\_}$ Ci/sec X $\underset{(45)}{\_\_\_\_}$ mrem/Ci X $\underset{(14)*}{\_\_\_\_\_\_}$ X $\underset{(46)}{\_\_\_\_}$ min X 60 = $\underset{(47)}{\_\_\_\_\_\_}$ mrem

——— If No Iodine Releases go to Worksheet #4; Otherwise Continue ———

d. Maximum Offsite Xu/Q [Table 6 and Footnote at bottom, (5) and (6)] = $\underset{(48)}{\_\_\_\_\_\_}$ m^{-2}

e. Maximum Offsite X/Q = $\underset{(48)}{\_\_\_\_\_\_}$ ÷ $\underset{(1)}{\_\_\_\_\_\_}$ $\underset{(49)}{=}$ ______ sec/m^3

f. Iodine Depletion Correction Factor [Figure 2, #17 on data sheet, and (5) or Distance Corresponding to Maximum Xu/Q (see step 11.d)] = $\underset{(50)}{\_\_\_\_\_\_}$

1 Child dose approximately 2 times adult dose
*Default valve of 1.0 if (14) is not completed

g. Maximum Ground Level Airborne Concentration of Radioiodine

$\underset{\text{Worksheet \#10 of Release Rate Procedure CONI-4.03}}{\underline{\hspace{3em}}}$ Ci/sec X $\underset{(50)}{\underline{\hspace{3em}}}$ X $\underset{(49)}{\underline{\hspace{3em}}}$ X $\underset{(14)*}{\underline{\hspace{3em}}}$ = $\underset{(51)}{\underline{\hspace{3em}}}$ Ci/m^3

h. Projected Thyroid Dose (Child)[1] Due to Elevated Portion of Mixed Release (Complete 1 or 2)

1. For release based upon I-131 or I-131 DEQ

$\underset{(51)}{\underline{\hspace{3em}}}$ Ci/m^3 X $\underset{(46)}{\underline{\hspace{3em}}}$ min. X 2.7×10^7 $\frac{\text{mrem-min}}{\text{Ci-min}}$ = $\underset{(52)}{\underline{\hspace{3em}}}$ mrem

OR

2. For release based upon total Radioiodine

Total Iodine Decay Correction Factor [Figure 3 and #7 on data sheet] = $\underset{(53)}{\underline{\hspace{3em}}}$

$\underset{(53)}{\underline{\hspace{3em}}}$ X $\underset{(51)}{\underline{\hspace{3em}}}$ Ci/m^3 X $\underset{(46)}{\underline{\hspace{3em}}}$ min X 1.1×10^7 $\frac{\text{mrem-m}^3}{\text{Ci-min}}$ = $\underset{(52)}{\underline{\hspace{3em}}}$ mrem

*Default value of 1.0 if (14) is not completed
1 Child Dose approximately 2 times adult dose

WORKSHEET #4

MP DOSE SUMMARY

1. Total Projected Whole Body Doses

Source Point	Whole Body Dose	Sector	Distance
MP Elevated Release	______ mrem (32) of Worksheet #2	______ (4) of Worksheet #2	______ m (5) of Worksheet #2
MP Elevated With Fumigation	______ mrem (30) of Worksheet #2	______ (4) of Worksheet #2	______ m (5) of Worksheet #2
MP Ground Release	______ mrem (28) of Worksheet #1	______ (4) of Worksheet #1	______ m (5) of Worksheet #1
MP Mixed Release (Ground Portion)	______ mrem (41) of Worksheet #3	______ (18) of Worksheet #3	______ m (19 of Worksheet #3
MP Mixed Release (Elevated Portion)	______ mrem (47) of Worksheet #3	______ (4) of Worksheet #3	______ m (5) of Worksheet #3

Total Dose = ______ (30) or (32) + ______ (28) + ______ (41) + ______ (47) = ______ (1) mrem

Distance [choose largest of distances shown] = ______ (2) m

Sector [choose sector corresponding to (2)] = ______ (3)

2. Total Projected Thyroid Doses (child[1])

Source Point	Thyroid Dose	Sector	Distance
MP Elevated Release (MP-1 Stack)	______ mrem (36) of Worksheet #2	______ (4) of Worksheet #2	______ m Larger of the following: (5) of Worksheet #2 or Distance Corresponding to (33) of Worksheet #2
MP Ground Release	______ mrem (32) of Worksheet #1	______ (4) of Worksheet #1	______ m (5) of Worksheet #1
MP Mixed Release (Ground Portion)	______ mrem (44) of Worksheet #3	______ (18) of Worksheet #3	______ m (19) of Worksheet #3
MP Mixed Release (Elevated Portion)	______ mrem (52) of Worksheet #3	______ (4) of Worksheet #3	______ m Distance Corresponding to (48) of Worksheet #3

Worksheet #4 (Cont'd)

Total Dose = ______ (36) + ______ (32) + ______ (44) + ______ (52) = ______ (4) mrem

Distance [choose largest of distances shown] = ______ (5) m

Sector [choose sector corresponding to (5)] = ______ (6)

1 Child Dose = approximately 2 times adult dose

WORKSHEET #5

MP CLASS A AND B WHOLE BODY DOSE LINES

1. Projected Whole Body Dose [(1) of Worksheet #4] = ____________ mrem
(1)

2. If Projected Whole Body Dose > 5000 mrem Continue; Otherwise skip to 3.

   a. 5000 ÷ _______ = _________
   (1) (2)

   b. Determine if majority of dose is due to ground or elevated meteorology from Worksheet #4 and (30) or (32), (28), (41) and (47) to (1) ratio.

   c. Calculate approximate 5 rem line based upon ground, fumigation, or elevated meteorology.

      1. Ground and Millstone I fumigation meteorology: Use Figure 8 to find fractional reduction factor corresponding to distance (Worksheet #4) of majority of dose = ________ then 5 rem line corresponding to
      (3)
      fractional reduction factor of ______ X ______ = ______
      (3) (2) (4)

      Distance Corresponding to (4) on Figure 8 is _______ meters
      (5)

      2. Elevated meteorology: Use ratio method to calculate 5 rem line using the appropriate Figure 4 or 5 for "estimated" distance so that,

      ________________ mrem/Ci X ________ = __________ mrem/Ci
      (31) of Worksheet #2 (2) (6)
      or (45) of Worksheet #3

      Distance Corresponding to (6) on appropriate Figure 4 or 5 is ________ meters
      (5)

   d. Class A exists to ________ ÷ 1600 ÷ ________ miles
   (5) (7)

3. If Projected Whole Body Dose >1000 mrem continue; Otherwise stop - No Class A or Class B Whole Body Doses offsite.

   a. 1000 ÷ ________ = ________
   (1) (8)

   b. Calculate approximate 1 rem line based upon ground, fumigation or elevated meteorology.

      1. Ground and fumigation meteorology:

1 rem line is distance corresponding to fractional reducton factor of

_______ X _______ = _______
(8) (3) (9)

Distance Corresponding to (9) on Figure 8 is _______ meters
(10)

2. Elevated Meteorology:

_______ ÷ 5 = _______mrem/Ci
(6) (11)

Distance Corresponding to (11) on appropriate Figure 4 or 5 is _______ meters
(10)

c. Class B. exists to _______ ÷ 1600 = _______ miles
(10) (12)

WORKSHEET #6

MP CLASS A AND B THYROID DOSE LINES

1. Projected Thyroid Dose [(4) of Worksheet #4] = ____________ mrem
(1)

2. If Projected Thyroid Dose > 25,000 mrem continue; Otherwise skip to 3

   a. 25,000 ÷ ________ = ____________
   (1) (2)

   b. Determine if majority of dose is due to ground, fumigation or elevated meteorology from Worksheet #4 and (32), (36), (44) and (52) to (4) ratio.

   c. Calculate approximate 25 rem line based upon either ground or elevated meteorology.

      1. Ground or Millstone I fumigation meteology: Use Figure 9 to find fractional reduction factor corresponding to distance (Worksheet #4) of majority of dose = ________
      (3)

         then 25 rem line is distance corresponding to fractional reduction factor of ________ X ________ = ________
         (3) (2) (4)

         Distance Corresponding to (4) on Figure 9 is ________ meters
         (5)

      2. Elevated meteorology from MP-2 Stack, S/G Safeties or Atmospheric steam dumps:

         Use Figure 10 and find distance corresponding to a dose reduction factor of (2).

         Distance corresponding to (2) = ________ meters
         (5)

      3. Elevated meteorology from MP-1 Stack: Use Figure 11 and find distance corresponding to a dose reduction factor of (2).

         Distance Corresponding to (2) = ________ meters
         (5)

   d. Class A exists to ________ ÷ 1600 = ________ miles
   (5) (6)

3. If projected Thyroid Dose > 5000 mrem continue; Otherwise stop - No class A or Class B Thyroid Dose.

a. 5000 ÷ $\underset{(1)}{\underline{\hspace{2cm}}}$ = $\underset{(7)}{\underline{\hspace{2cm}}}$

b. Calculate approximate 5 rem line based upon ground, fumigation or elevated meteorology.

1. Ground or fumigation meteorology. Use Figure 9 to find fractional reduction factor corresponding to distance at majority of dose = $\underset{(8)}{\underline{\hspace{2cm}}}$

   then 5 rem line is distance corresponding to fractional reduction factor of $\underset{(7)}{\underline{\hspace{2cm}}}$ X $\underset{(8)}{\underline{\hspace{2cm}}}$ = $\underset{(9)}{\underline{\hspace{2cm}}}$

   Distance Corresponding to (9) is $\underset{(10)}{\underline{\hspace{2cm}}}$ meters

2. Elevated meteorology from MP-1 Stack: Use figure 11 and find distance corresponding to a dose reduction factor of (7).

   Distance Corresponding to (7) $\underset{(10)}{\underline{\hspace{2cm}}}$ meters

c. Class B. exists to $\underset{(10)}{\underline{\hspace{2cm}}}$ ÷ 1600 = $\underset{(4)}{\underline{\hspace{2cm}}}$ miles

TABLE 1

MILLSTONE GROUND RELEASES AND MP-2 STACK RELEASES
WIND DIRECTIONS AND SECTORS

DIRECTION WIND IS FROM	DOWN WIND DIRECTION	DOWNWIND SECTOR	DISTANCE TO NEAREST LAND	DISTANCE TO NEAREST SIT BOUNDARY
169° - 191°	349° - 11°	A (N)	1138 m	1138 m
192° - 213°	12° - 33°	B (NNE)	997 m	997 m
214° - 236°	34° - 56°	C (NE)	620 m	620 m
237° - 258°	57° - 78°	D (ENE)	1070 m	620 m
259° - 281°	79° - 101°	E (E)	1600 m	620 m
282° - 303°	102° - 123°	F (ESE)	1900 m	620 m
304° - 326°	124° - 146°	G (SE)	31700 m	620 m
327° - 348°	147° - 168°	H (SSE)	12390 m	620 m
349° - 11°	169° - 191°	J (S)	11800 m	620 m
12° - 33°	192° - 213°	K (SSW)	13030 m	620 m
34° - 56°	214° - 236°	L (SW)	3430 m	620 m
57° - 78°	237° - 258°	M (WSW)	3100 m	620 m
79° - 101°	259° - 281°	N (W)	2830 m	620 m
102° - 123°	282° - 303°	P (WNW)	2550 m	620 m
124° - 146°	304° - 326°	Q (NW)	1930 m	620 m
147° - 168°	327° - 348°	R (NNW)	915 m	915 m

NOTE: NEAREST SITE BOUNDARY IS GIVEN AS 620 m FROM THE MP2 STACK FOR WATER SECTORS (SECTORS D THROUGH Q).

TABLE 2

MP GROUND Xu/Q FOR GIVEN STABILITY CLASS

Distance (Meters)	A	B	C	D	E	F	G
500	2.58E-5	7.16E-5	1.57E-4	3.44E-4	5.21E-4	7.69E-4	9.43E-4
620	1.37E-5	4.75E-5	1.10E-4	2.61E-4	4.19E-4	6.65E-4	8.63E-4
915	4.29E-6	2.21E-5	5.65E-5	1.50E-4	3.66E-4	4.73E-4	6.91E-4
997	3.29E-6	1.86E-5	4.82E-5	1.31E-4	2.36E-4	4.33E-4	6.46E-4
1070	2.70E-6	1.63E-5	4.28E-5	1.19E-4	2.17E-4	4.05E-4	6.16E-4
1138	2.10E-6	1.44E-5	3.83E-5	1.09E-4	2.00E-4	3.80E-4	5.88E-4
1600	1.60E-6	7.38E-6	2.07E-5	6.56E-5	1.25E-4	2.59E-4	4.40E-4
1900	1.40E-6	5.30E-6	1.52E-5	5.06E-5	9.78E-5	2.10E-4	3.73E-4
1930	1.38E-6	5.10E-6	1.48E-5	4.92E-5	9.57E-5	2.06E-4	3.67E-4
2550	1.10E-6	2.94E-6	8.91E-6	3.24E-5	6.42E-5	1.45E-4	2.75E-4
2830	1.00E-6	2.40E-6	7.42E-6	2.83E-5	5.79E-5	1.27E-4	2.49E-4
3100	9.40E-7	2.00E-6	6.28E-6	2.46E-5	5.05E-5	1.25E-4	2.72E-4
3430	8.60E-7	1.64E-6	5.22E-6	2.11E-5	4.34E-5	1.08E-4	2.37E-4
4000	7.50E-7	1.21E-6	3.95E-6	1.66E-5	3.46E-5	8.67E-5	1.92E-4
6000	5.20E-7	7.00E-7	1.89E-6	9.00E-6	1.93E-5	4.95E-5	1.13E-4
10000	3.40E-7	4.50E-7	7.55E-7	4.22E-6	9.48E-6	2.51E-5	5.97E-5

TABLE 3

MILLSTONE 1 374 FOOT STACK RELEASES
WIND DIRECTIONS + SECTORS

DIRECTION WIND IS FROM	DOWN WIND DIRECTION	DOWNWIND SECTOR	DISTANCE TO NEAREST LAND	DISTANCE TO NEAREST SITE BOUNDARY
169° - 191°	349° - 11°	A (N)	1695 m	1695 m
192° - 213°	12° - 33°	B (NNE)	813 m	813 m
214° - 236°	34° - 56°	C (NE)	496 m	496 m
237° - 258°	57° - 78°	D (ENE)	1101 m	496 m
259° - 281°	79° - 101°	E (E)	1410 m	496 m
282° - 303°	102° - 123°	F (ESE)	1640 m	496 m
304° - 326°	124° - 146°	G (SE)	31700 m	496 m
327° - 348°	147° - 168°	H (SSE)	12390 m	496 m
349° - 11°	169° - 191°	J (S)	11800 m	496 m
12° - 33°	192° - 213°	K (SSW)	13030 m	496 m
34° - 56°	214° - 236°	L (SW)	3660 m	496 m
57° - 78°	237° - 258°	M (WSW)	3270 m	496 m
79° - 101°	259° - 281°	N (W)	3050 m	496 m
102° - 123°	282° - 303°	P (WNW)	2660 m	649 m
124° - 146°	304° - 326°	Q (NW)	997 m	710 m
147° - 168°	327° - 348°	R (NNW)	1029 m	1029 m

NOTE: NEAREST SITE BOUNDARY IS GIVEN AS 496 m IN WATER SECTORS (SECTORS D THROUGH N).

TABLE 4

MP 347 FT. RELEASE Xu/Q FOR GIVEN STABILITY CLASS

Distance (Meters)	A	B	C	D	E	F	G
496	1.50E-5*	5.69E-6	3.10E-7	2.37E-12	2.33E-20	2.35E-44	
649	9.87E-6	1.06E-5	2.27E-6	9.91E-10	3.27E-15	1.49E-30	
710	8.05E-6	1.15E-5	3.45E-6	4.27E-9	6.43E-14	3.46E-27	
813	5.70E-6	1.19E-5*	5.47E-6	2.81E-8	2.67E-12	5.78E-23	
997	3.20E-6	1.08E-5	8.54E-6	2.10E-7	2.17E-10	1.32E-18	Less Than
1029	2.93E-6	1.06E-5	8.90E-6	2.66E-7	3.50E-10	4.13E-18	2.49E-14
1101	2.44E-6	9.96E-6	9.58E-6	4.03E-7	9.75E-10	5.32E-17	
1410	1.90E-6	7.36E-6	1.05E-5*	1.36E-6	1.85E-8	7.92E-14	
1640	1.60E-6	5.86E-6	9.97E-6	2.30E-6	7.66E-8	2.89E-12	
1695	1.50E-6	5.54E-6	9.76E-6	2.58E-6	9.73E-8	5.85E-12	
2660	1.05E-6	2.55E-6	6.23E-6	5.20E-6	9.49E-7	3.38E-9	2.49E-14
3050	9.50E-7	1.98E-6	5.17E-6	5.66E-6	1.44E-6	1.22E-8	5.54E-13
3270	8.60E-7	1.74E-6	4.70E-6	5.80E-6	1.71E-6	2.09E-8	1.25E-12
3660	8.00E-7	1.40E-6	3.97E-6	5.84E-6*	2.14E-6	4.57E-8	9.45E-12
4000	7.50E-7	1.18E-6	3.45E-6	5.75E-6	2.45E-6	7.81E-8	3.04E-11
6000	5.20E-7	7.00E-7	1.78E-6	4.72E-6	3.45E-6	4.31E-7	1.57E-9
8000	4.10E-7	5.50E-7	1.08E-6	3.71E-6	3.55E-6*	8.62E-7	9.56E-9
10000	3.40E-7	4.50E-7	7.36E-7	2.97E-6	3.35E-6	1.21E-6	2.63E-8
15000						1.70E-6*	1.70E-6*

*Denotes maximum ground Xu/Q for use in ground radioiodine airborne concentrations if beyond site boundary.

TABLE 5

MP 374 FT. FUMIGATION Xu/Q_f FOR STABLE METEROLOGY

Distance (Meters)	E	F	G
496	1.33E-4	1.98E-4	2.94E-4
649	1.04E-4	1.55E-4	2.28E-4
710	9.58E-5	1.43E-4	2.10E-4
813	8.46E-5	1.25E-4	1.85E-4
997	6.96E-5	1.03E-4	1.52E-4
1029	6.77E-5	1.01E-4	1.48E-4
1101	6.35E-5	9.47E-5	1.39E-4
1410	5.04E-5	7.58E-5	1.12E-4
1640	4.34E-5	6.55E-5	9.67E-5
1695	4.19E-5	6.33E-5	9.36E-5
2660	2.75E-5	4.20E-5	6.23E-5
3050	2.42E-5	3.74E-5	5.51E-5
3270	2.27E-5	3.49E-5	5.15E-5
3660	2.05E-5	3.14E-5	4.69E-5
4000	1.89E-5	2.90E-5	4.31E-5
6000	1.30E-5	2.02E-5	3.00E-5
8000	1.00E-5	1.56E-5	2.32E-5
10000	8.23E-5	1.28E-5	1.90E-5

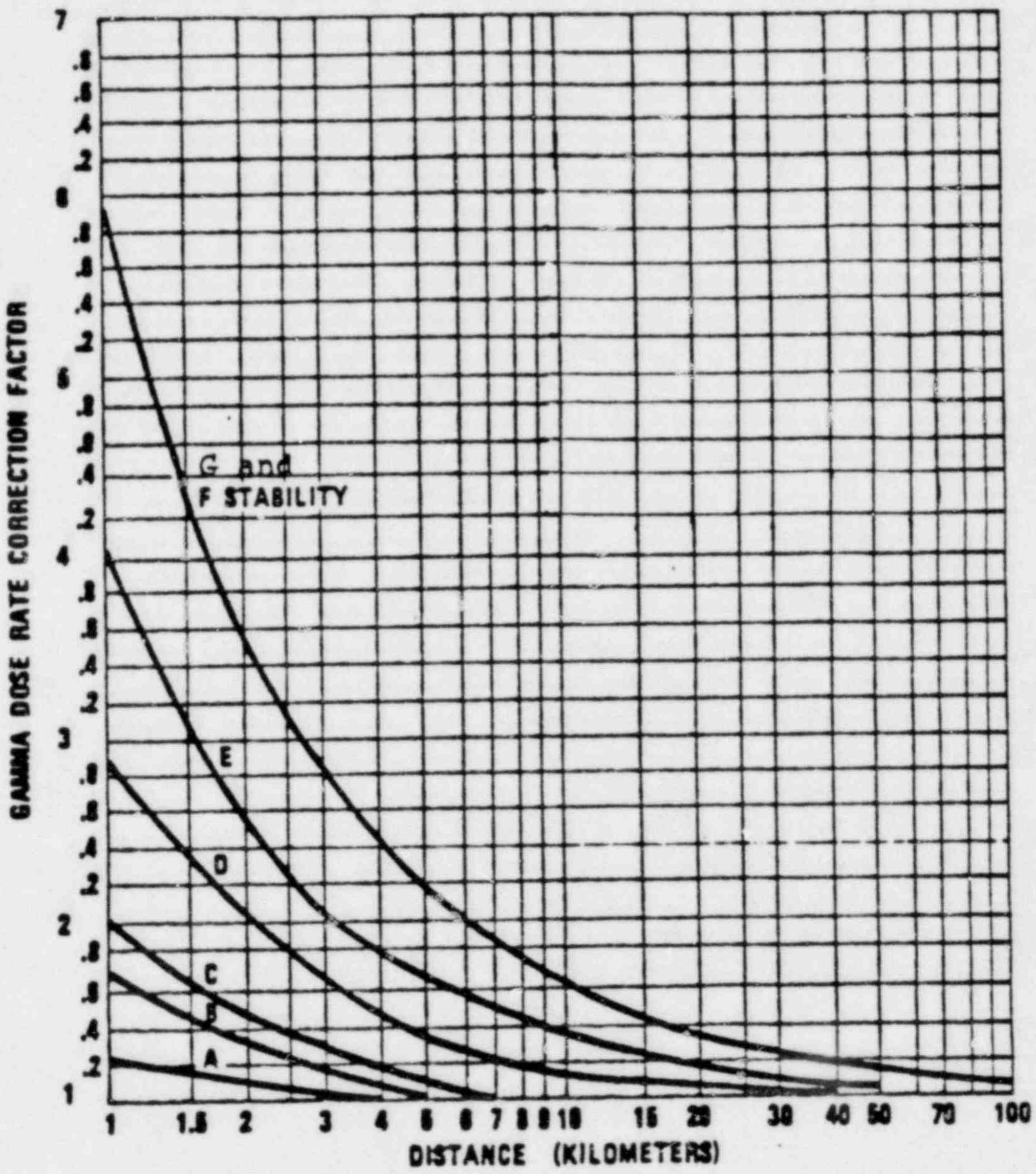
TABLE 6

MP 142 FT. RELEASE Xu/Q FOR GIVEN STABILITY CLASS

Distance (Meters)	A	B	C	D	E	F	G
500	2.37E-5*	4.84E-5*	5.93E-5*	1.62E-5	1.05E-6	1.43E-10	7.65E-17
620	1.32E-5	3.72E-5	5.73E-5	2.98E-5	4.70E-6	1.07E-8	2.82E-13
915	4.27E-6	2.02E-5	4.10E-5	4.54E-5	2.04E-5	9.30E-7	2.46E-9
997	3.29E-6	1.71E-5	3.68E-5	4.62E-5*	2.41E-5	1.67E-6	1.07E-8
1070	2.70E-6	1.53E-5	3.37E-5	4.59E-5	3.00E-5	2.59E-6	2.41E-8
1138	2.24E-6	1.37E-5	3.17E-5	4.52E-5	2.92E-5	3.73E-6	4.51E-8
1600	1.60E-6	7.17E-6	1.85E-5	3.75E-5	3.54E-5*	1.13E-5	7.29E-7
1900	1.40E-6	5.15E-6	1.40E-5	3.24E-5	3.51E-5	1.60E-5	1.81E-6
1930	1.38E-6	5.00E-6	1.36E-5	3.19E-5	3.51E-5	1.65E-5	1.96E-6
2550	1.10E-6	2.93E-6	8.53E-6	2.39E-5	3.11E-5	2.24E-5	5.20E-6
2830	1.00E-6	2.38E-6	7.09E-6	2.12E-5	2.72E-5	2.41E-5	6.63E-6
3100	9.40E-7	1.99E-6	6.04E-6	1.90E-5	2.71E-5	2.48E-6	8.20E-6
3430	8.60E-7	1.69E-6	5.06E-6	1.68E-5	2.49E-5	2.52E-5*	9.75E-6
4000	7.50E-7	1.21E-6	3.85E-6	1.38E-5	2.17E-5	2.50E-5	1.20E-5
6000	5.20E-7	7.00E-7	1.87E-6	8.03E-6	1.42E-5	2.14E-5	1.56E-5*
10000	3.40E-7	4.50E-7	7.51E-7	3.96E-6	7.88E-6	1.47E-5	1.52E-5

*Denotes maximum ground Xu/Q for use in ground radioiodine airborne concentrations if beyond site boundary.

Figure 1



Gamma Exposure Rate Finite Cloud Correction Factor

FIGURE 2
IODINE DEPLETION CORRECTION FACTOR

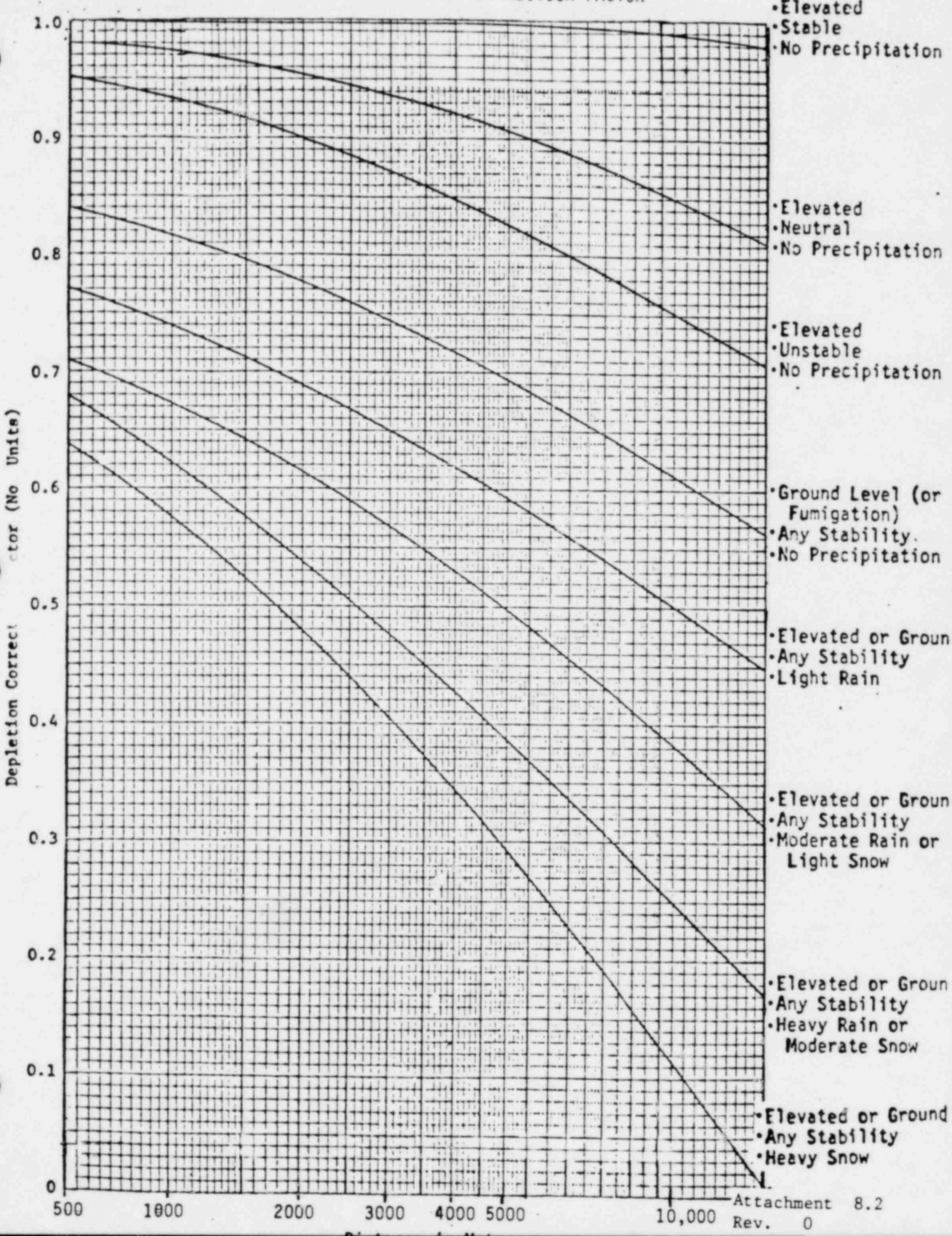


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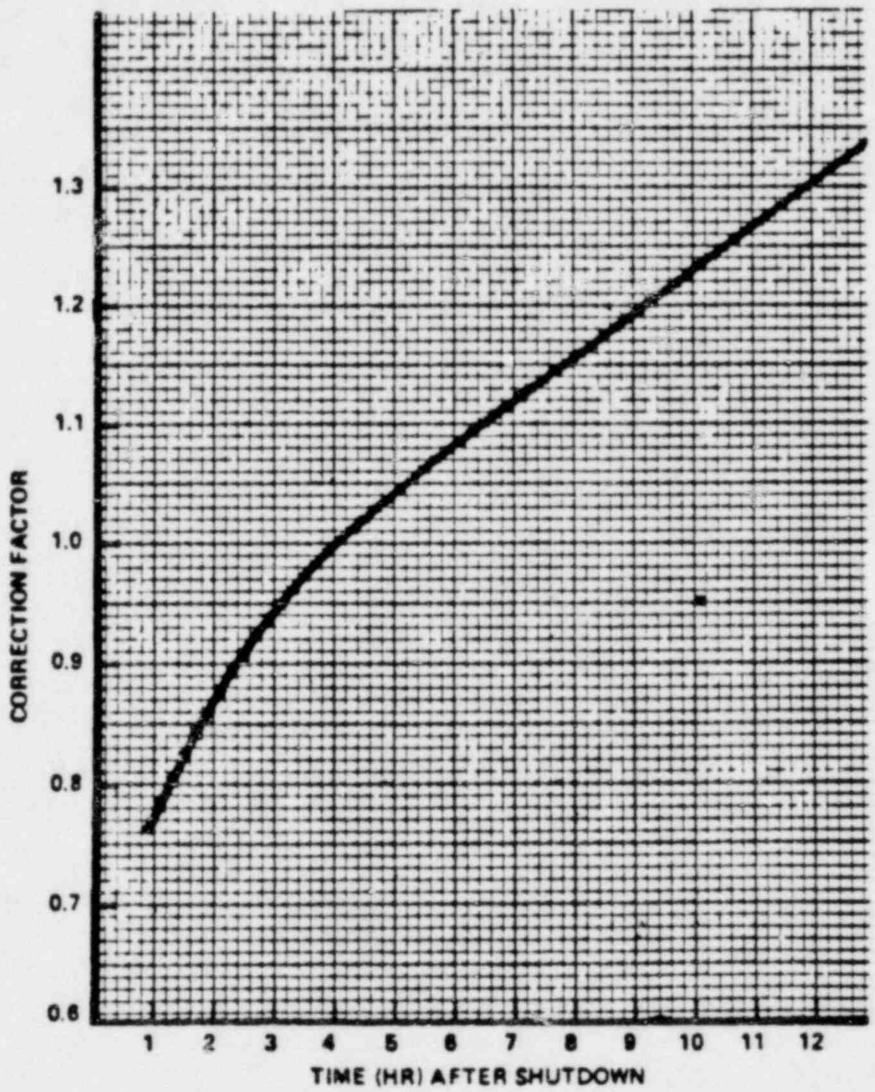
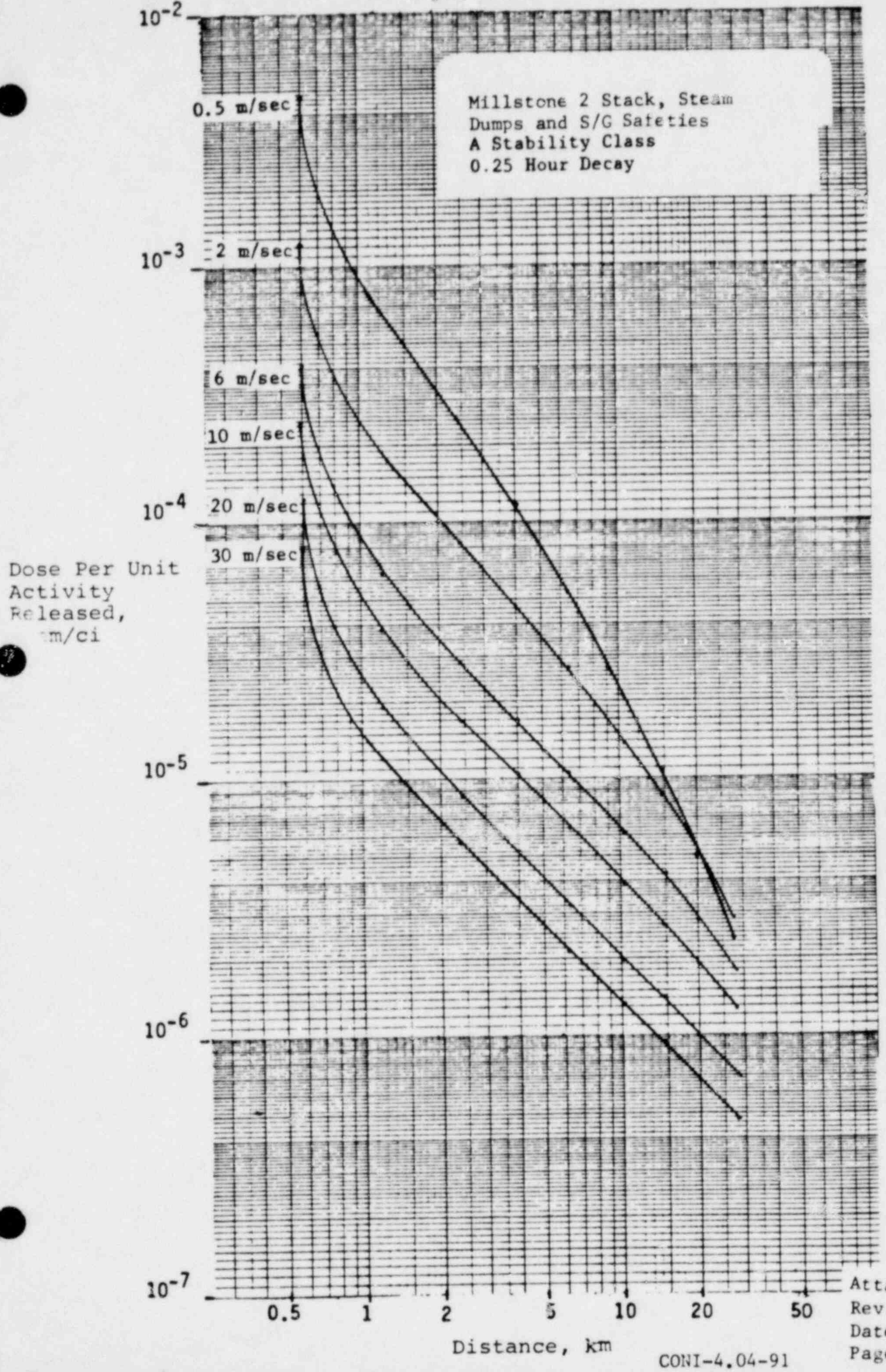
Figure 3



Correction Factors for Thyroid Inhalation Dose as a Function of Time After Reactor Shutdown That Radioiodine Concentration is Measured

Figure 4-a



CONI-4.04-91

Attachment 8.2
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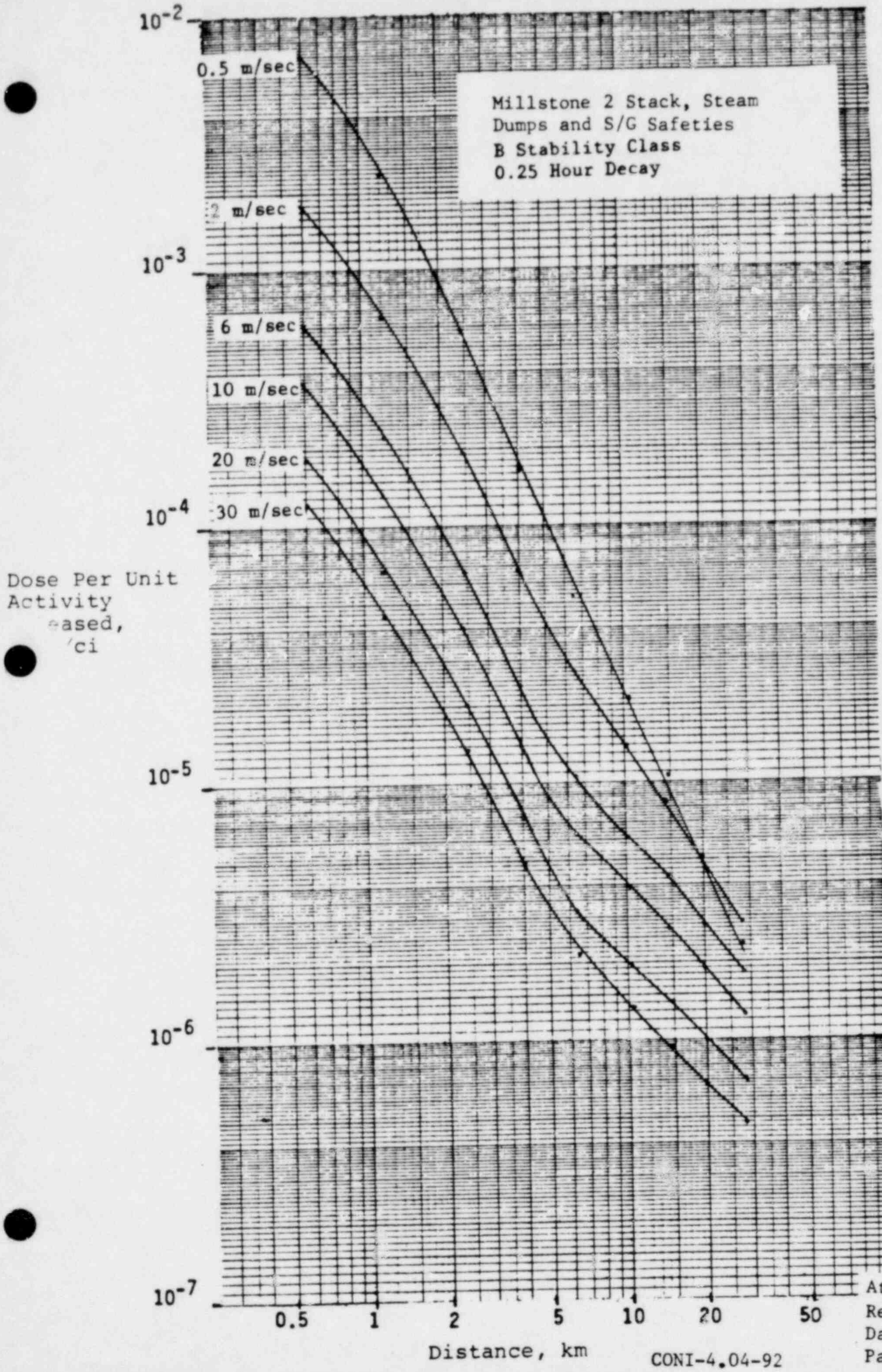
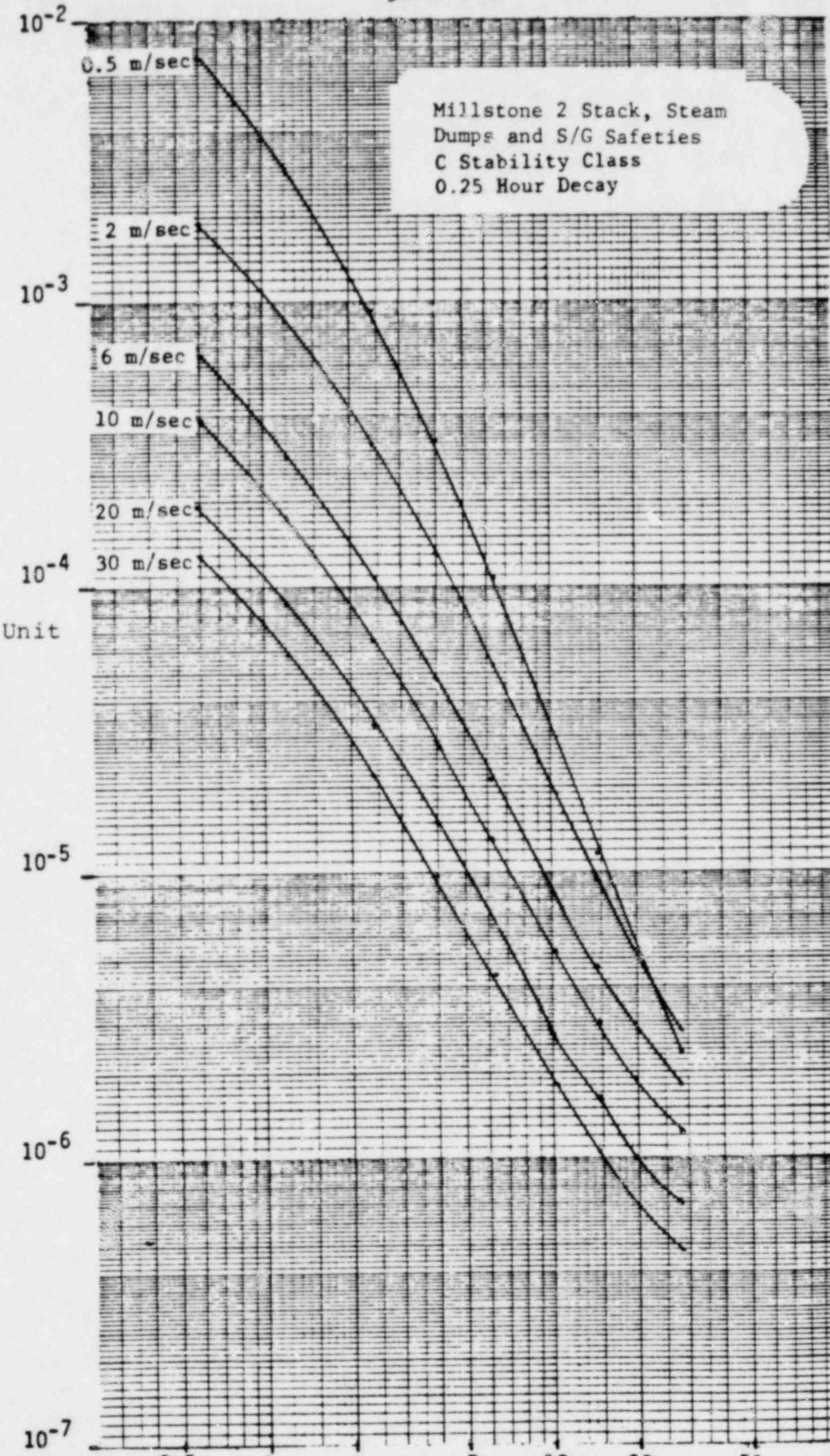
Figure 4-b



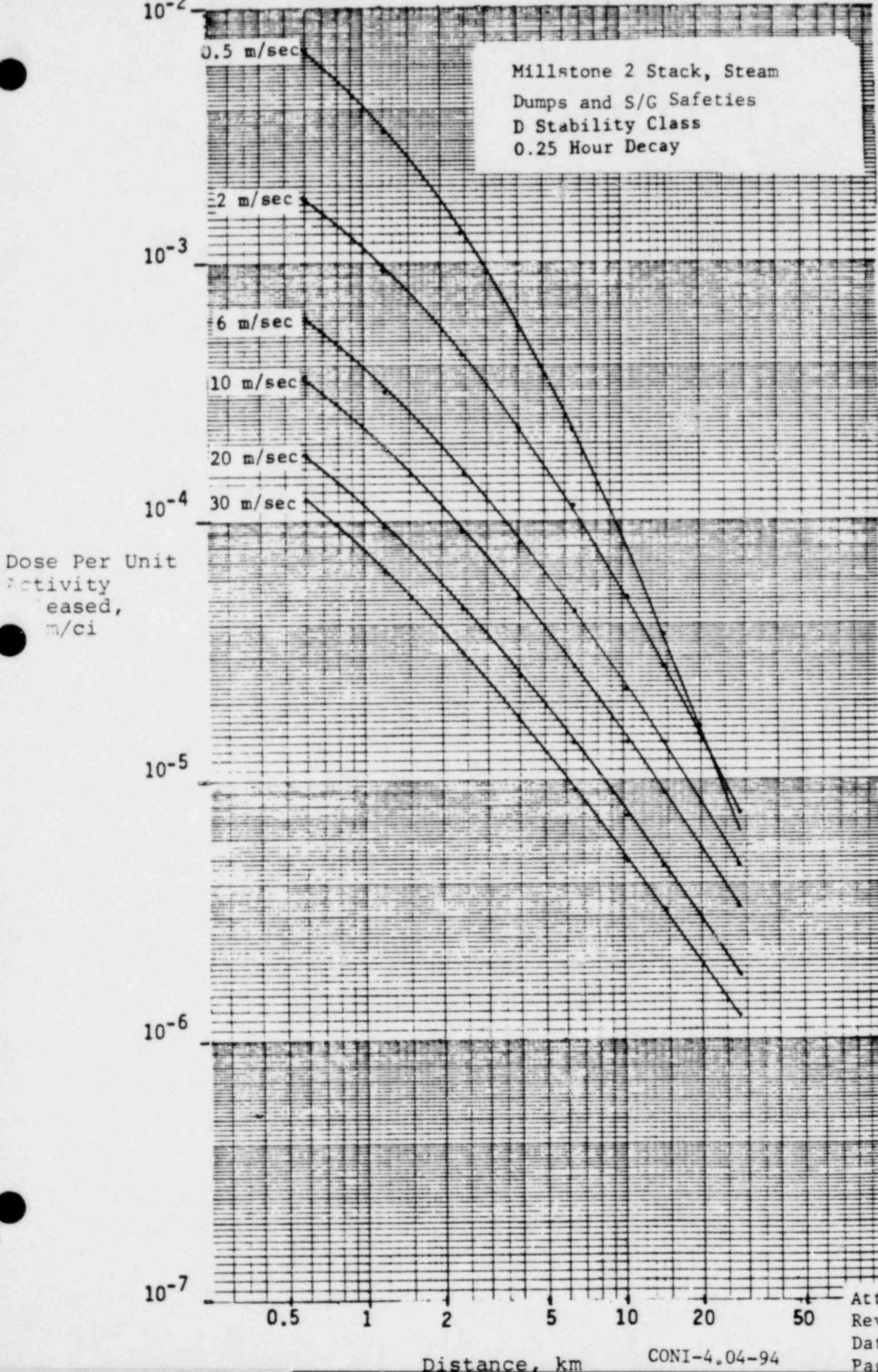
CONI-4.04-92

Figure 4-c



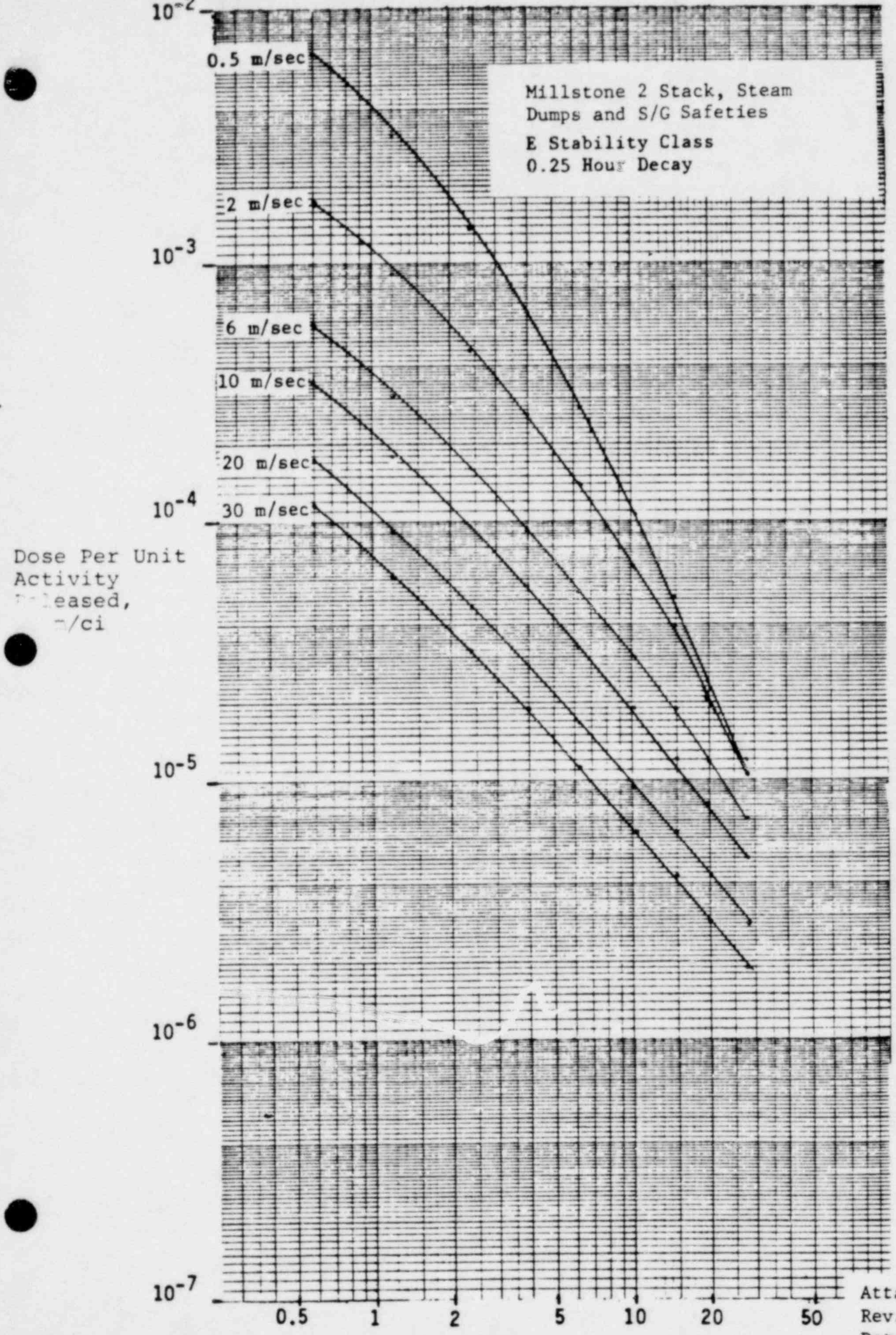
CONI-4.04-93

Figure 4-d



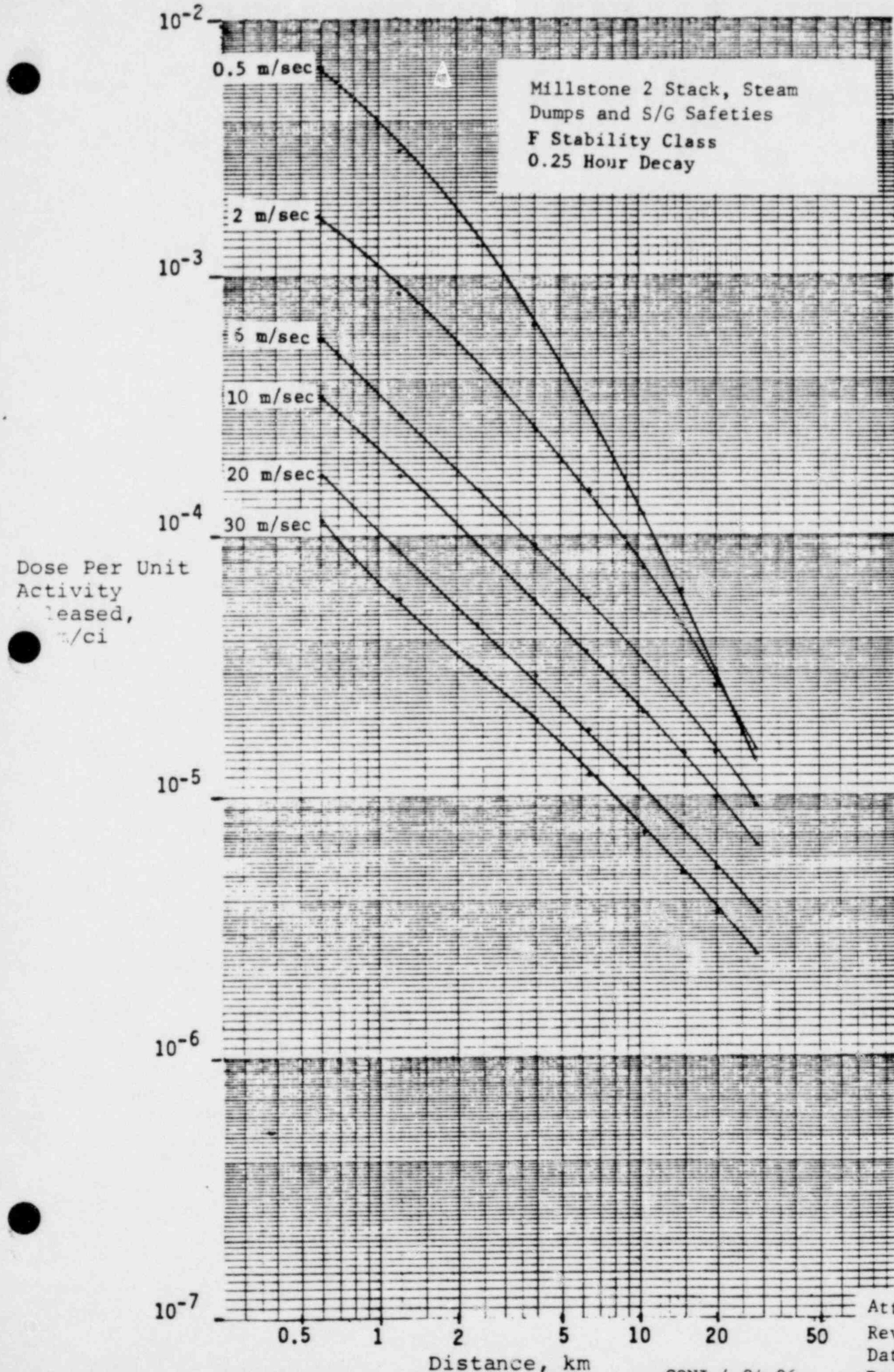
CONI-4.04-94

Figure 4-e



CONI-4.04-95

Figure 4-f



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CONI-4.04-96

Figure 4-g

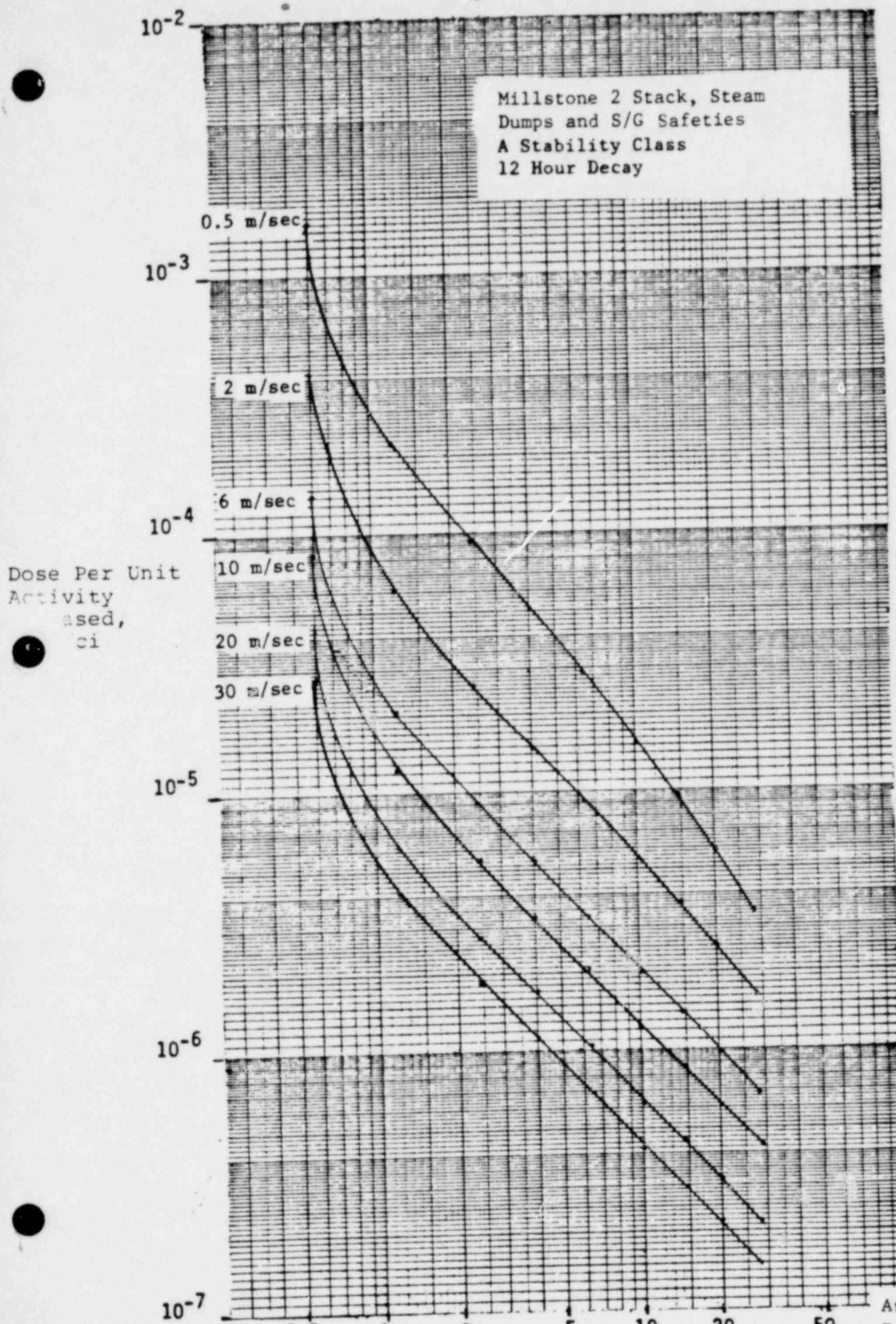
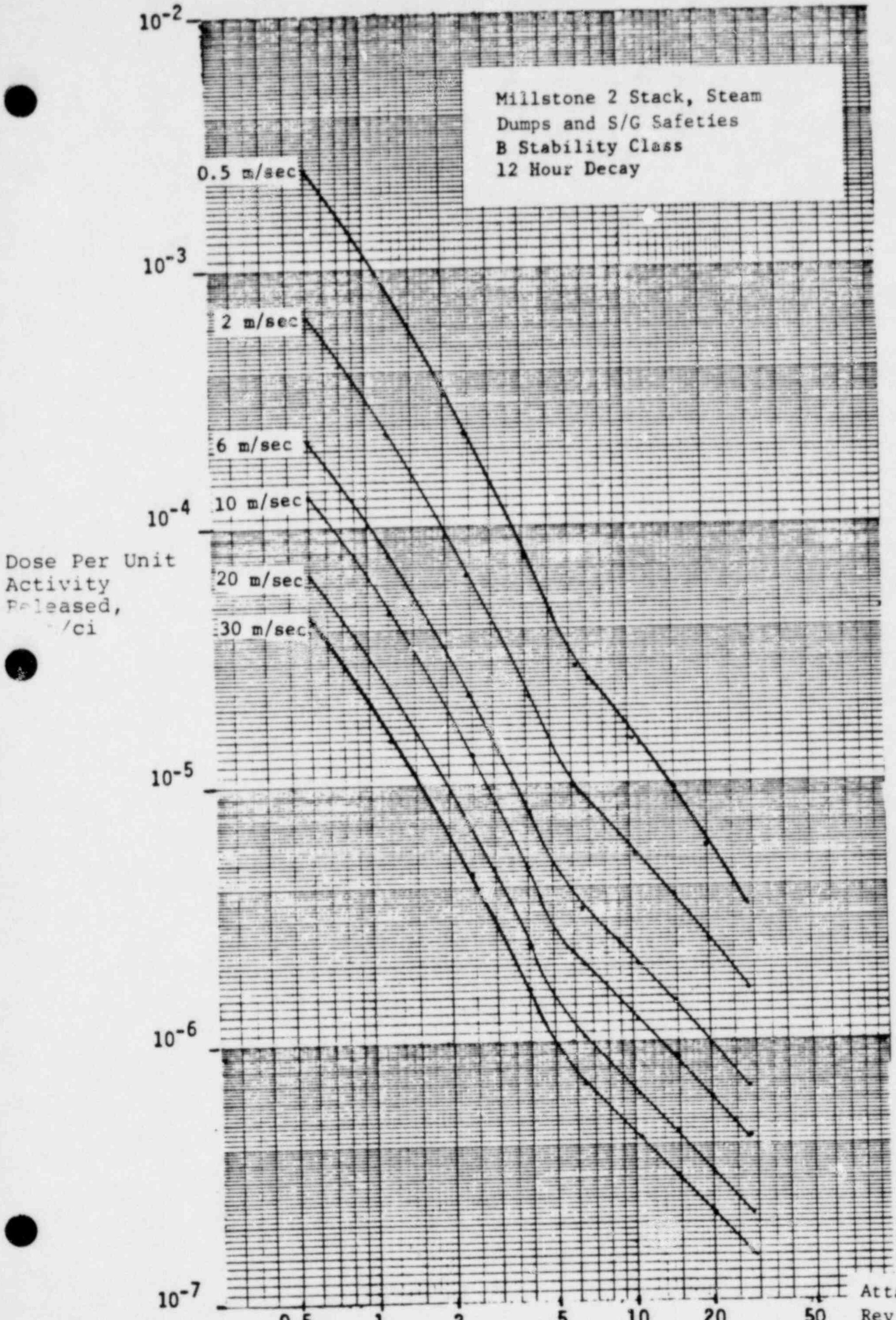

Millstone 2 Stack, Steam
Dumps and S/G Safeties
A Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10-2
10-3
10-4
10-5
10-6
10-7
Dose Per Unit
Activity
ased,
ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-h



CONI-4.04-98

Figure 4-i

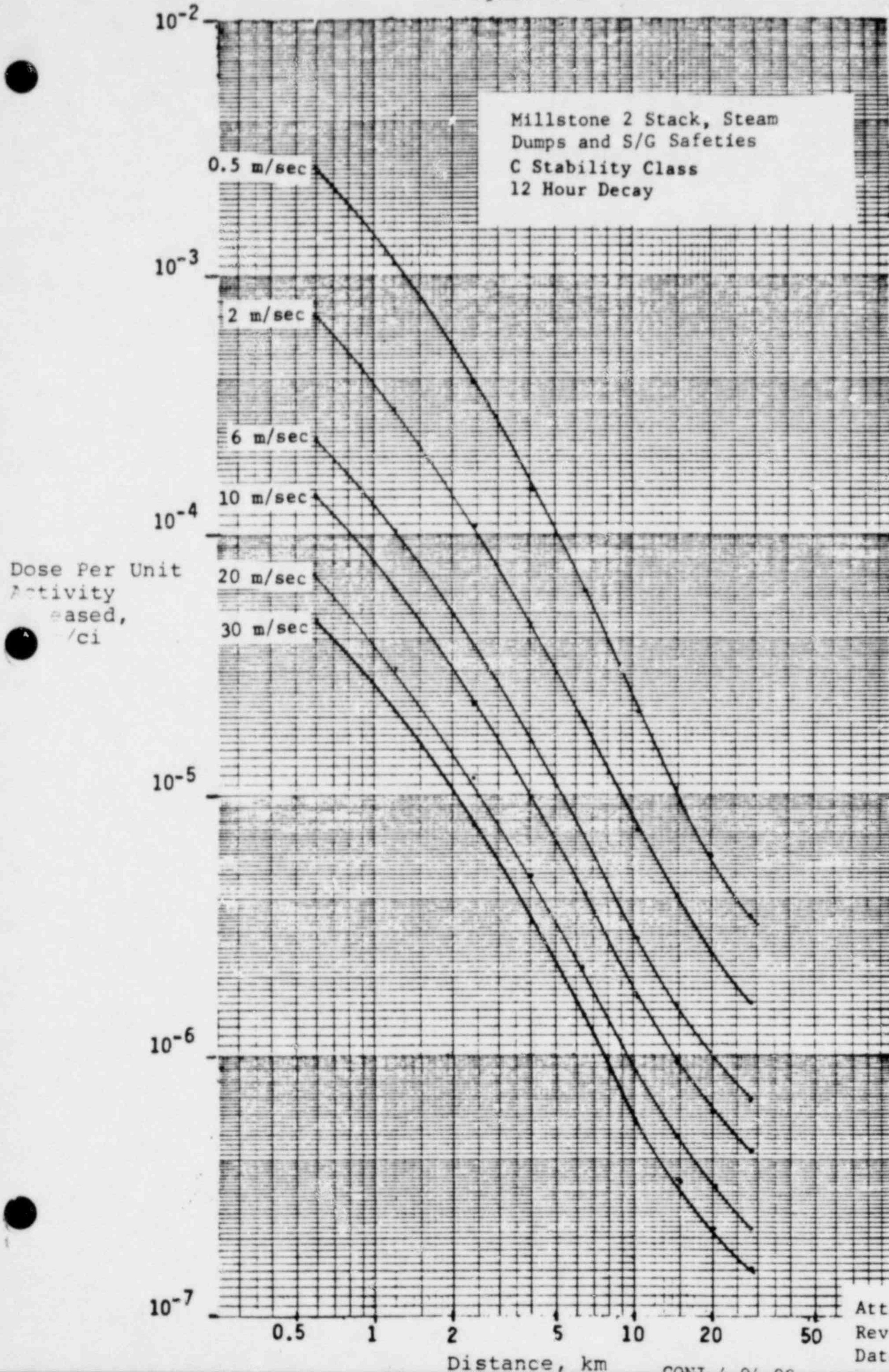


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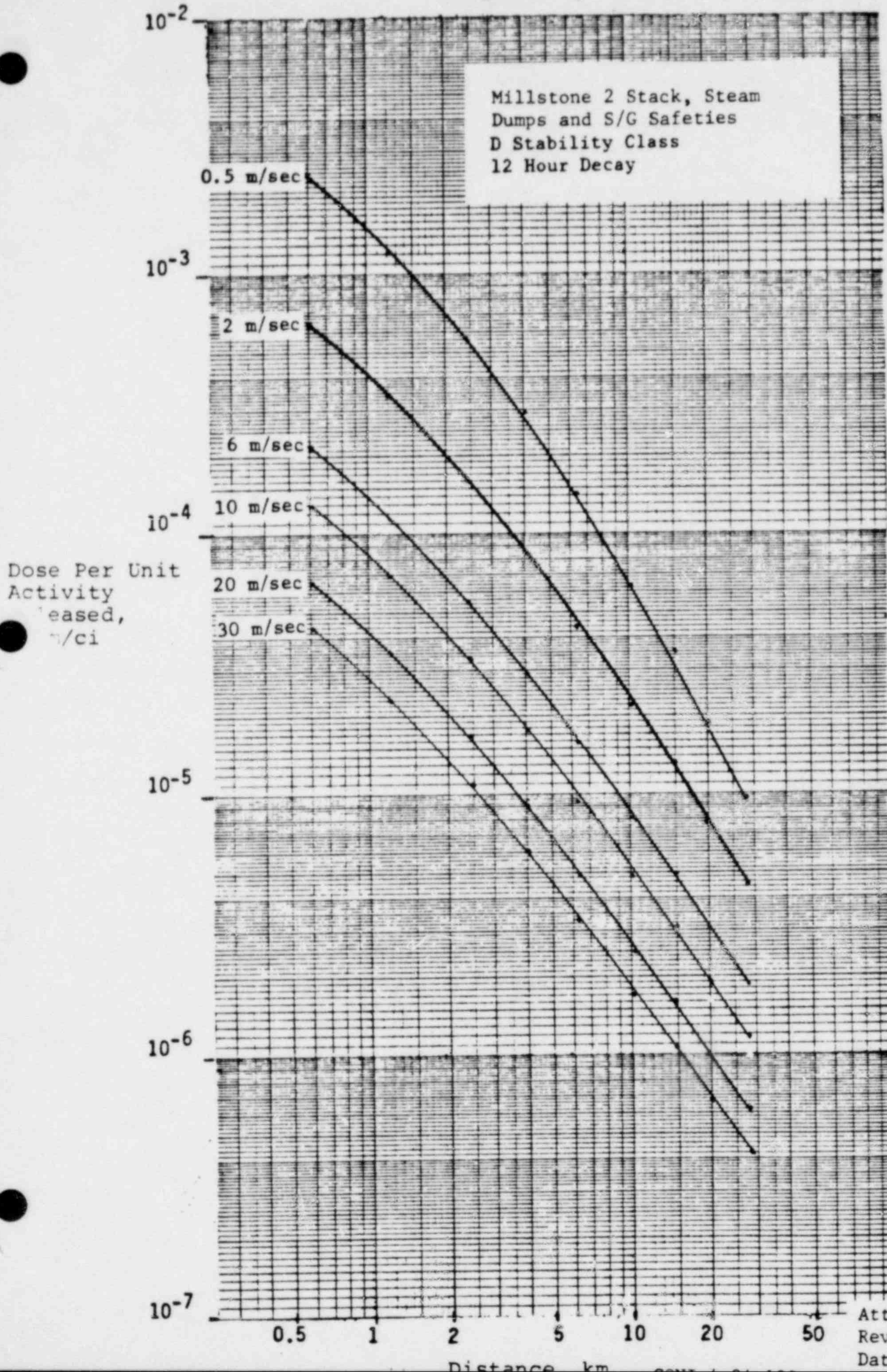
Figure 4-j



Attachment 8.2
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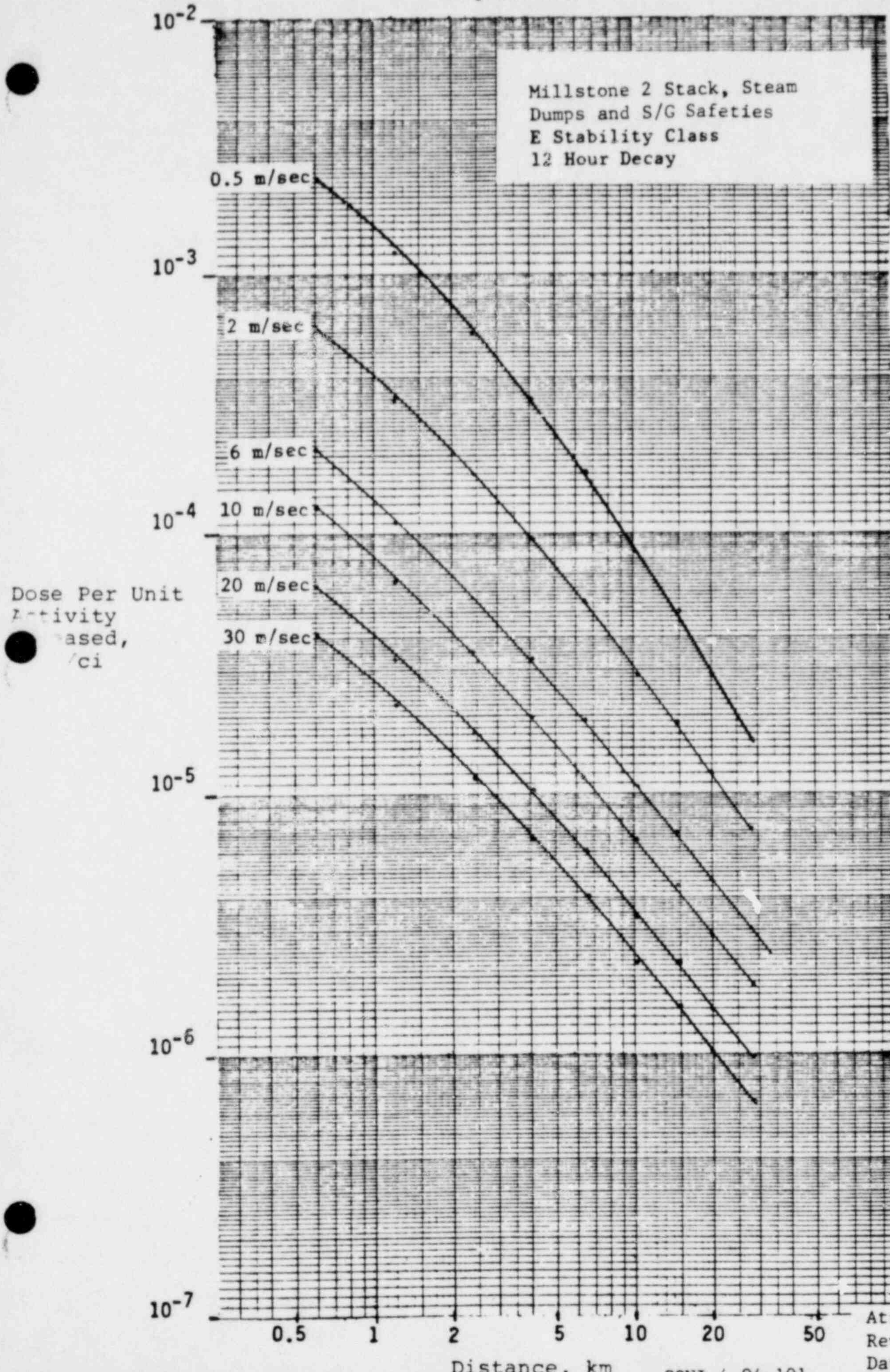
Figure 4-k



Millstone 2 Stack, Steam
Dumps and S/G Safeties
E Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
Dose Per Unit
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
0.5
1
2
5
10
20
50
Distance, km

Figure 4-1

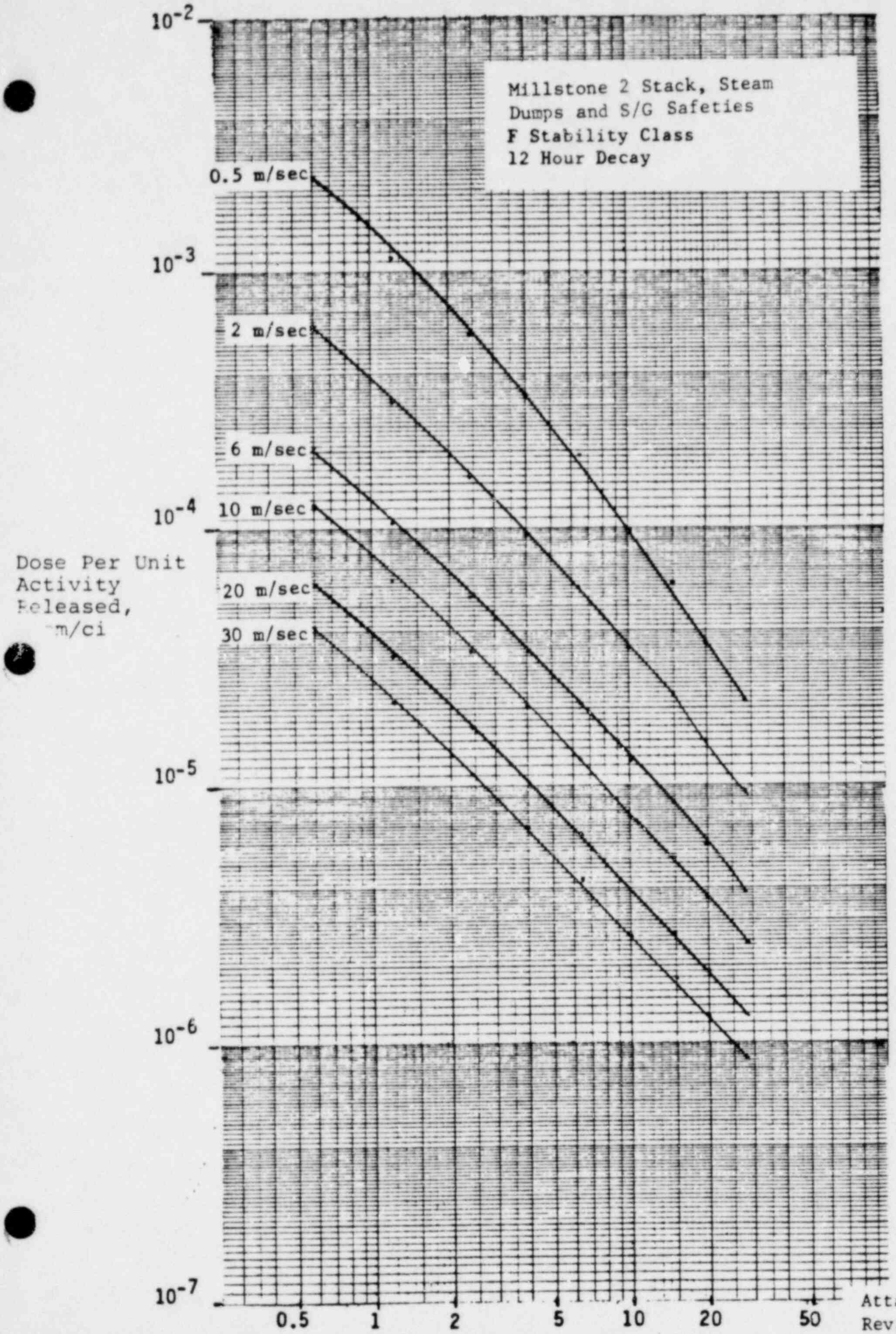

Millstone 2 Stack, Steam
Dumps and S/G Safeties
F Stability Class
12 Hour Decay
0.5 m/sec
2 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 4-m

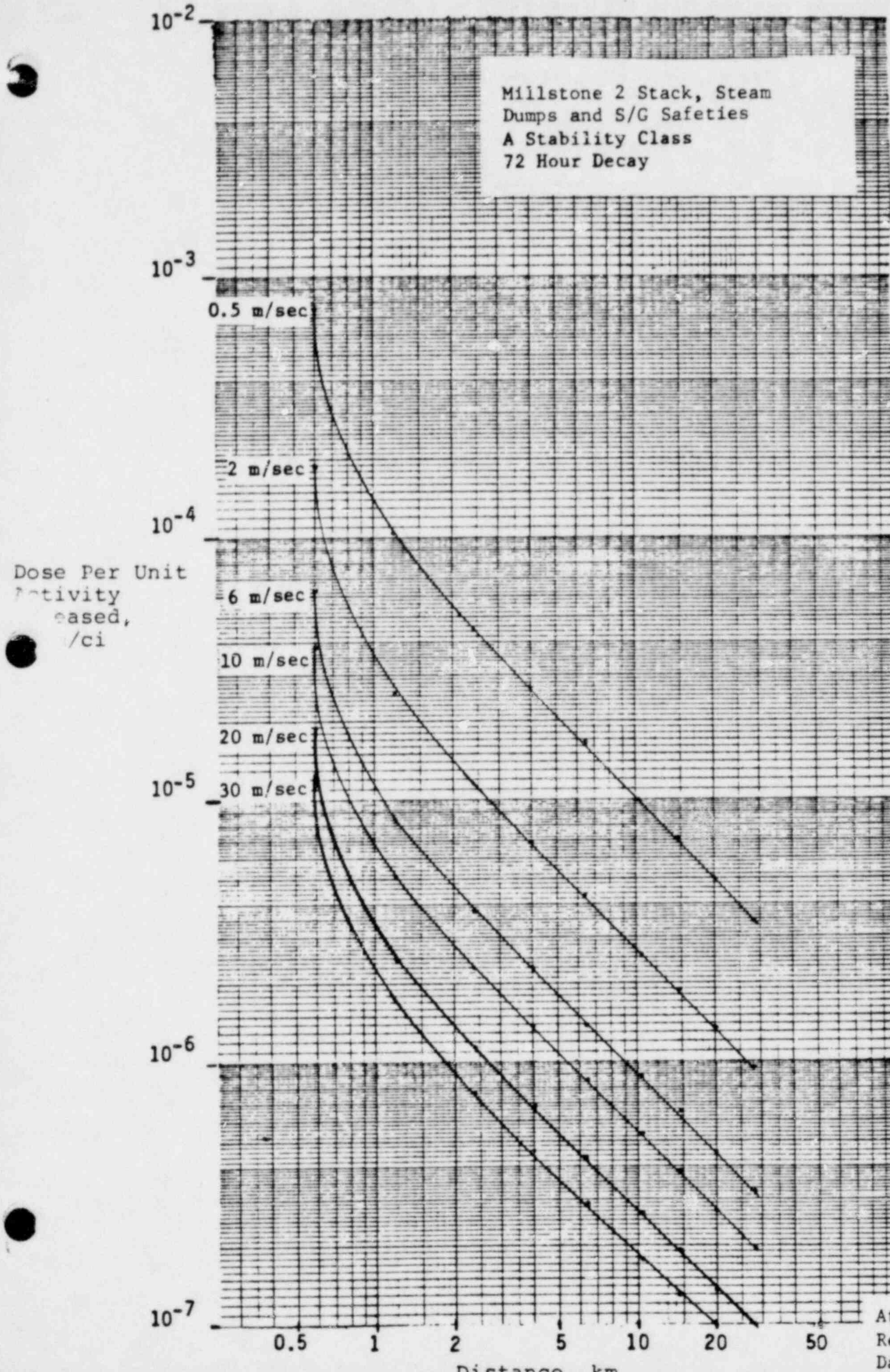


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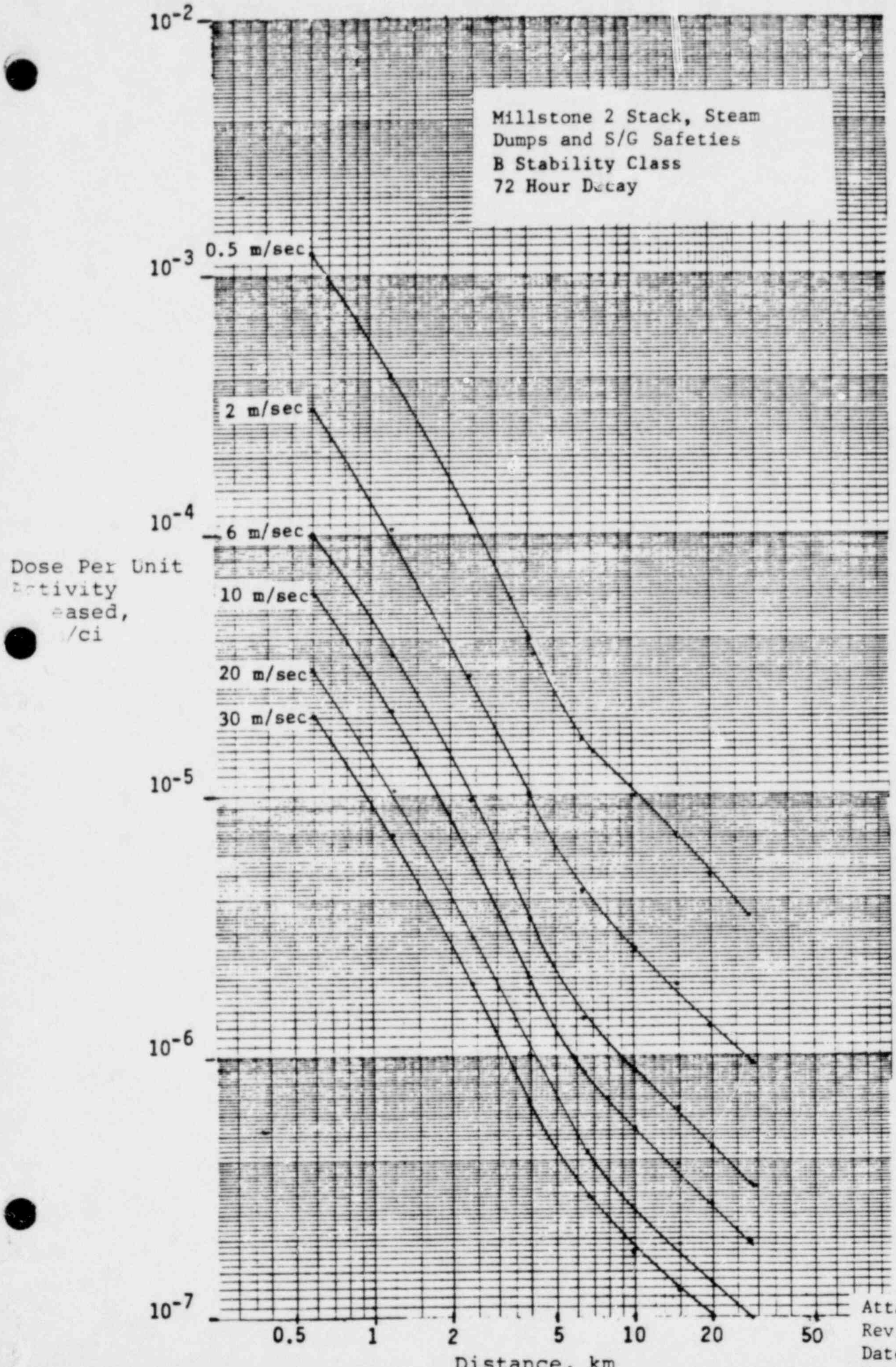
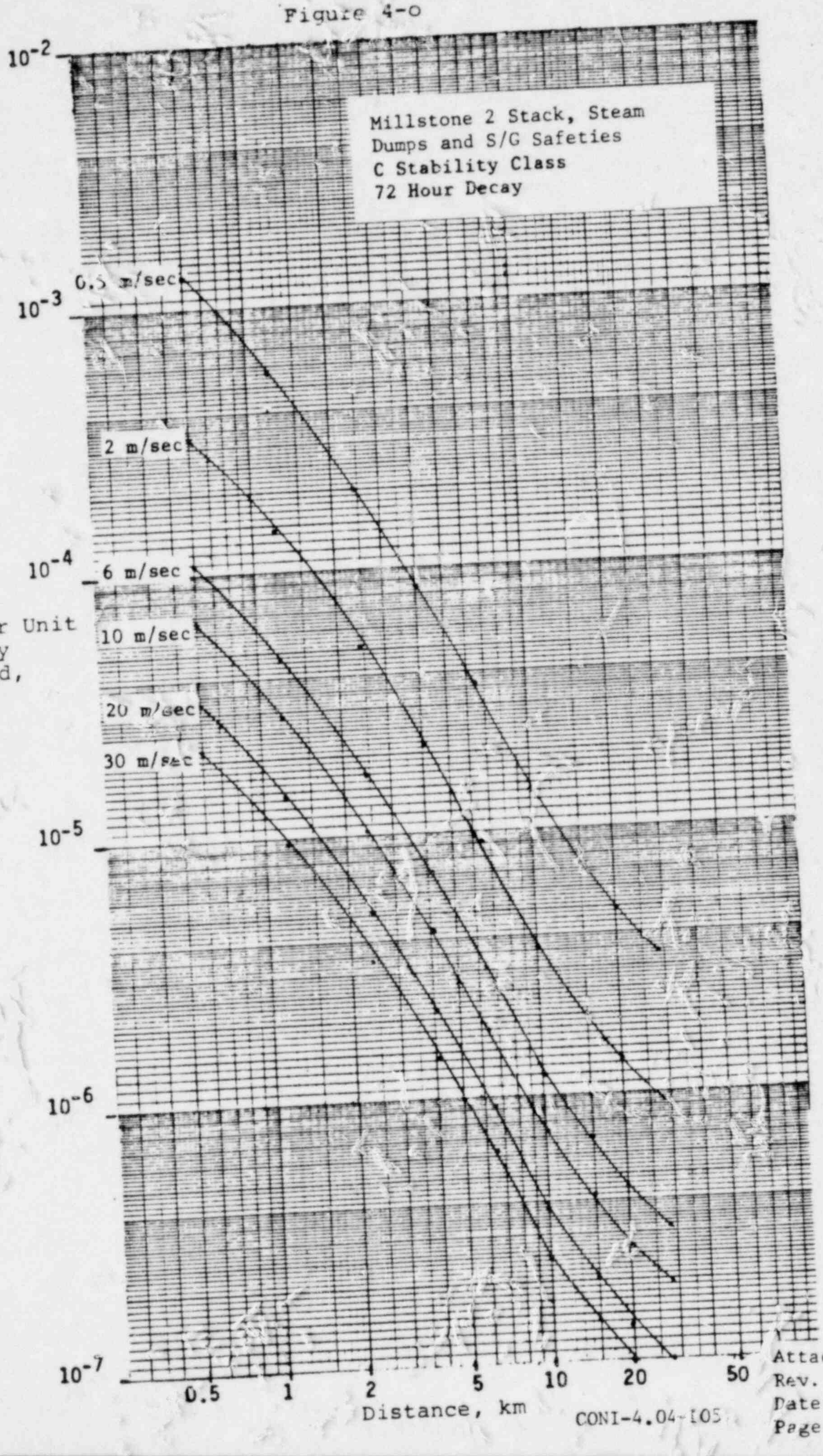
Figure 4-n



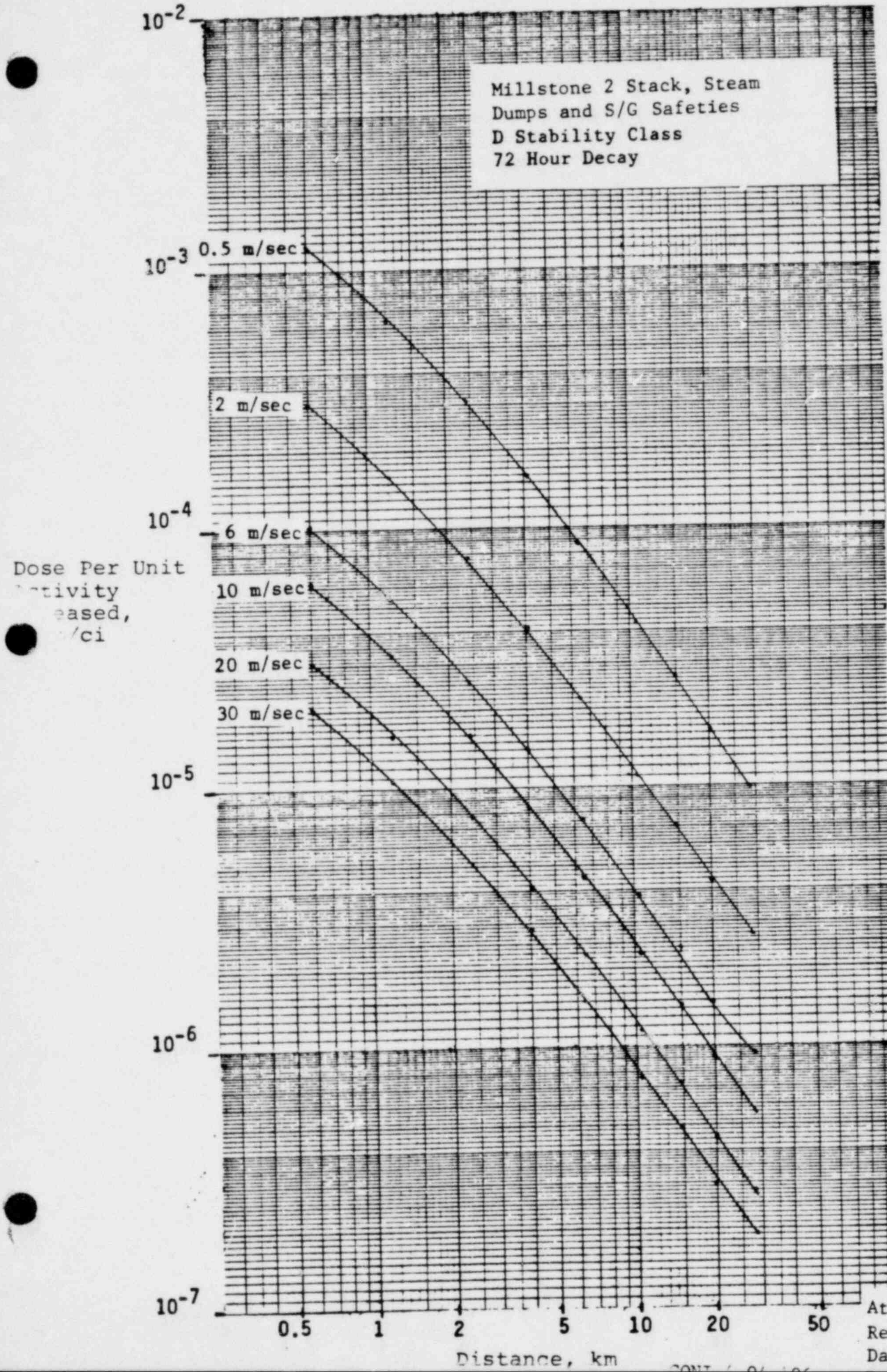
Attachment 8.2
Rev. 0
Date: August 1981

Figure 4-o



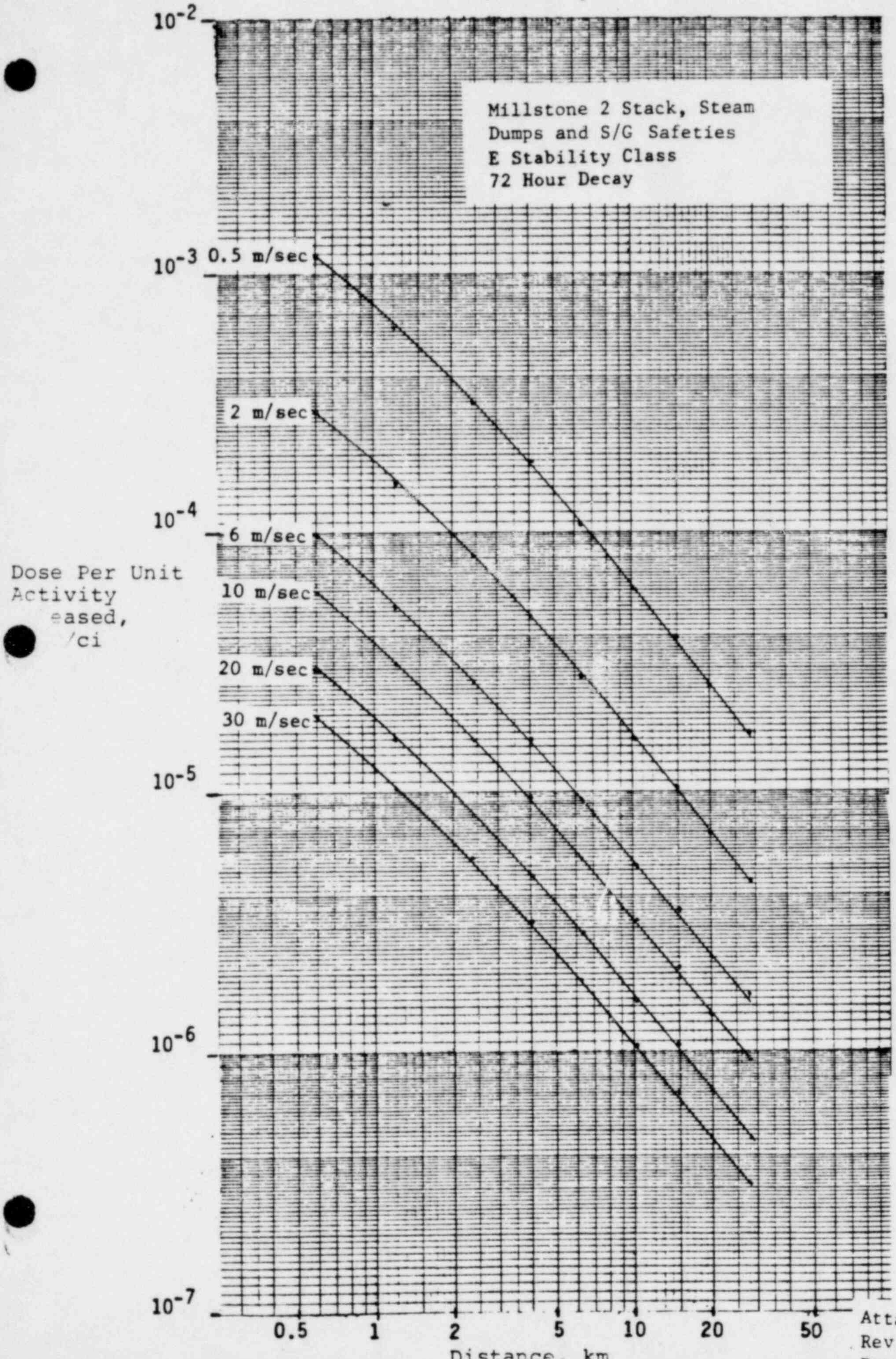
CONI-4.04-105

Figure 4-p



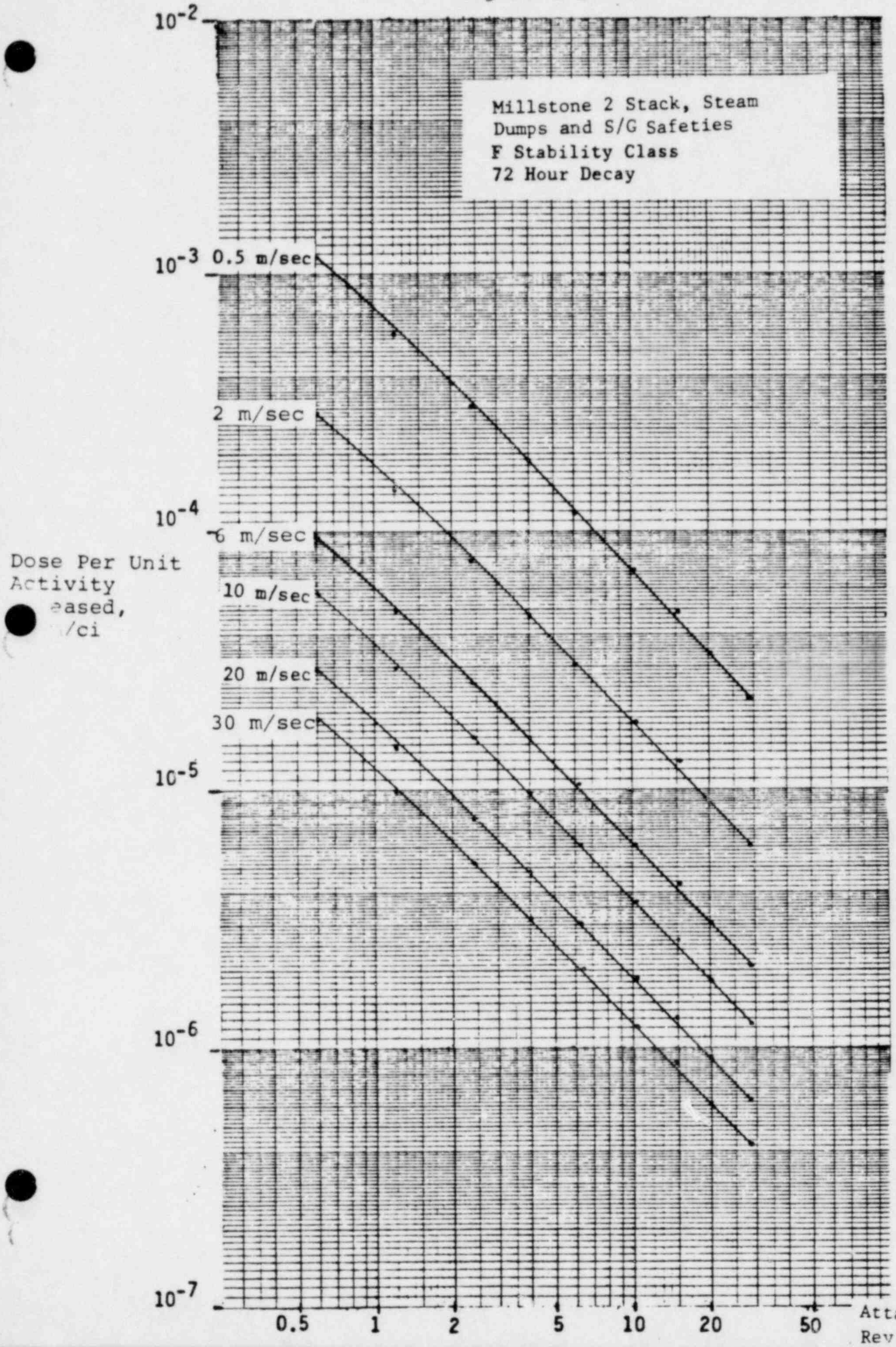
Attachment 8.2
Rev. 0
Date: August 1981

Figure 4-q



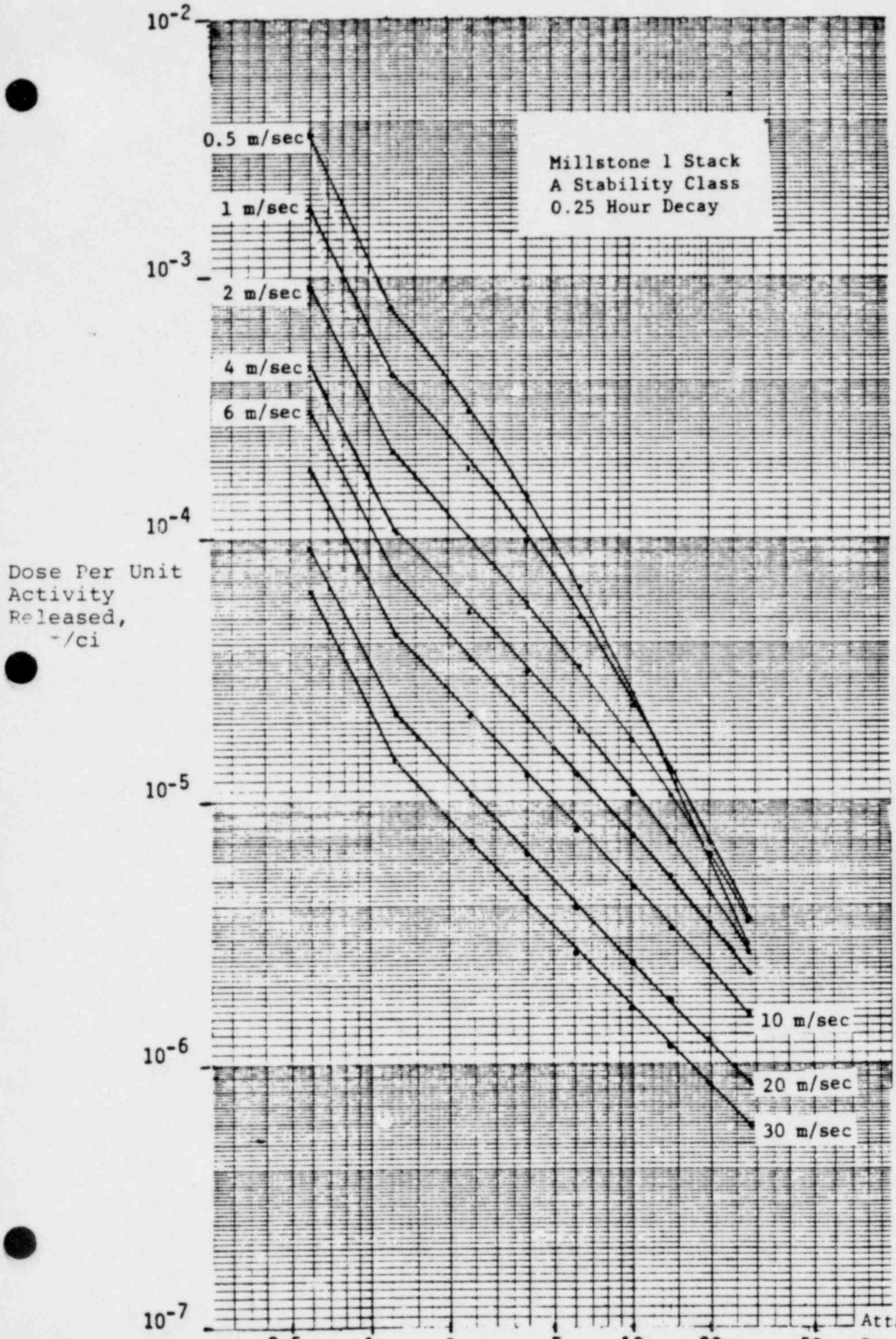
Attachment 8.2
Rev. 0
Date: August 1981

Figure 4-r



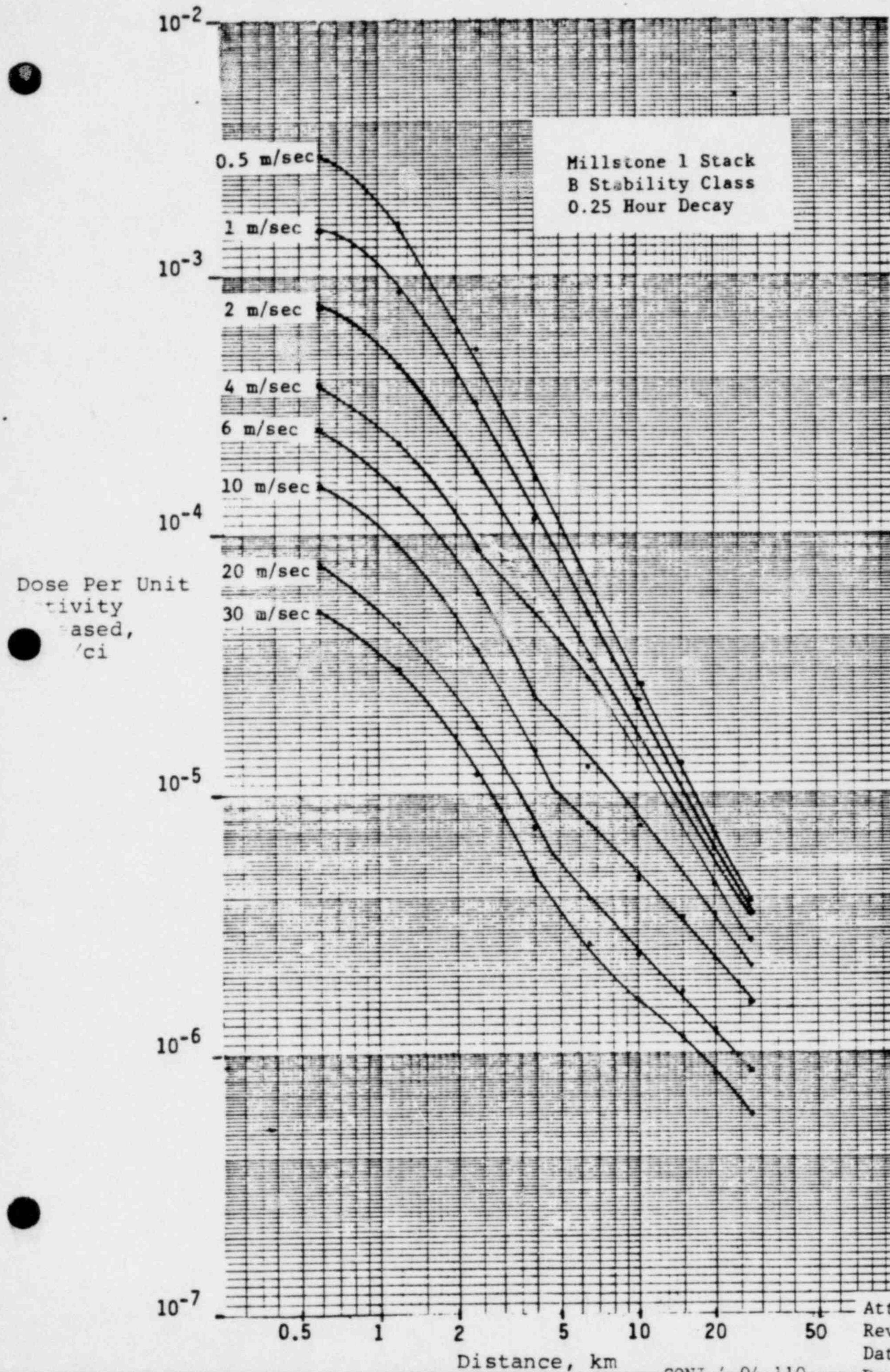
Attachment 8.2
Rev. 0

Figure 5-a



Millstone 1 Stack
A Stability Class
0.25 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, -/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-b



Attachment 8.2
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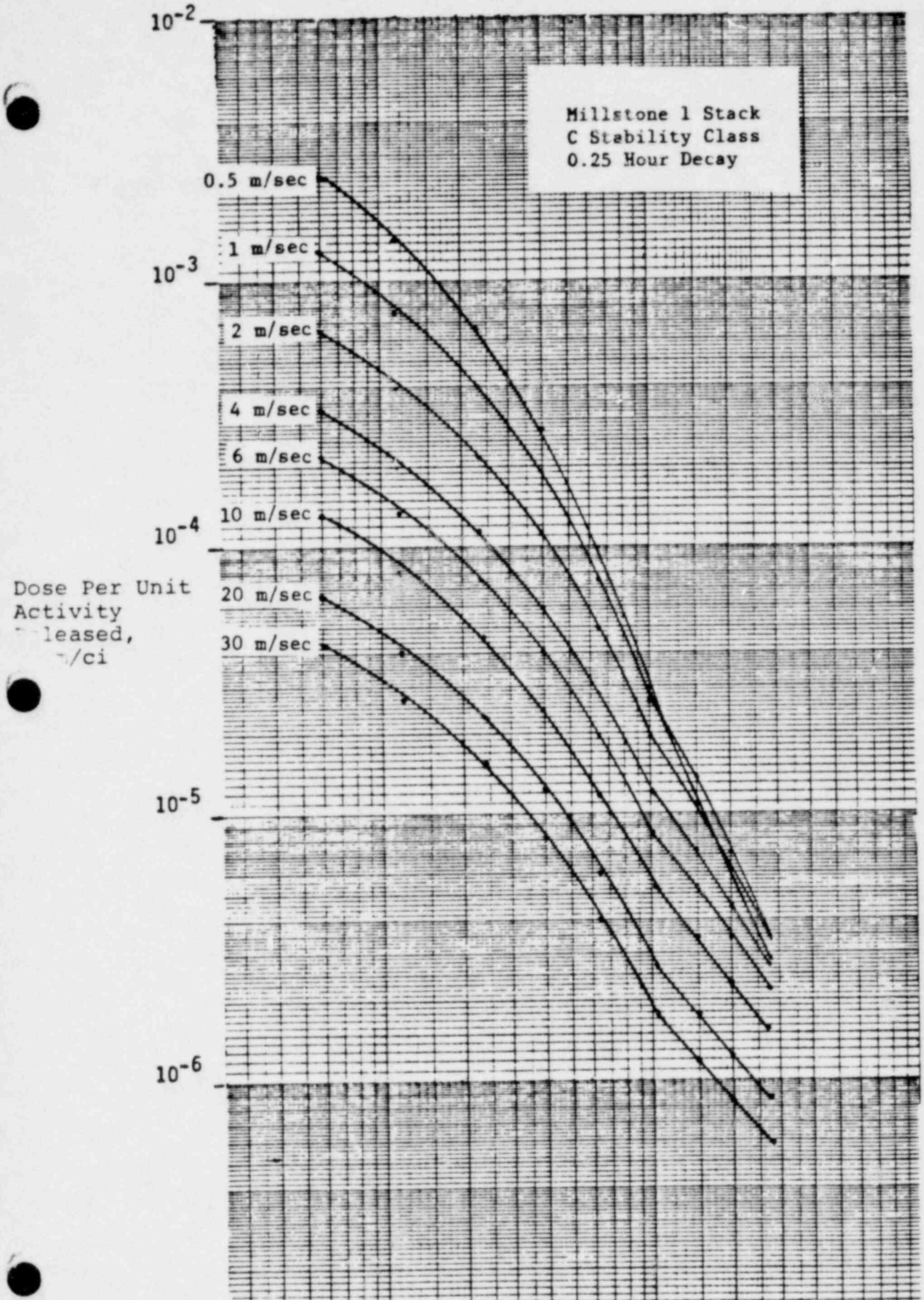
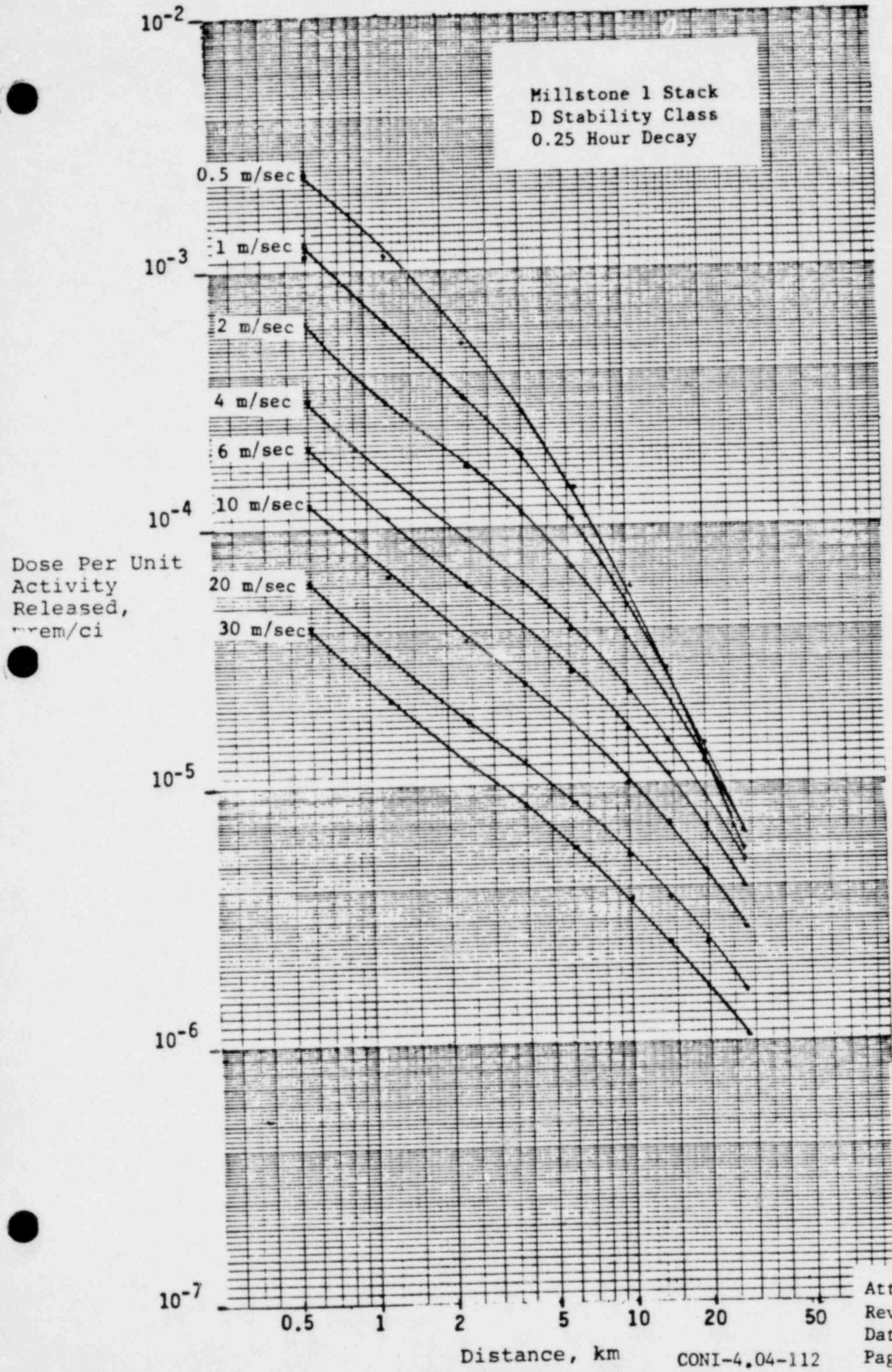
Figure 5-c



Millstone 1 Stack
C Stability Class
0.25 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit
Activity
Released,
/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-d



Millstone 1 Stack
D Stability Class
0.25 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10-2
10-3
10-4
10-5
10-6
10-7
Dose Per Unit Activity Released, mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-e

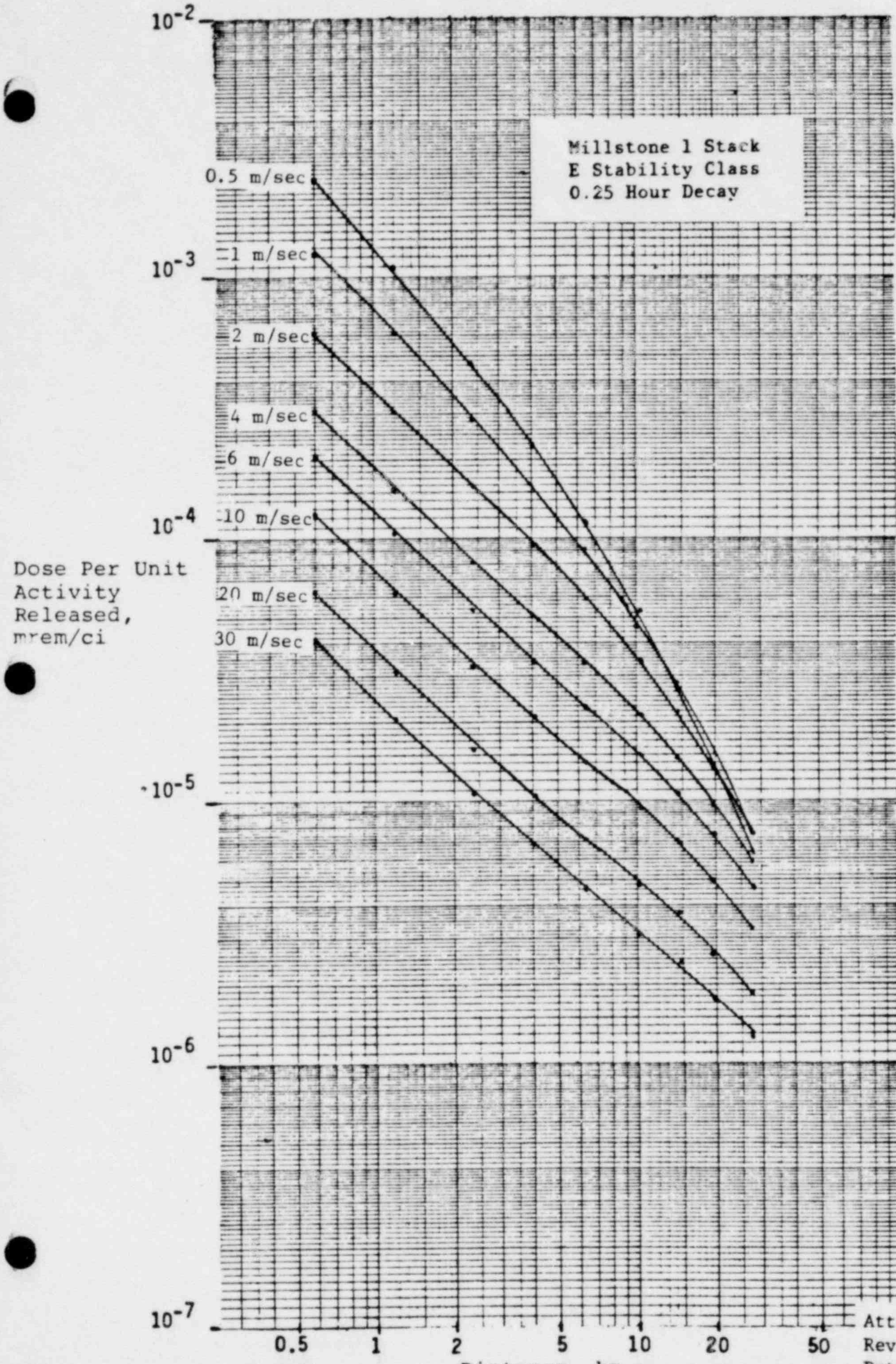
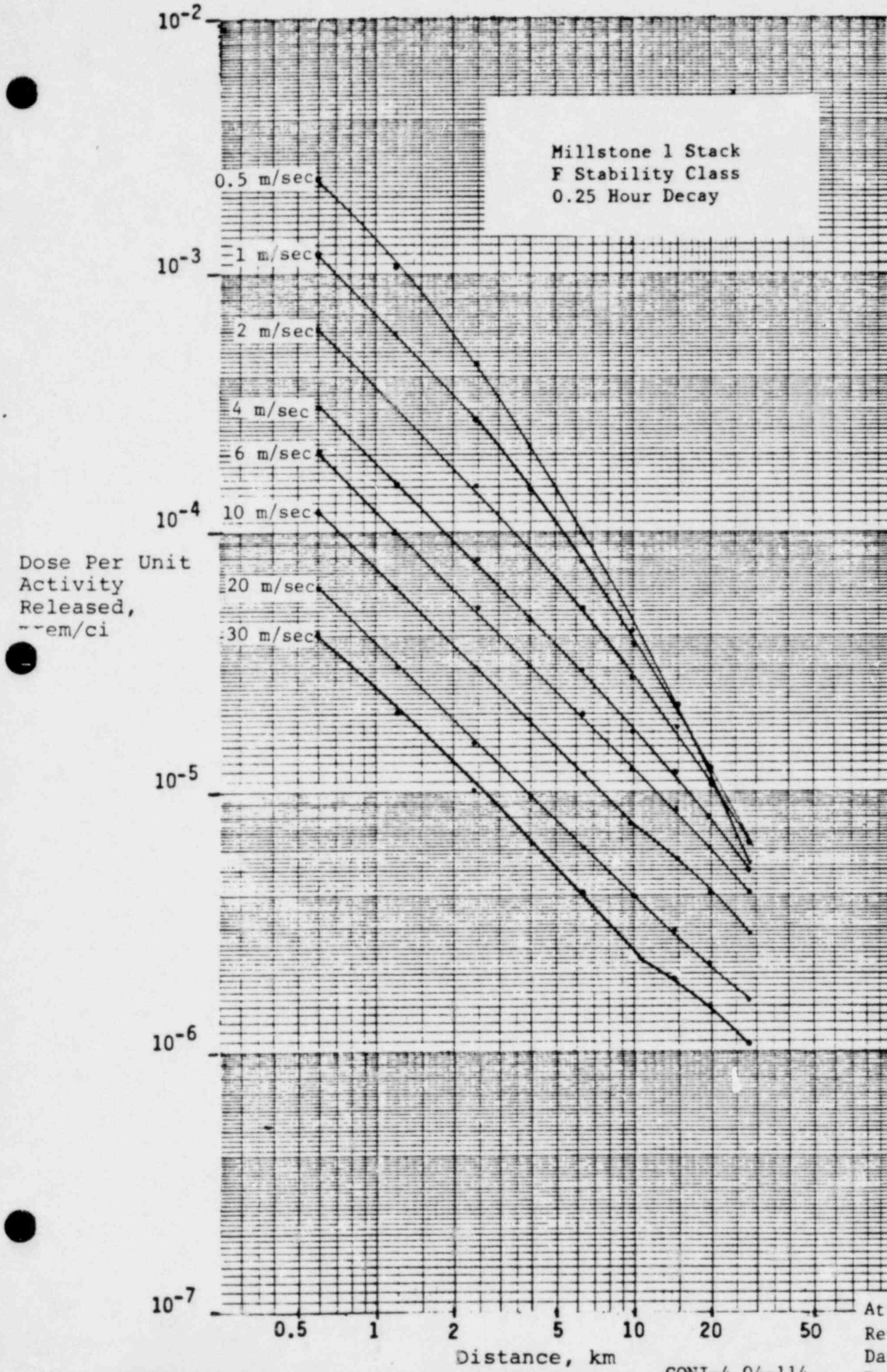
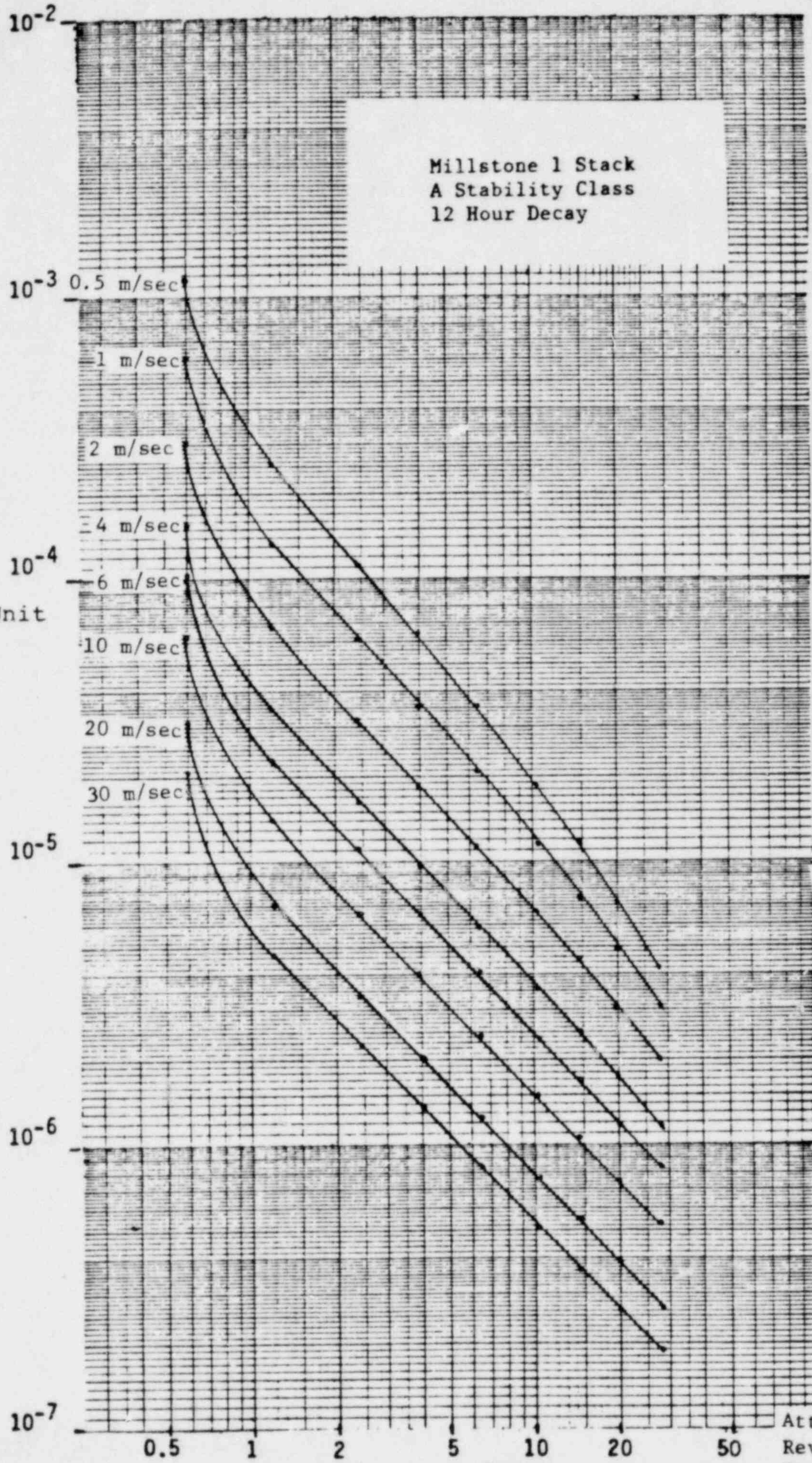

Millstone 1 Stack
E Stability Class
0.25 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-f



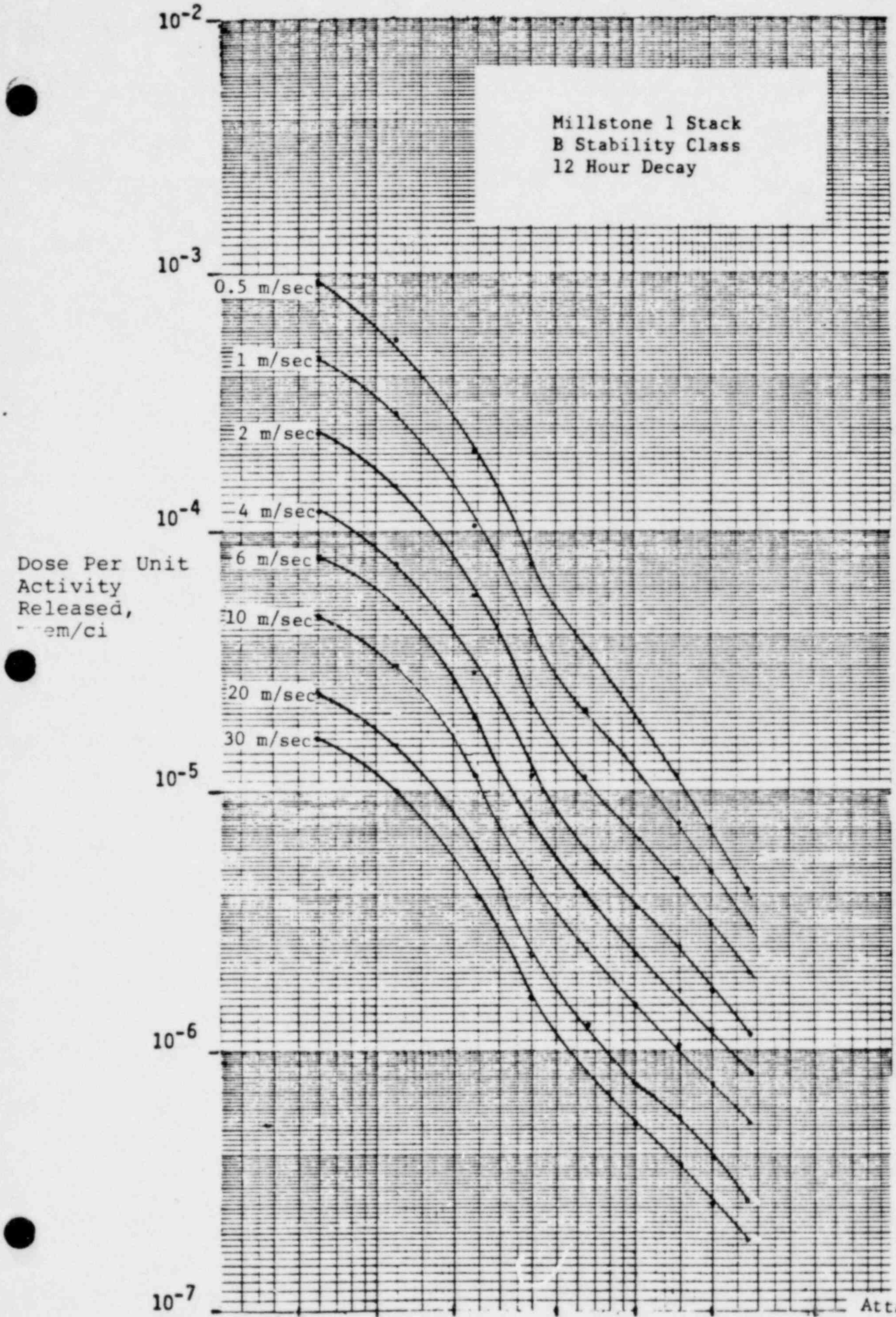
CONI-4.04-114

Figure 5-g



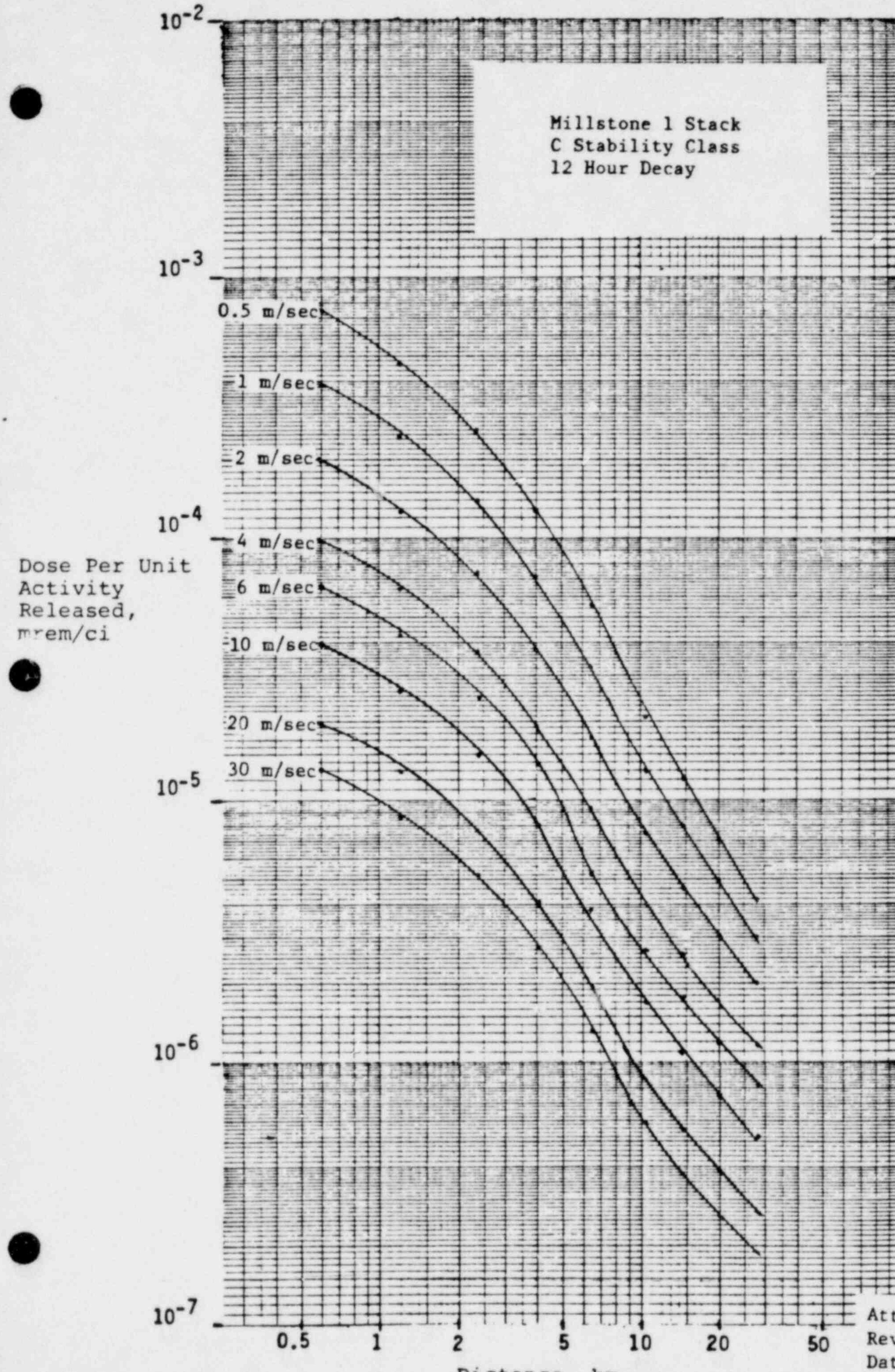
CONI-4.04-115

Figure 5-h



CONI-4.04-116

Figure 5-i



Millstone 1 Stack
C Stability Class
12 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-j

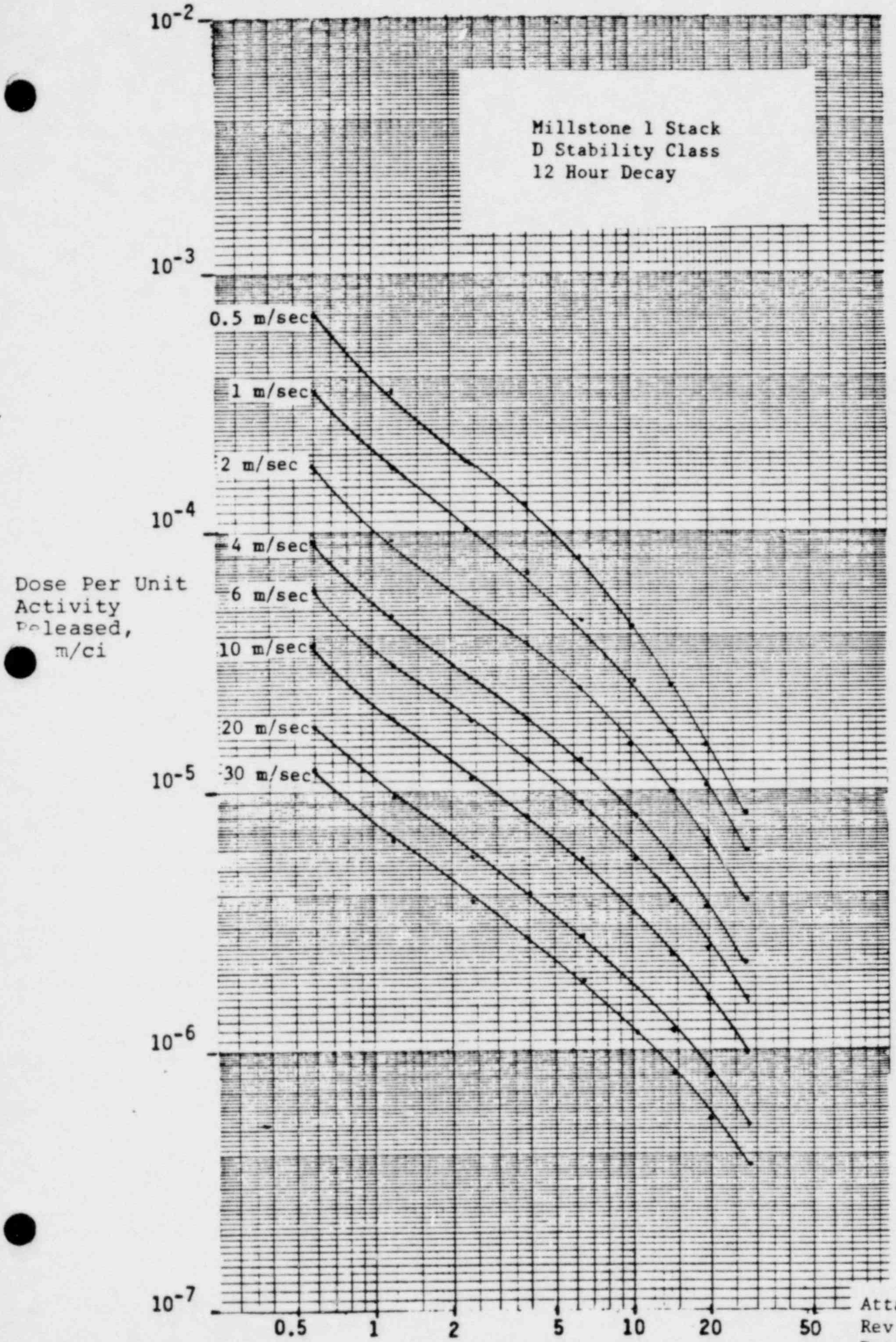
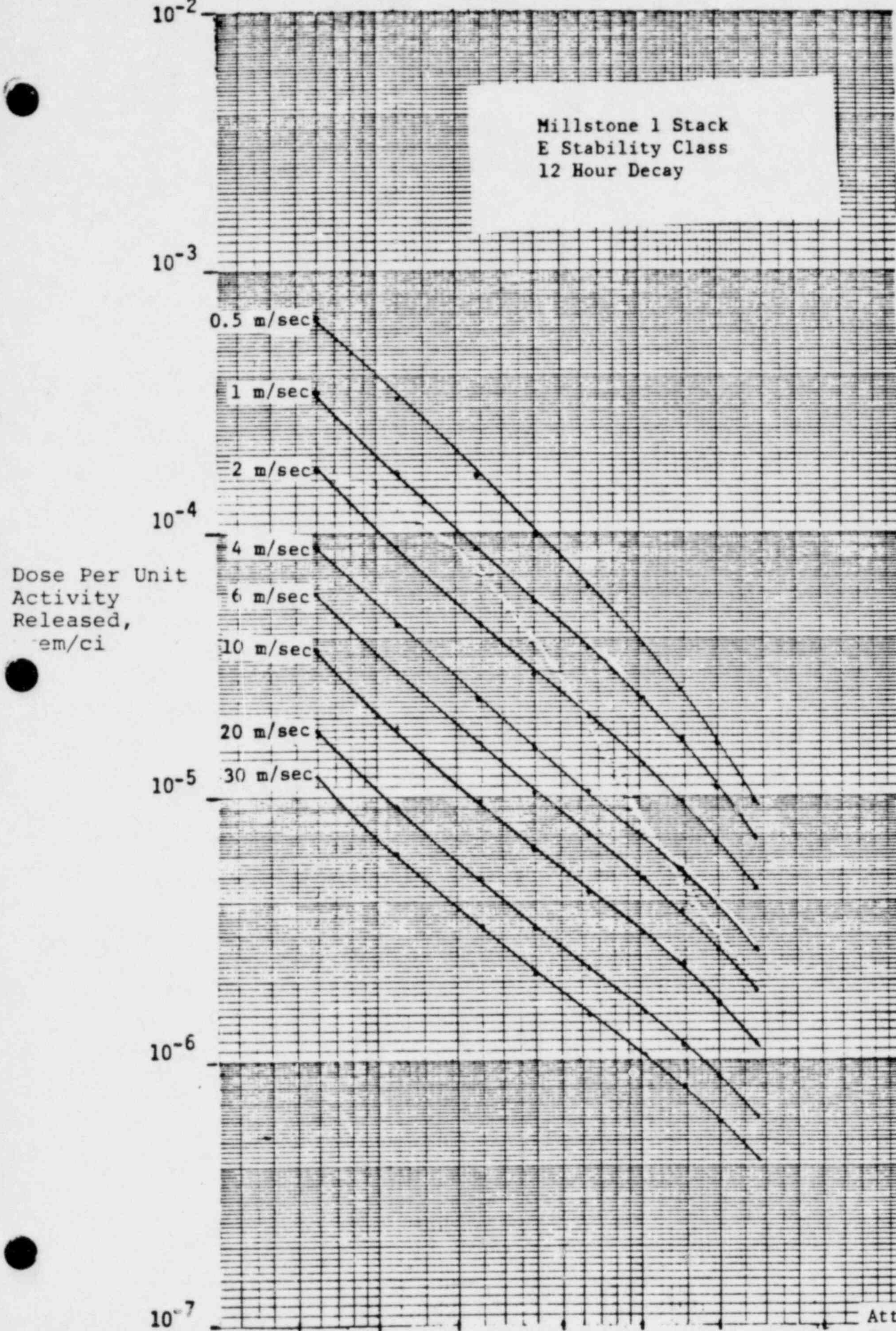

Millstone 1 Stack
D Stability Class
12 Hour Decay
Dose Per Unit Activity Released, m/ci
Distance, km
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
0.5
1
2
5
10
20
50

Figure 5-k



Millstone 1 Stack
E Stability Class
12 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-1

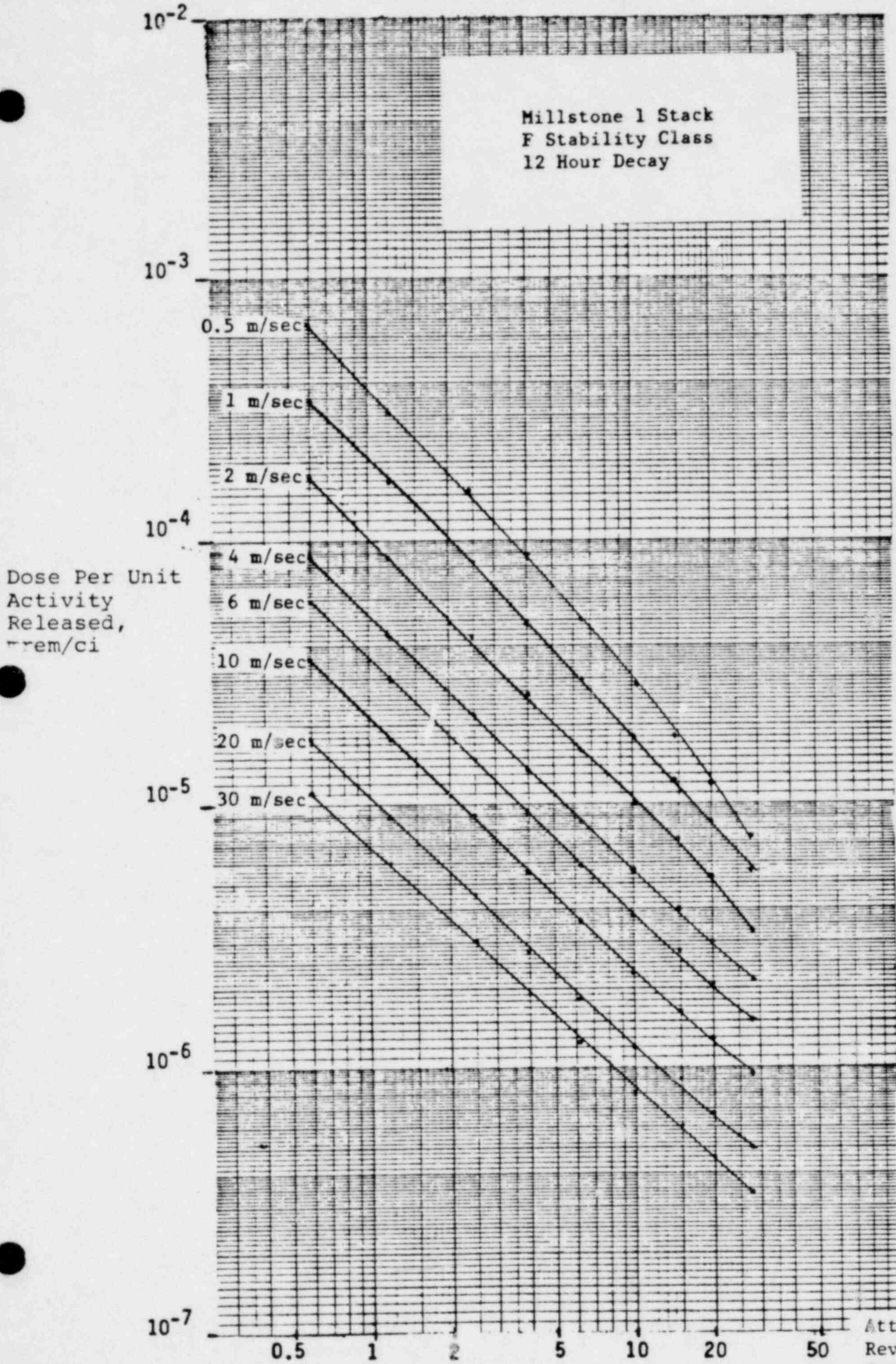
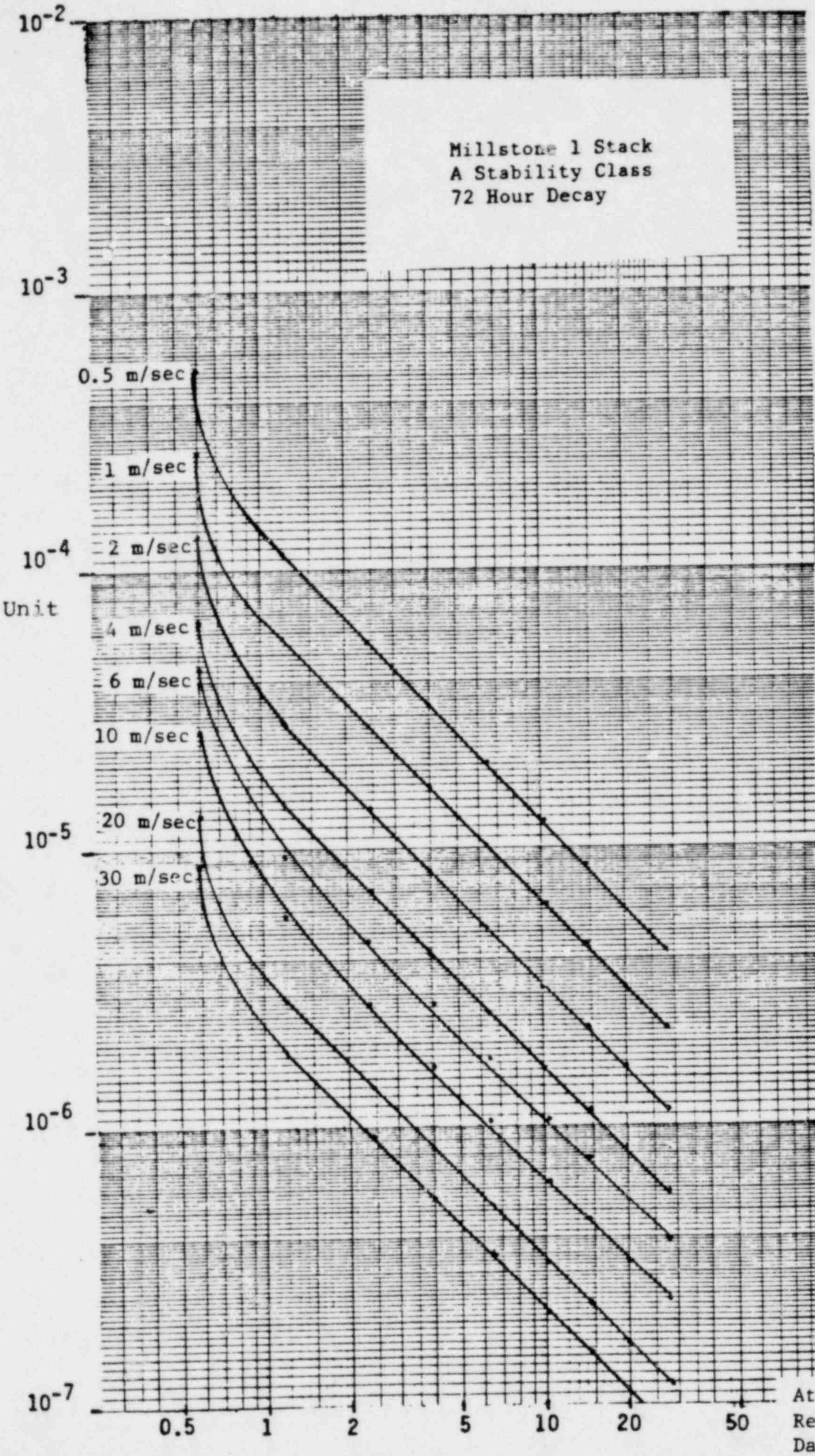
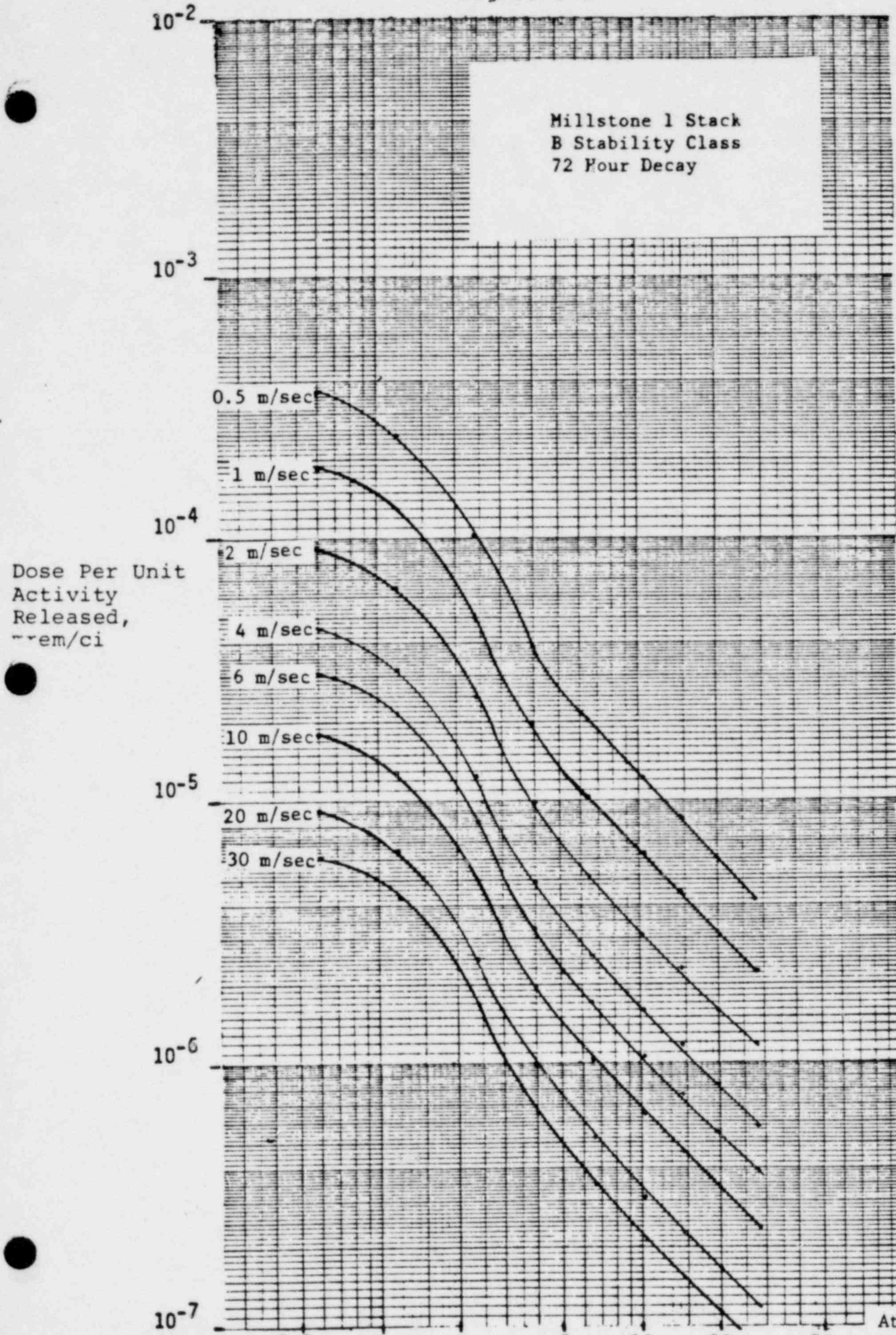

Millstone 1 Stack
F Stability Class
12 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-m



CONI-4.04-121

Figure 5-n



Millstone 1 Stack
B Stability Class
72 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit
Activity
Released,
mrem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-o

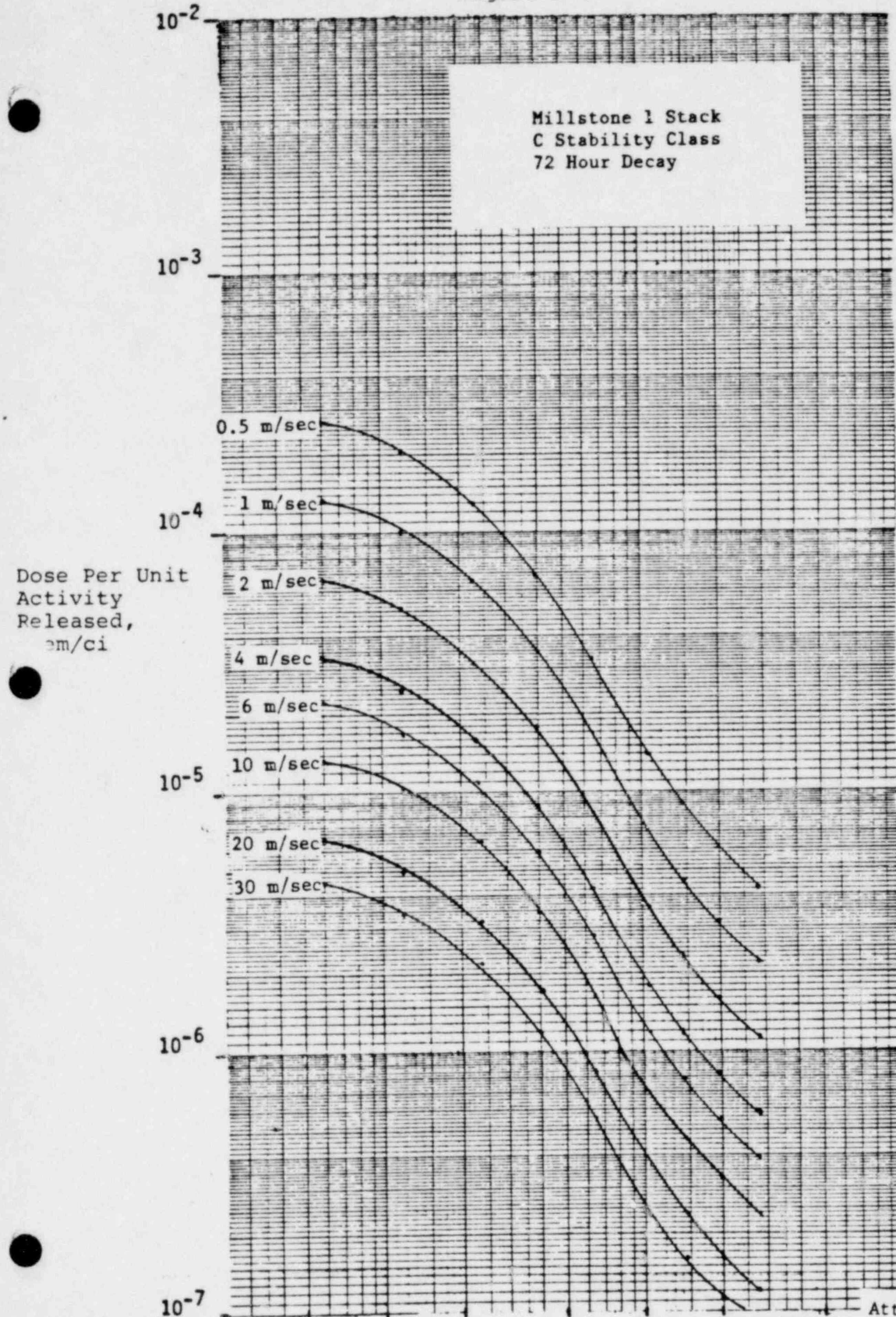
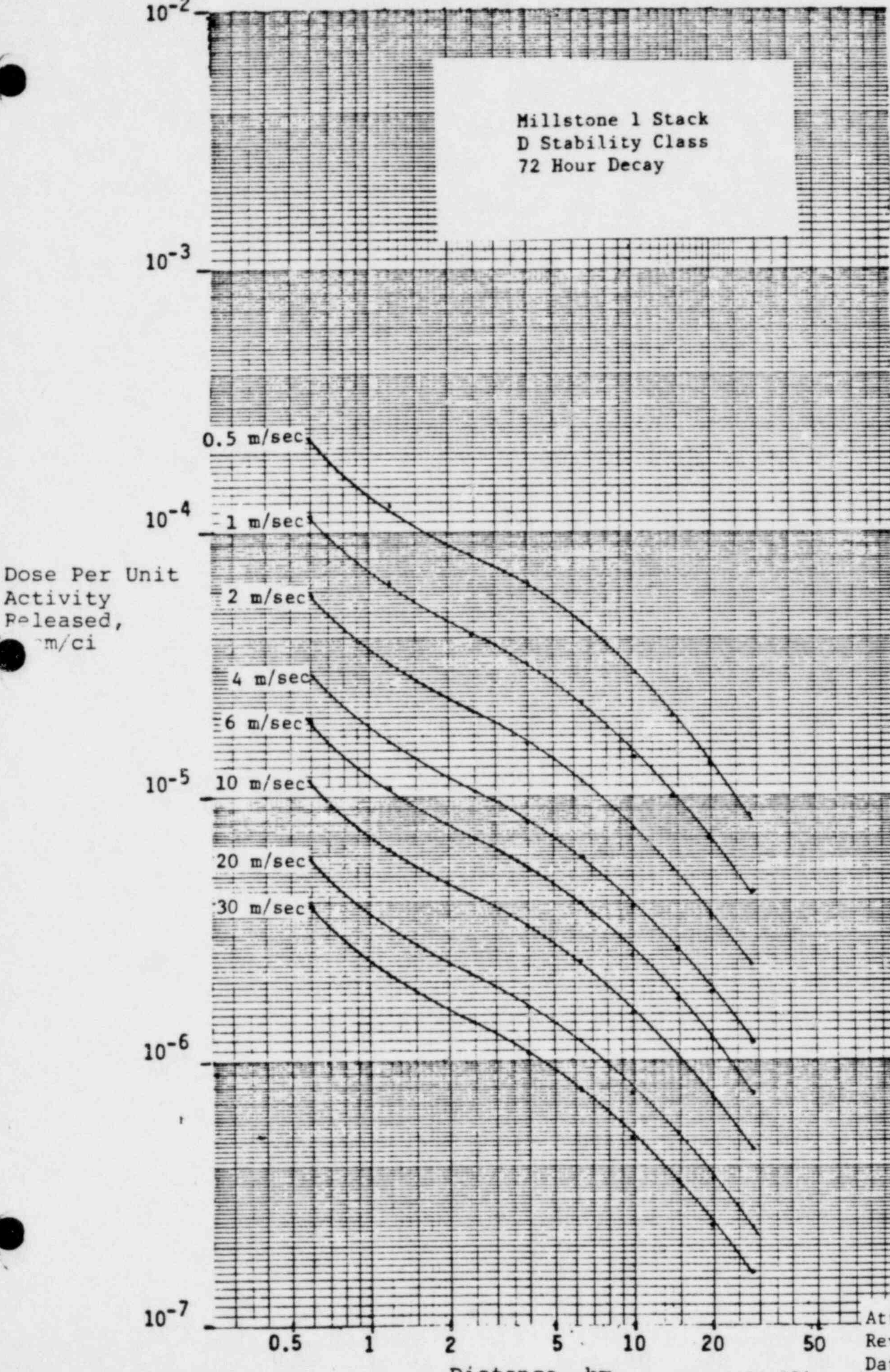
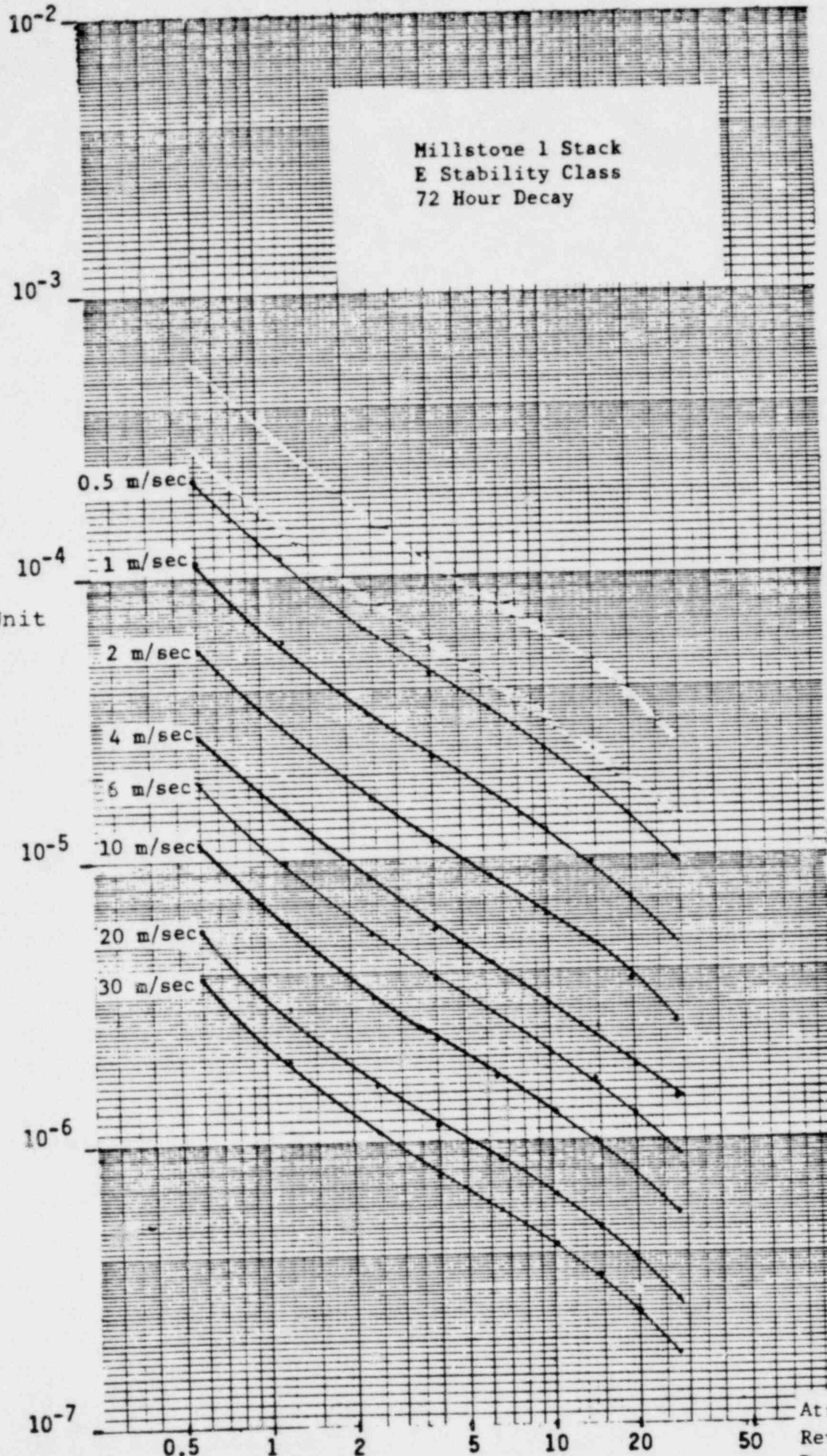

Millstone 1 Stack
C Stability Class
72 Hour Decay
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
Dose Per Unit Activity Released, rem/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-p



CONI-4.04-124

Figure 5-q



Millstone 1 Stack
E Stability Class
72 Hour Decay
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
Dose Per Unit Activity Released, m/ci
0.5
1
2
5
10
20
50
Distance, km

Figure 5-r

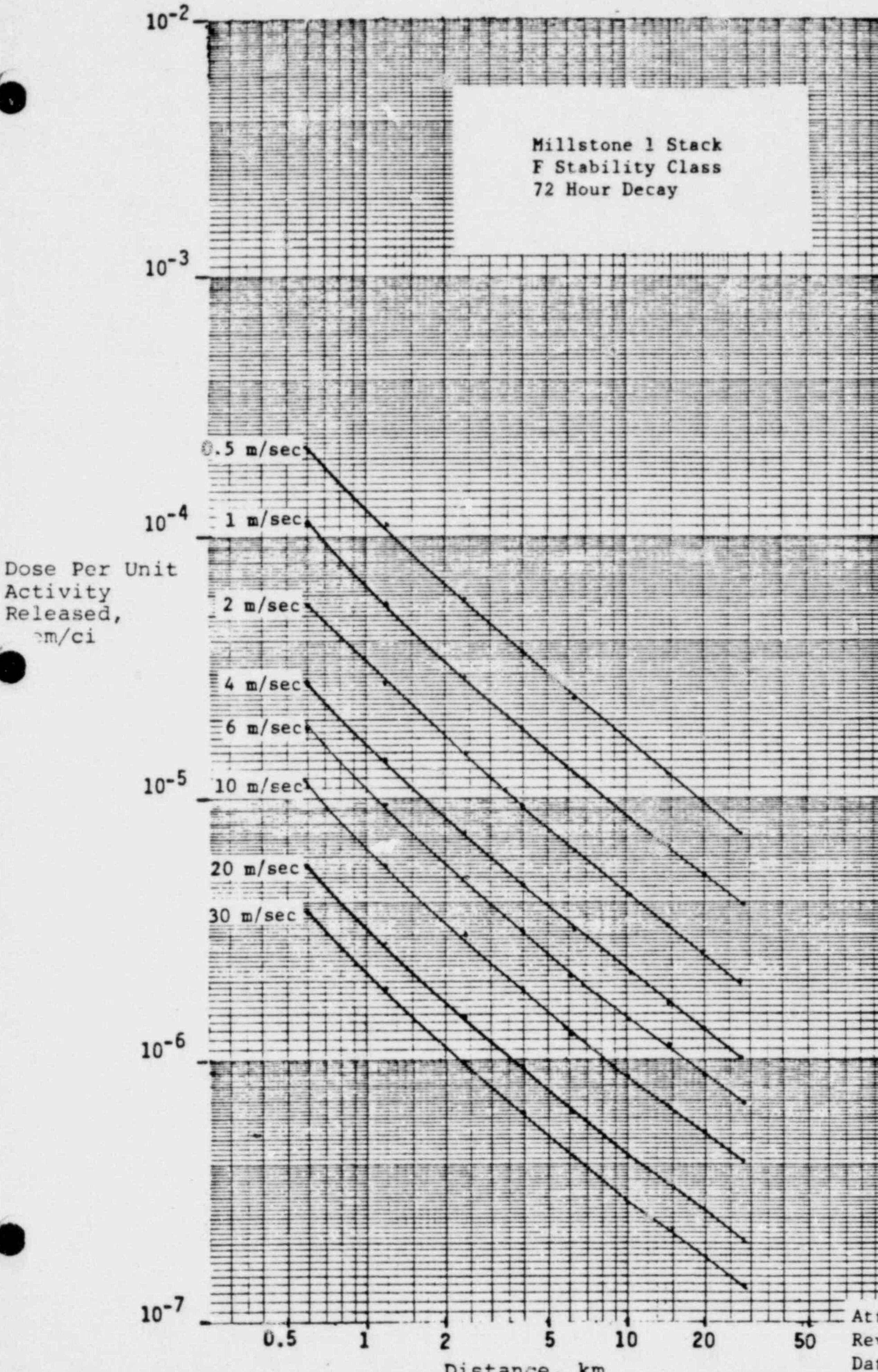
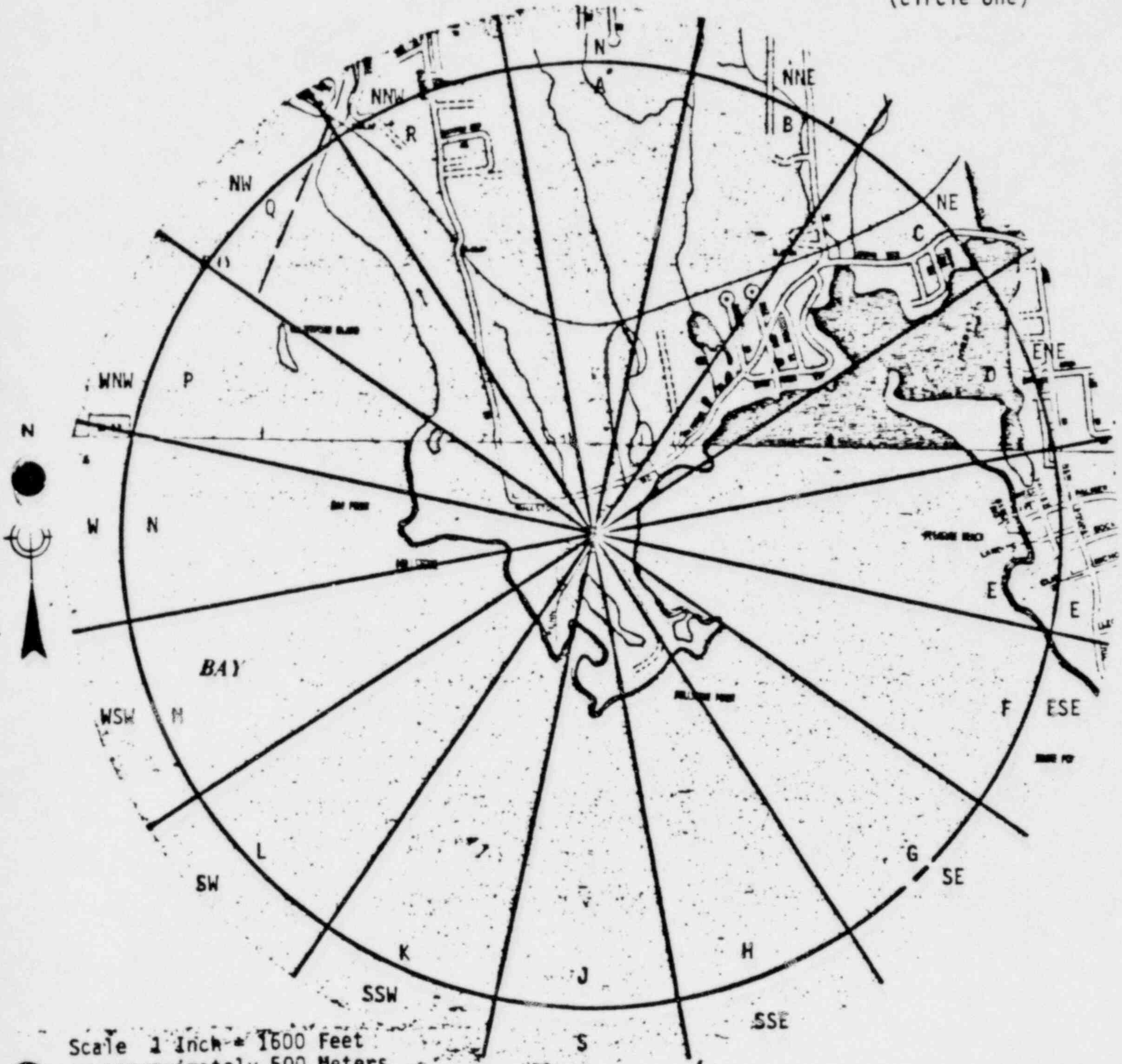

Millstone 1 Stack
F Stability Class
72 Hour Decay
10-2
10-3
10-4
10-5
10-6
10-7
Dose Per Unit
Activity
Released,
rem/ci
0.5 m/sec
1 m/sec
2 m/sec
4 m/sec
6 m/sec
10 m/sec
20 m/sec
30 m/sec
0.5
1
2
5
10
20
50
Distance, km

FIGURE 6

MILLSTONE POINT

DATE __________ TIME __________ INITIALS __________

Distance	Sector	Dose			
________ meters	______	Whole Body	________	mrem	Actual or
________ meters	______	Thyroid	________	mrem	Projected
					(circle one)



Scale 1 Inch = 1600 Feet
or approximately 500 Meters

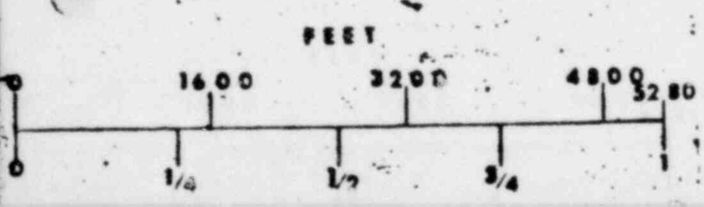


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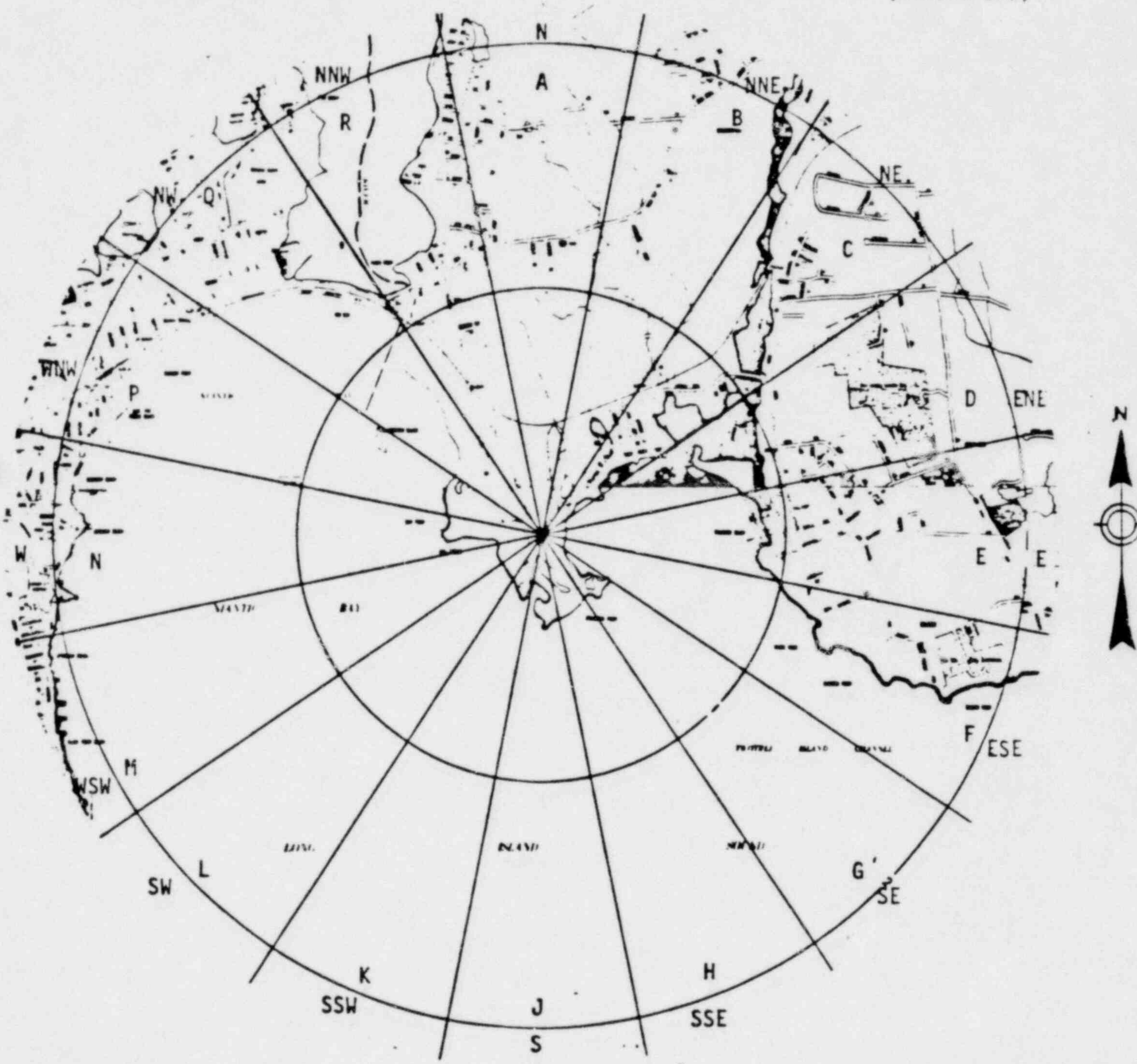
FIGURE 7

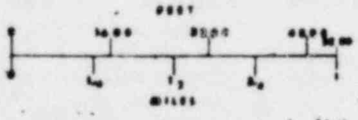
MILLSTONE POINT

DATE __________ TIME __________ INITIALS __________

Distance	Sector	Dose			
________ meters	______	Whole Body	__________	mrem	Actual or
________ meters	______	Thyroid	__________	mrem	Projected (Circle one)



Scale: 1 inch = approx. 1000 meters



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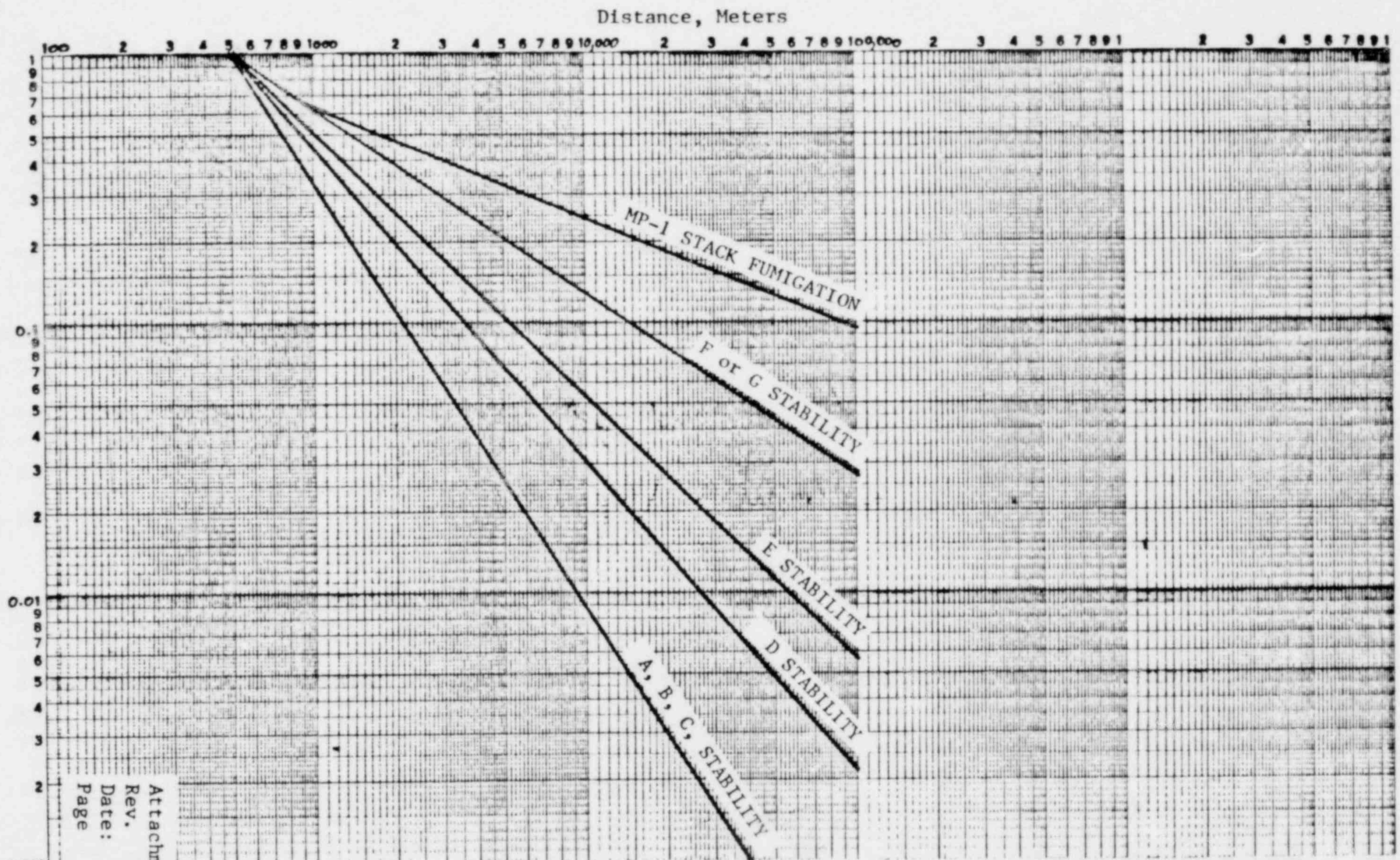
Date: August 1981

FI

MP GROUND AND MIGATION

γ DOSE REDUCTION



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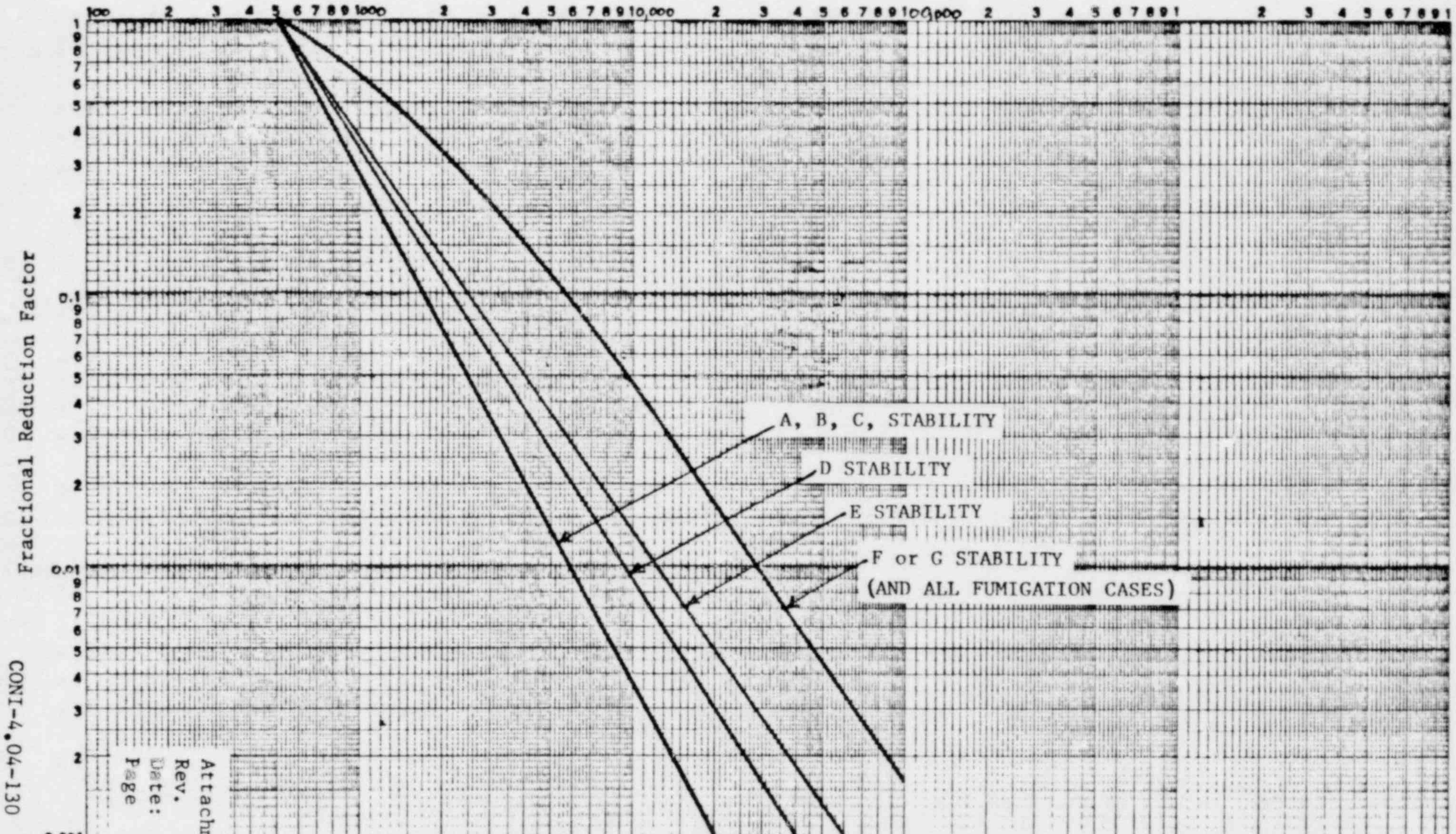
MP GROUND AN IGATION

IODINE DOSE REDUCTION



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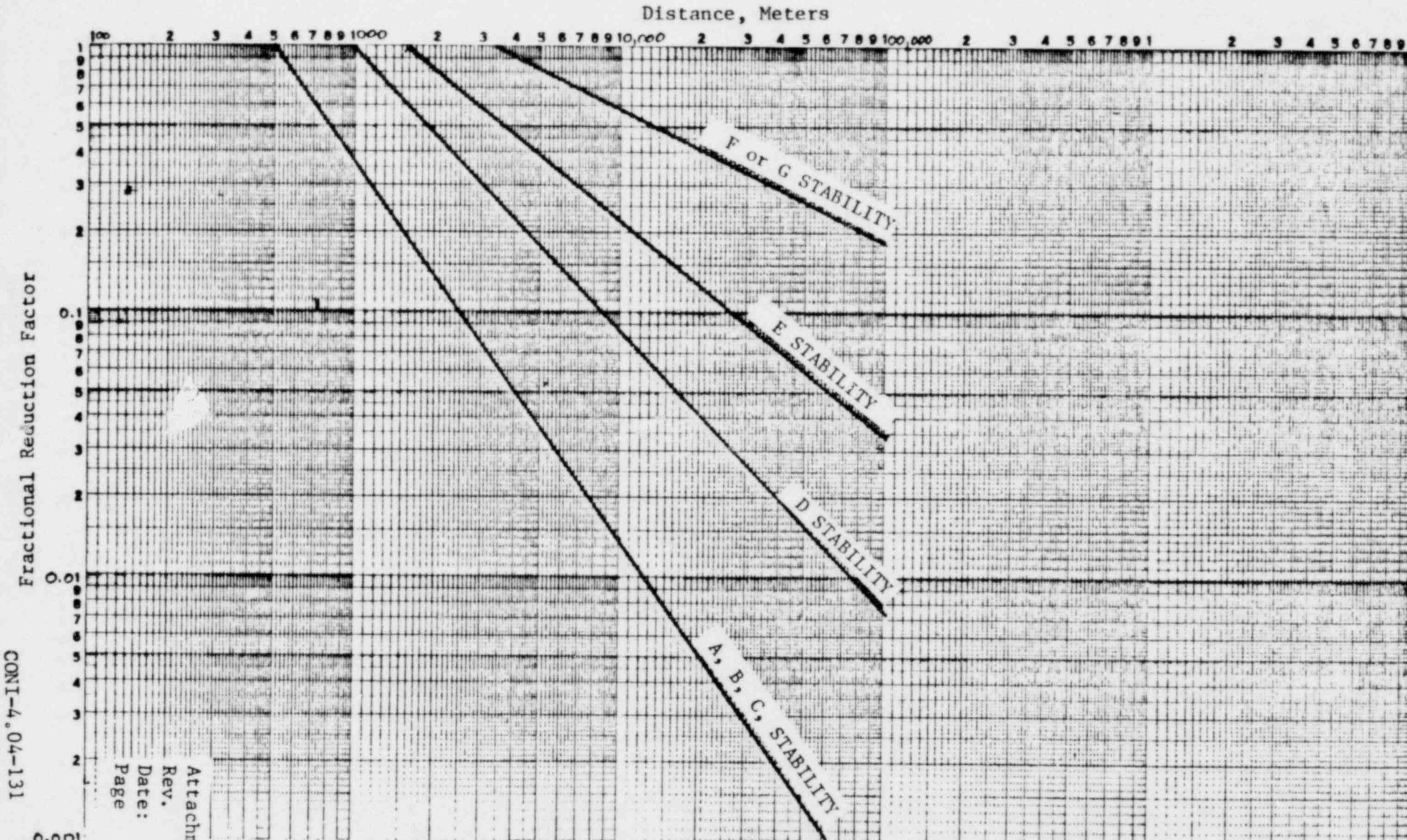
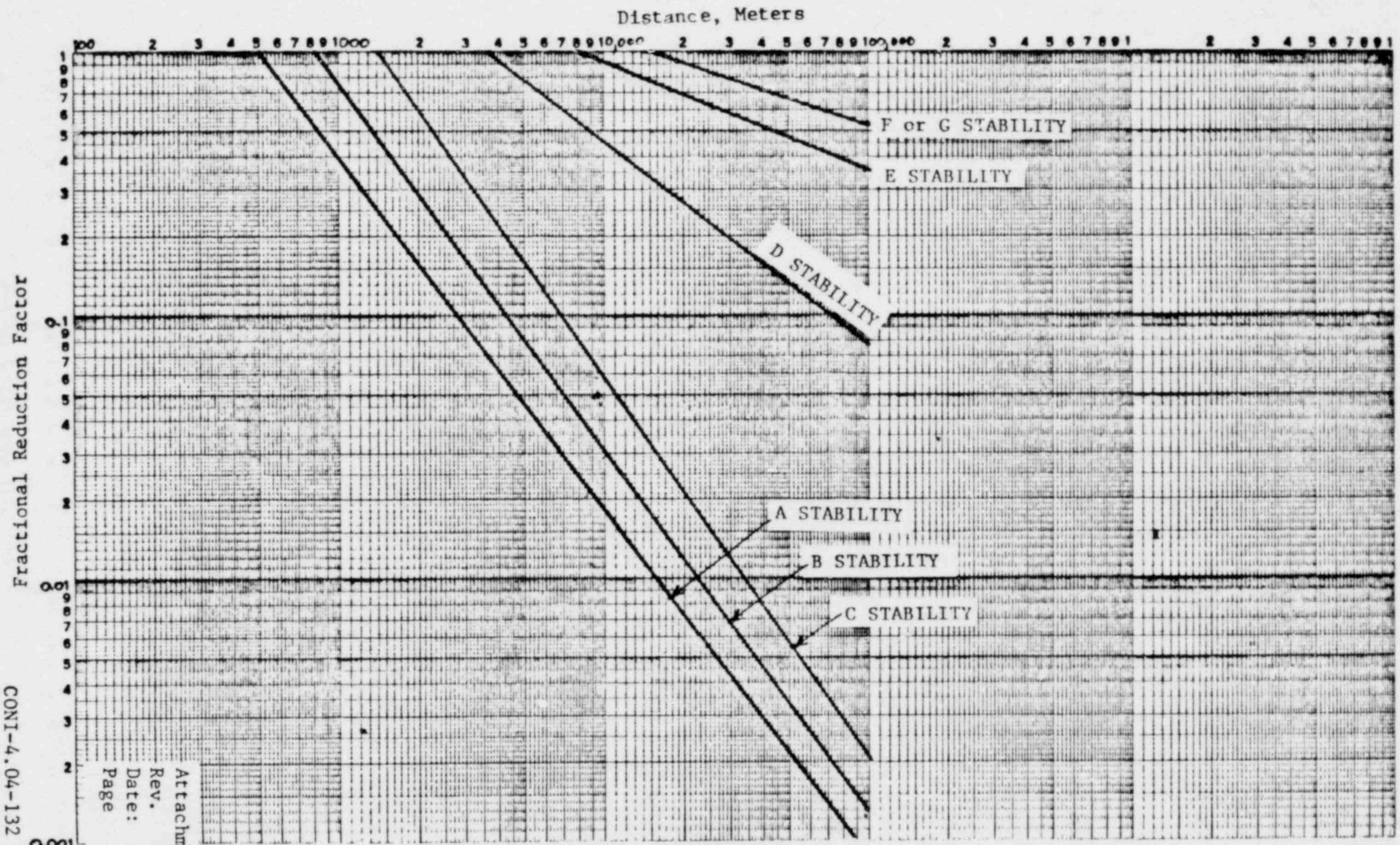
MP ELEVATED RELLASE (MP-2 STACK,
S/G SAFETIES; ATM STEAM DUMPS)
IODINE DOSE REDUCTION



Attachment 8.2
Rev. 0
Date: August 1981

FIGU

MP ELEVATED RELEA (MP-1 STACK)
IODINE DOSE REDUCTION



CORPORATE OPERATIONS FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI - 4.05

GUIDANCE AND DOCUMENTATION OF EMT AND POSL PLUME MONITORING

APPROVED RCRodgers
Corporate Emergency
Organization Coordinator

REVISION 2

DATE February 1982

CONCURRENCE RCRodgers
Corporate Nuclear
Emergency Plan Coordinator

GUIDANCE AND DOCUMENTATION OF EMT AND POSL PLUME MONITORING

1.0 PURPOSE

This procedure defines how guidance is given to the field teams and how the data is documentated and compared to the projections performed in procedure CONI 4.04.

2.0 APPLICABILITY

This procedure applies to the emergency field monitoring data resulting from radioactive releases from the Haddam Neck Plant and the Millstone Power Station.

3.0 REFERENCES

3.1	ES #163 -	Initial Response to a Nuclear Site Emergency.
3.2	CONI 4.02 -	Manager of Radiological Consequence Assessment Responsibilities and General Guidelines.
3.3	CONI 4.03 -	Estimating Post Accident Release Rates.
3.4	CONI 4.04 -	Calculation of Offsite Doses from Airborne Releases.

3.5 Map of the Haddam Neck Emergency Monitor Points (on Radiological Assessment Branch hanging files).

3.6 Map of the Millstone Point Emergency Monitor Points (on Radiological Assessment Branch hanging files).

3.7 Connecticut Yankee Environmental Reference Map (on Radiological Assessment Branch hanging files).

3.8 Millstone Environmental Reference Map (on Radiological Assessment Branch hanging files).

3.9 Listing of Emergency TLD Locations and their Backgrounds (in Emergency Reference Manual on Radiological Assessment Branch bookshelf).

4.0 DEFINITIONS

NOT APPLICABLE

5.0 RESPONSIBILITIES

5.1 The Corporate Manager of Radiological Consequence Assessment (RCA) and his staff are responsible for the implementation of this procedure.

5.2 Production Operations Services Laboratory (POSL) Staff are responsible for providing results of the field TLD's and dose rate measurements to the Corporate Manager of the RCA or his staff.

5.3 The Station Managers of RCA are responsible for providing the Emergency Monitoring Team (EMT) field measurements to the Corporate Manager of RCA.

6.0 INSTRUCTION

6.1 Consult References 3.5 and 3.6 for the location of the EMT measurements. If necessary, provide guidance to the Station Manager of RCA on the selection of locations.

6.2 Results of the EMT field measurements should be recorded on Attachments 8.1 and 8.2.

6.3 The projected dose rates from Procedure CONI 4.04 should be recorded on Attachment 8.1.

6.4 The projected airborne iodine concentrations from Procedure CONI 4.4 should be recorded on Attachment 8.2.

6.5 Significant differences (greater than 300 percent) between measured and calculated values should be resolved by expanding the EMT surveys and/or recalculating the projections.

6.6 Consult References 3.7 and 3.8 for the location of the field TLD's. Provide guidance to POSL on where and when TLD's should be collected. Determine if one or both TLD's need be collected and if TLD's should be zeroed to increase plume detectability (eliminate high background). Record requests on Attachment 8.3.

6.7 The results of the field TLD measurements obtained by POSL should be recorded on Attachment 8.4.

6.8 If POSL performs any dose rate measurements, they should be recorded on Attachment 8.1.

6.9 Figure 7.1, Figure 7.2 and/or Attachment 8.5 may be used to determine the location of the plume.

7.0 FIGURES

7.1 Millstone Site Layout.

7.2 Haddam Neck Site Layout

8.0 ATTACHMENTS

8.1	Radiation Dose Rate Worksheet
8.2	Air Sample Activity Concentrations Worksheet
8.3	NUSCO EOC - Record of Requested Samples
8.4	Field TLD Data
8.5	Matrix of Monitoring Results

Millstone Site Layout

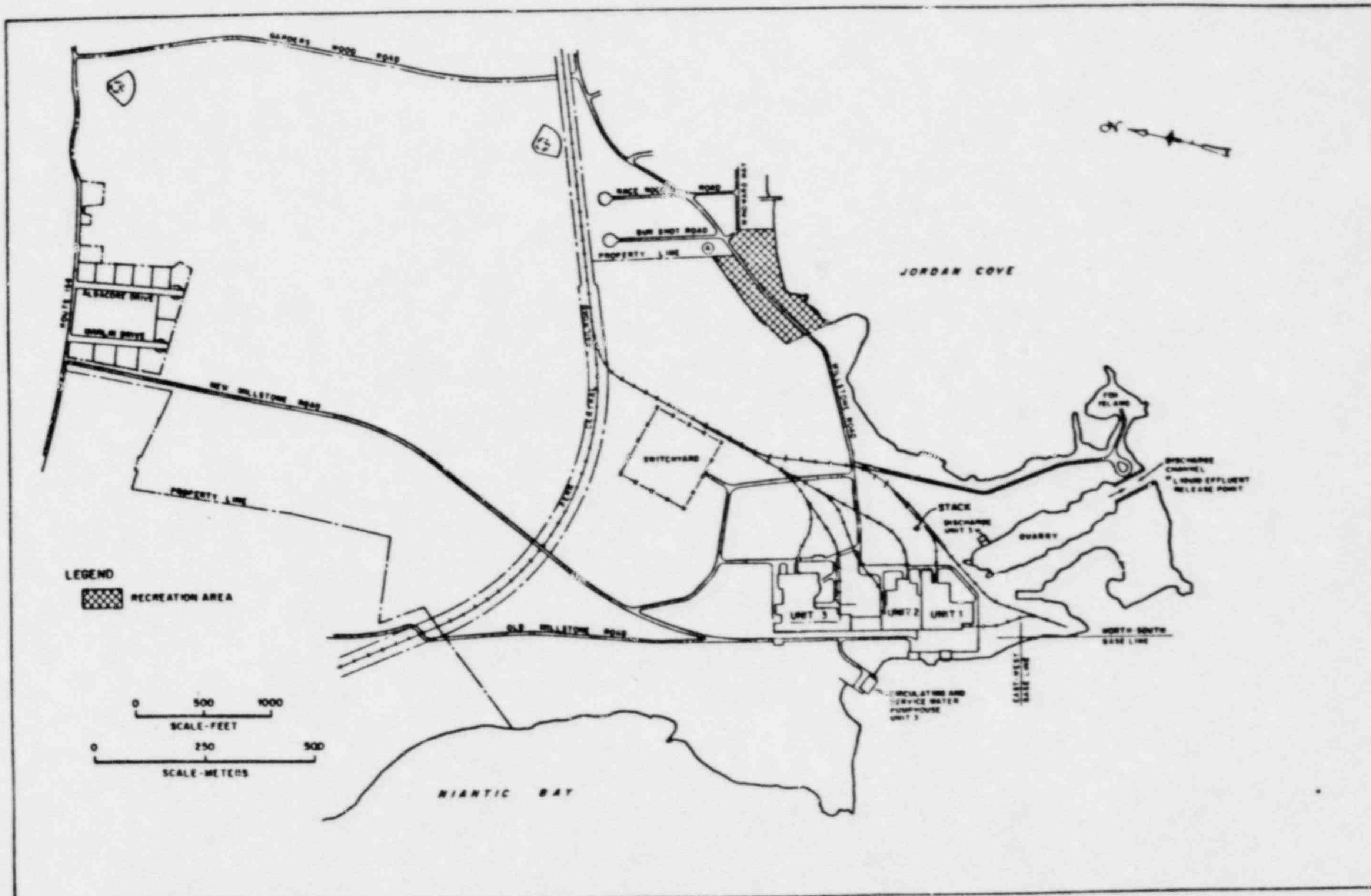


Figure 7.1
Rev. 2
Date: February 1982

Haddam Neck Site Layout

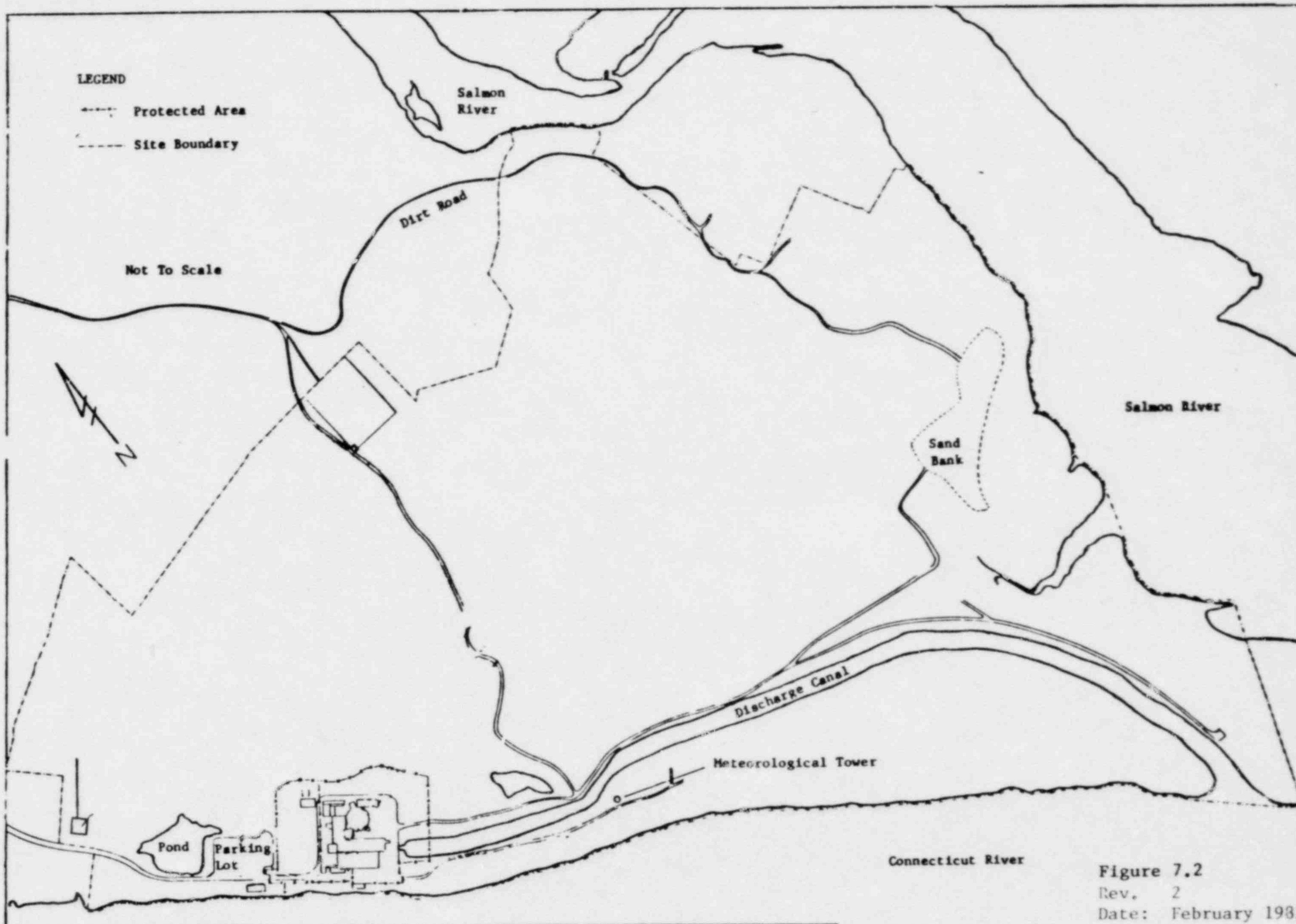


Figure 7.2
Rev. 2
Date: February 1982
Page: 5 of 10

RADIATION DOSE RATE WORKSHEET

EMT #	SAMPLE LOCATION AND DISTANCE	DATE/ TIME	MEASURED RADIATION DOSE RATES*		PROJECTED DOSE RATE (mR/hr)	% DIFFERENCE
			WAIST (mR/hr)	GROUND (mR/hr)		

*Measured with open window

AIR SAMPLE I-131 ACTIVITY CONCENTRATIONS WORKSHEET

EMT #	SAMPLE LOCATION DISTANCE	SAMPLE #	DATE/ TIME	SAMPLE ACTIVITY (ccpm)	SAMPLE VOLUME (cc)	F* (uCi/ccpm)	EMT CONCENTRATION (uCi/cc)	LAB CONCENTRATION (uCi/cc)	PROJECTED CONCENTRATION (uCi/cc)	% DIFFERENCE

*F = 1.6E-5 @ > 12 hours after shutdown
*F = 1.0E-4 @ < 12 hours after shutdown

$$\text{Conc.} = \frac{\text{Activity}}{\text{Volume}} \times F$$

NUSCO EOC - RECORD OF REQUESTED SAMPLES

Type of Sample	Locations or Area	Approximate Time for Sampling	Laboratory	Analyses Requested	POSL Contacted Name	POSL Contacted Date/Time Contacted

FIELD TLD DATA

LOCATION	CORRECTED uR/hr 1	TIME IN FIELD (hr) 2	BACKGROUND* uR/hr 3	PLANT CONTRIBUTION uR/hr 1-3	PLANT RELATED DOSE MR (1-3) x 2/1000

*See Reference 3.9

Matrix of Monitoring Results

Downwind Sector _______ Date ________

Time Frame	Location/ Distance								
	Measurement	Gamma	Iodine	Gamma	Iodine	Gamma	Iodine	Gamma	Iodine
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								
	Value								
	Time								

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-4.06

AIRBORNE AND INGESTION PATHWAY SAMPLING

APPROVED RCRodgers
Lead Manager, Radiological Consequence Assessment

REVISION 0

DATE February 1982

CONCURRENCE RCRodgers
Corporate Nuclear Emergency Plan Coordinator

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

AIRBORNE AND INGESTION PATHWAY SAMPLING

1.0 PURPOSE

This procedure defines how the NUSCO Manager of Radiological Consequence Assessment and his staff make recommendations to field teams as to where and what types of airborne and ingestion pathway products should be sampled.

2.0 APPLICABILITY

This procedure applies to any staff member of the Radiological Assessment Branch (RAB) during and after a period of emergency operations.

3.0 REFERENCE

3.1 Haddam Neck Plant Off-site Dose Calculation Manual (on RAB Bookshelf)

3.2 Millstone Nuclear Power Station Units 1 and 2 Off-site Dose Calculation Manual (on RAB Bookshelf)

3.3 Connecticut Yankee Environmental Reference Map (on RAB Hanging Files)

3.4 Millstone Environmental Reference Map (on RAB Hanging Files)

3.5 Haddam Neck Emergency Monitor Points (on RAB Hanging Files)

3.6 Millstone Nuclear Power Station Emergency Monitor Points (on RAB Hanging Files)

3.7 Dairy Cows Within 15 Miles of Connecticut Yankee (on RAB Bookshelf)

3.8 Goats Within 20 Miles of Connecticut Yankee (on RAB Bookshelf)

3.9 Dairy Cows Within 17.5 Miles of Millstone Point (on RAB Bookshelf)

3.10 Goats Within 20 Miles of Millstone Point (on RAB Bookshelf)

3.11 State of Connecticut Radiological Ingestion Pathway Procedures (on RAB Bookshelf)

4.0 DEFINITIONS

Not Applicable

5.0 RESPONSIBILITIES

5.1 The Corporate Manager of Radiological Consequence Assessment (RCA), his staff and any RAB member are responsible for the implementation of this procedure.

5.2 Production Operations Services Laboratory (POSL) Staff are responsible for the collection and delivery of the requested samples.

6.0 INSTRUCTIONS

6.1 The location and collection of TLD's is addressed in CONI 4.05.

6.2 Consult the Sample Location Reference Table (Attachment 8.1) for a listing of the various sample types (other than TLD's) and where they are located. From the guidance on survey directions (Attachment 8.2 for Connecticut Yankee or Attachment 8.3 for Millstone), utilize information on release height(s) and meteorology to determine sample locations.

6.3 General Guidance

6.3.1 Depending on the anticipated severity of the incident, an RAB staff member will determine which (if any) samples need to be taken.

6.3.2 For air particulate (and iodine) samples, it may be desirable to change out the filters before any release has been made (if this is possible). The filters will then usually remain in the field for the duration of the accident. However, depending on the length of the accident and the half life of the nuclides of concern, the filters may be replaced and analyzed earlier.

6.3.3 It may be desirable to sample ground cover (broad leaf vegetation, grass, snow, etc.) for deposition.

6.3.4 If releases are severe enough, milk may eventually require sampling. However, it takes from two to four days for iodine-131 to reach a peak in the milk. Therefore, it may first be desirable to sample grass at the milk locations.

6.3.5 Cows and goats on pasture will be the most sensitive indicators of iodine (and other isotopes, such as strontium, barium and lanthanum). Even if cows (or goats) are not on pasture, they will uptake iodine by inhalation (approximately a factor of 10 lower than by ingestion).

6.3.6 The sampling of leafy vegetables is more preferable than fruits.

6.3.7 Due to the large volumes of water involved, any activity in surface water supplies would be greatly diluted.

6.4 Determine what analyses (GeLi or NaI, iodine chemistry, strontium chemistry and/or tritium) need be performed on each sample and the required detectable levels. In general, the minimum detectable levels (MDL's) should be approximately a factor of 10 higher than for routine samples. If sample loading permits, lower MDL's would be desirable. The laboratory performing the analyses should be aware that these samples have the potential for contamination. Therefore, there would be a need to analyze background samples (e.g., prior environmental samples or blanks).

6.5 Most samples should be sent to the primary contractor and at least 10 percent to another contractor for quality control. However, if the primary contractor becomes swamped with samples, a much larger percentage of the samples may be sent to the other contractors. See Attachment 8.4 for a listing of some radioanalytical contractors.

6.6 Depending on severity and duration of release(s), it may be necessary to develop a time schedule in order to obtain the maximum radionuclide concentrations. This is necessary in the application of the dose calculation procedure (CONI 4.07).

6.7 Log the determinations made while performing Steps 6.2 through 6.6 on the NUSCO EOC-Record of Requested Samples (Attachment 8.5). The Lead Manager (or his designate) of Radiological Consequence Assessment should review the recommendations. Both individuals should sign the attachment.

6.8 Trasmit the above recommendations as recorded on Attachment 8.5 to POSL. Also record who was contacted and when.

6.9 It may also be necessary to provide guidance to the appropriate state agency (Radiation Compliance Unit of the Department of Environmental Protection) for their implementation of the State of Connecticut Radiological Ingestion Pathway Procedures. Any such recommendations should be documented as per Instruction 13 of the RAB Instructional Manual.

7.0 FIGURES

Not Applicable

8.0 ATTACHMENTS

8.1 Sample Location Reference Table

8.2 Connecticut Yankee - Guidance on Survey Directions

8.3 Millstone - Guidance on Survey Directions

8.4 Radioanalytical Laboratories

8.5 NUSCO EOC - Record of Requested Samples

SAMPLE LOCATION REFERENCE TABLE

Sample Type	Listing of Locations	Maps
Air Particulates & Iodine	Haddam Neck Plant Off-site Dose Calculation Manual (ODCM) Millstone Nuclear Power Station Units 1 and 2 Off-site Dose Calculational Manual (ODCM)	Connecticut Yankee Environmental Reference Map Millstone Environmental Reference Map
Ground Cover (Broad Leaf Vegetation, Grass, Snow, Etc.		Haddam Neck Emergency Monitor Points Millstone Nuclear Power Station Emergency Monitor Points
Milk (or Pasture Grass)	Dairy Cows Within 15 Miles of Connecticut Yankee Goats Within 20 Miles of Connecticut Yankee Dairy Cows Within 17.5 Miles of Millstone Point Goats Within 20 Miles of Millstone Point State of Connecticut Radiological Ingestion Pathway Procedures	Connecticut Yankee Environmental Reference Map Millstone Environmental Reference Map Preselected Sampling Locations Maps (See State of Connecticut Radiological Ingestion Pathway Procedures)
Vegetables, Fruits (or Water)	State of Connecticut Radiological Ingestion Pathway Procedures	Preselected Sampling Locations Maps (See State of Connecticut Radiological Ingestion Pathway Procedures)

CONNECTICUT YANKEE GUIDANCE ON SURVEY DIRECTIONS

I. STACK RELEASES - USE 196' MET DATA

STABILITY CLASS	WIND SPEED	GUIDANCE
1. Unstable or Neutral	Greater Than 5 MPH	Survey in downwind sector and one sector either side
($\Delta T196 < +0.5°F$)	1-5 MPH	Survey in downwind sector and three sectors on either side
	Calm <1 MPH	Survey in all directions
2. STABLE ($\Delta T196 > +0.5°F$)	Greater Than 5 MPH	Survey in downwind sector and two sectors either side
	1-5 MPH	Survey in downwind sector and three sectors either side
	Calm <1 MPH	Survey in all directions

II. GROUND OR NONSTACK RELEASES

1. If the wind direction at 196' and 33' are within 20° of each other - Survey in downwind direction and one sector either side (regardless of stability or speed)

2. If 196' and 33' wind directions are not within 20°

   a. If an elevated steam release (e.g., atmospheric steam dump) - Use guidance above for stack +196' data

   b. If any other ground release - Use 33' data

      (i) Wind Speed >5 MPH - Survey downwind sector + one sector each side
      (ii) Wind Speed 1-5 MPH - Survey downwind sector + three sectors each side
      (iii)Wind Speed - Calm - <1 MPH - Survey all directions

MILLSTONE GUIDANCE ON SURVEY DIRECTIONS

For MP1 Stack Releases - Use the 375' met data

For Rooftop Releases - Use the 142' met data

For Ground Releases - Use the 33' met data

Daytime - Wind Speed $<$ 5 MPH

Survey in downwind sector and 3 sectors to each side

Daytime - Wind Speed $>$ 5 MPH

Survey in downwind sector and 1 sector on each side

Nighttime - Wind Speed $<$ 2 MPH

Survey in downwind sector and 2 sectors each side

Nighttime - Wind Speed $>$ 2 MPH

Survey in downwind sector and 1 sector each side

RADIOANALYTICAL LABORATORIES

Laboratory	Contacts	Phone Numbers Day	Night
Chemical Waste Mgt. of Massachusetts, Inc. (Primary Contractor)	Richard Fix David Newton		
Radiation Management Corporation	General Number Emergency Number Rosemary Hogan		
Teledyne Isotopes	Andrew Hayter J. David Martin Hewitt Jeter		
Yankee Atomic Electric Co. (Env. Lab Group)	David McCurdy Russel Mellor		

NUSCO EOC - RECORD OF REQUESTED SAMPLES

Type of Sample	Locations or Area	Approximate Time For Sampling	Laboratory	Analysis Requested	POSL Contacted Name	POSL Contacted Date/Time Contacted

Performed By ______________________

Reviewed By ______________________

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-4.07

INHALATION AND INGESTION DOSE CALCULATIONS

APPROVED	R C Rodgers Lead Manager, Radiological Consequence Assessment
REVISION	0
DATE	February 1982
CONCURRENCE	R C Rodgers Corporate Nuclear Emergency Plan Coordinator

INHALATION AND INGESTION DOSE CALCULATIONS

1.0 PURPOSE

This procedure presents methodology to be used by the Radiological Assessment Branch (RAB) in the calculation of inhalation and ingestion doses based on the analyses of field samples.

2.0 APPLICABILITY

This procedure applies to the evaluation of data obtained from sampling in the event of an incident at the Haddam Neck Plant or the Millstone Nuclear Power Station.

3.0 REFERENCES

3.1 Nuclear Regulatory Commission, Regulatory Guide 1.109.

3.2 ICRP-2 - Report of Committee II on Permissible Dose for Internal Radiation.

4.0 DEFINITIONS

Not applicable.

5.0 RESPONSIBILITIES

5.1 The Corporate Manager of Radiological Consequence Assessment, his staff, and RAB staff are responsible for implementing this procedure.

5.2 All RAB staff members are responsible for understanding the following:

5.2.1 Maximum radionuclide concentrations for ingestion products need to be obtained if only the first dose equation is used. Otherwise, the average concentration and the concentration before decay need to be obtained.

5.2.2 Removal of radioactivity on crops by natural occurrences (e.g., weathering) has occurred for all isotopes except tritium (H-3).

5.2.3 Crops are assumed to be eaten at the same rate for the entire year and not just for the growing season.

5.2.4 Mitigative action, in the form of removal of crops from the market, abstaining from ingestion of contaminated consumerable goods, removal of contamination by washing, or people staying indoors has not occurred.

5.2.5 The calculated doses are for a 50-year dose commitment.

5.2.6 Final calculations may require summing up the individual doses for each release (especially for the short-lived isotopes).

6.0 INSTRUCTIONS

Radiation doses resulting from inhalation and ingestion of radionuclides can be calculated for various radionuclides as a function of age and organ type. Average and maximum individual doses can be calculated for adult, teen, child and infant organs, including the whole body, thyroid, bone, liver, kidney, lung and gastro-intestinal tract - lower large intestine (GI-LLI). The following steps should be used to calculate doses to specific organs as a function of age.

6.1 Attachment 8.1, Sample Analysis Results Sheet, should be completed from information obtained from the analytical laboratory. Special care should be taken to ensure that the units of the radionuclide concentrations are as indicated on Attachment 8.1. If radionuclides not listed on this attachment are identified, consult NRC Regulatory Guide 1.109 for an estimate of the dose conversion factors.

6.2 For short term releases, use Attachment 8.2 (for each sample) to calculate the average individual or maximum individual radiation dose from each observed radionuclide.

The basic formula used is:

$$D_{oa} = \frac{C_i \times U_{oa} \times DCF_{oa}}{\lambda eff_i \text{ or } \lambda_i}$$

where:

D_{oai} = Age and organ specific dose due to the i^{th} isotope, in mrem.

C_i = Maximum observed concentration of the i^{th} isotope in pci/gm, l or m^3 from completed Attachment 8.1.

U_{oa} = The maximum or average individual consumption rate of the particular pathway as indicated on Attachment 8.4.

λ_{eff_i} = Effective decay constant (use this for ingestion) of the i^{th} isotope in days^{-1}, from Attachment 8.5.

λ_i = Radioactive decay constant (use this for inhalation) of the i^{th} isotope in days^{-1}, from Attachment 8.5.

DCF_{oa} = Age and organ specific dose conversion factors from Attachments 8.6 through 8.11 for ingestion and 8.12 through 8.18 for inhalation.

6.2.1 List the observed isotopes and concentrations in Columns 1 and 2, respectively, from those listed on Attachment 8.1.

6.2.2 Determine the type of dose to be calculated, maximum or average individual, and circle in the appropriate location.

6.2.3 List the consumption rate in Column 3, appropriate for the specific age group, sample type (milk, water, vegetables and fruit, or air) and type of dose calculation (maximum or average individual), as obtained from Attachment 8.4.

6.2.4 List the effective (for ingestion, radioactive for inhalation) radionuclide decay constants of the observed radionuclides in Column 4 as obtained from Attachment 8.5.

6.2.5 List the appropriate organ and age specific dose conversion factors in Column 5 as obtained from Attachments 8.6 through 8.11 for ingestion and 8.12 through 8.18 for inhalation. (For isotopes not listed, consult NRC Regulatory Gude 1.108.)

6.2.6 Perform the mathematical computation as denoted on the dose calculation worksheet, Attachment 8.2, and in step 3.0b. List the radiation doses in Column 6.

6.2.7 Sum the isotope specific doses and list the total at the bottom.

6.2.8 If appropriate, sum the doses over the various media for the different age groups and affected organs.

6.3 For long term releases or multiple short term releases (or inhalation doses where the sample may be taken over a long period of time) where the average concentration is determined over a period of time, use Attachments 8.2 and 8.3 (for each sample) to calculate the average individual or maximum individual radiation dose from each observed radionuclide.

The basic formula used is:

$$D_{oai} = \frac{C_i \times U_{oa} \times DCF_{oa}}{(\lambda eff_i \text{ or } \lambda_i)} + C_{avg} \times U_{oa} \times T \times DCF_{oa}$$

where D_{oai}, U_{oa}, DCF_{oa}, λeff_i, and λ_i are defined above and:

C_i = Observed concentration of the i^{th} isotope in pCi/gm, l, or m^3 at the time when the effects of release termination become apparent (i.e., negligible concentration build-up).

$Cavg_i$ = Average concentration of the i^{th} isotope (in same units as C_i) over the time period from initial release to termination of all releases.

T = Time, in days, during which the average concentration is assumed to occur.

Follow steps 3.0b(1)-(7) in filling out Attachment 8.2 to obtain the dose for the first half of the equation. Similarly, complete Attachment 8.3 and sum the two totals.

6.4 Thyroid doses resulting from ingestion of milk can be predicted from the measured levels of radioactive iodine on pasture grass. This is not as accurate as measuring the milk, however, earlier predictions may be possible in spite of the delay in reconcentration by milk producing animals. If this prediction is desired then utilize the following equation:

$$D_{oai} = \frac{Cmax_i \times R}{\lambda_i} \times U_{oa} \times DCF$$

where D_{oai}, U_{oa}, and DCF are as described earlier, and

$Cmax_i$ = Maximum measured concentration of the i^{th} isotope of iodine observed on pasture grass, in pCi/g.

λ_i = Radioactive decay constant for the i^{th} isotope, in $days^{-1}$.

R = Grass to milk transfer parameter = 200 g/l.

Then calculate the doses as in steps 3.0a(1) through (7) except under column (2) on Attachment 8.2 record $Cmax_i \times R$, where R = 200 g/l.

6.5 Utilize additional dose calculation worksheets for each age and organ specific dose estimate.

6.6 If concentrations in subsequent environmental samples exceed the concentrations used in the most recent dose calculation, new dose estimates should be made in accordance with step 3.0b. These dose estimates should supersede the earlier dose estimates, if higher.

6.7 Completed Attachments 8.1, 8.2 and 8.3 should be retained and filed.

7.0 FIGURES

Not applicable.

8.0 ATTACHMENTS

8.1 Sample Analysis Results Sheet
8.2 Dose Calculation Worksheet #1
8.3 Dose Calculation Worksheet #2
8.4 Ingestion Rates (U_{oa})
8.5 List of Isotopes - Radiological Half Lives and Decay Constants
8.6 Whole Body - Ingestion Dose Conversion Factors
8.7 GI-LLI - Ingestion Dose Conversion Factors
8.8 Bone - Ingestion Dose Conversion Factors
8.9 Thyroid - Ingestion Dose Conversion Factors
8.10 Kidney Dose - Ingestion Conversion Factors
8.11 Liver Dose - Ingestion Conversion Factors
8.12 Whole Body - Inhalation Dose Conversion Factors
8.13 GI-LLI - Inhalation Dose Conversion Factors
8.14 Bone - Inhalation Dose Conversion Factors
8.15 Thyroid - Inhalation Dose Conversion Factors
8.16 Kidney - Inhalation Dose Conversion Factors
8.17 Liver - Inhalation Dose Conversion Factors
8.18 Lung - Inhalation Dose Conversion Factors

SAMPLE ANALYSIS RESULTS SHEET

Sample Location ________ Sample Type __________ Collection Date/Time ________

Sample ID # ___________ Analyzed by __________ Analysis Date ______________

Recorded by (initial) _______________

Radionuclide	Results (pCi/gm, l, or m^3	Radionuclide	Results (pCi/gm, l or m^3
H-3		Sb-124	
Cr-51		Sb-125	
Mn-54		Te-127m	
Co-57		Te-129m	
Co-58		I-131	
Fe-59		I-133	
Co-60		Te-132	
Zn-65		Cs-134	
Rb-86		Cs-137	
Sr-89		Ba-140	
Sr-90		La-140	
Y-90		Ce-141	
Sr-91		Ce-144	
Y-91		Eu-152	
Zr-95		Eu-154	
Nb-95		Eu-155	
Ru-103		Eu-156	
Ru-106		Others	
Ag-110m			

DOSE CALCULATION WORKSHEET

Sample Type ________ Sample Location ___________ Collection Date/Time _______

Sample ID # ____________________ Type of Individual (Circle One) MAX. AVG.

Age Group (Circle One) ADULT TEEN CHILD INFANT

Organ Dose (Circle One) WB THYROID BONE LIVER KIDNEY GI-LLI

(1) Isotope	(2) pCi/g, l or m^3	(3) x Uoa	(4) $\div \lambda$	(5) x DCF_{oa} =	(6) Dose (mrem)

DOSE CALCULATION WORKSHEET

Sample Type ________ Sample Location ___________ Collection Date/Time ______

Sample ID # ____________________ Type of Individual (Circle One) MAX. AVG.

Age Group (Circle One) ADULT TEEN CHILD INFANT

Organ Dose (Circle One) WB THYROID BONE LIVER KIDNEY GI-LLI

(1) Isotope	(2) pCi/g, l or m^3	(3) x Uoa	(4) x T	(5) x DCF_{oa} =	(6) Dose (mrem)

CONSUMPTION RATES (U_{oa})

Maximum

Pathway	Adult	Teen	Child	Infant
Milk (l/day)	0.84	1.10	0.90	0.90
Drinking Water (l/day)	2.0	1.40	1.40	0.90
Fruits & Vegetables (gm/day)	1425	1725	1425	-
Air (m^3/day)	22	22	10	3.8

Average

Pathway	Adult	Teen	Child
Milk (l/day)	0.30	0.60	0.50
Drinking Water (l/day)	1.0	0.70	0.70
Fruits & Vegetables (gm/day)	520	660	550
Air (m^3/day)	10	22	10

LIST OF ISOTOPES

Isotope	*T 1/2 (Days)	λ_i (Days^{-1})	λ_{eff} (Days^{-1})
H-3	4,458	1.55 E-04	1.55E-04
Cr-51	27.8	2.49 E-02	7.44E-02
Mn-54	303	2.29 E-03	5.18E-02
Co-57	270	2.57 E-03	5.21E-02
Co-58	71.3	9.72 E-03	5.92E-02
Fe-59	45.6	1.52 E-02	6.47E-02
Co-60	1,898	3.65 E-04	4.99E-02
Zn-65	245	2.83 E-03	5.23E-02
Rb-86	18.7	3.71 E-02	8.66E-02
Rb-88	0.012	5.64 E+00	5.64E+01
Sr-89	52.7	1.31 E-02	6.26E-02
Sr-90	10,110	6.85 E-05	4.96E-02
Y-90	2.7	2.57 E-01	3.07E-01
Sr-91	0.4	1.73 E+01	1.78E+00
Y-91	58.8	1.18 E-02	6.13E-02
Zr-95	65.5	1.06 E-02	6.01E-02
Nb-95	35	1.98 E-02	6.93E-02
Mo-99	2.75	2.52 E-01	3.02E-01
Ru-103	39.5	1.75 E-02	6.70E-02
Ru-106	368	1.88 E-03	5.14E-02
Ag-110m	255	2.72 E-03	5.22E-02
Sb-124	60.4	1.15 E-02	6.10E-02
Sb-125	989	7.01 E-04	5.02E-02
Te-127m	109	6.36 E-03	5.59E-02
Te-129m	34.1	2.03 E-02	6.98E-02
I-131	8.1	8.56 E-02	1.35E-01
I-133	0.85	8.15 E-01	8.65E-01
Te-132	3.2	2.17 E-01	2.67E-01
Cs-134	748	9.26 E-04	5.04E-02
Cs-136	13.1	5.03 E-02	1.02E-01
Cs-137	10,950	6.33 E-05	4.96E-02
Cs-138	0.022	3.10 E+01	3.10E-01
Ba-140	12.8	5.41 E-02	1.04E-01
La-140	1.7	4.08 E-02	9.03E-02
Ce-141	32.5	2.13 E-02	7.08E-02
Ce-144	284	2.44 E-03	5.19E-02
Eu-152	4,636	1.50 E-04	4.96E-02
Eu-154	5,840	1.19 E-04	4.96E-02
Eu-155	661	1.05 E-03	5.05E-02
Eu-156	15.4	4.50 E-02	9.45E-02

*$T_{1/2}$ = Time required for radioactivity to decay to one-half of initial activity.

λ_i = Radioactive decay constant.

λeff_i = Effective decay constant = $\ln 2/T_{1/2} + \ln 2/T_w$;

T_w = half-life due to weathering (14 days)

WHOLE BODY - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
H-3	1.05E-07	1.06E-07	2.03E-07	3.08E-07
Cr-51	3.51E-09	5.02E-09	1.50E-08	3.19E-08
Mn-54	8.72E-07	1.17E-06	2.85E-06	4.51E-06
Co-57	2.91E-07	3.99E-07	1.12E-06	2.39E-06
Co-58	1.67E-06	2.33E-06	6.95E-06	1.48E-05
Fe-59	3.91E-06	5.29E-06	1.56E-05	3.32E-05
Co-60	4.72E-06	6.45E-06	1.93E-05	4.10E-05
Zn-65	6.96E-06	9.37E-06	2.80E-05	5.96E-05
Rb-86	9.83E-06	1.40E-05	4.17E-05	8.88E-05
Sr-89	8.84E-06	1.26E-05	3.77E-05	7.97E-05
Sr-90	1.98E-03	2.84E-03	8.47E-03	1.81E-02
Y-90	2.58E-10	3.69E-10	1.10E-09	2.33E-09
Sr-91	2.66E-07	3.80E-07	1.13E-06	2.42E-06
Y-91	3.77E-09	5.39E-09	1.61E-08	3.28E-08
Zr-95	6.60E-09	9.22E-09	2.76E-08	5.87E-08
Nb-95	1.86E-09	2.57E-09	7.70E-09	1.64E-08
Ru-103	8.66E-08	1.24E-07	3.70E-07	7.87E-07
Ru-106	3.48E-07	4.94E-07	1.46E-06	3.01E-06
Ag-110m	8.80E-08	1.26E-07	3.76E-07	8.00E-07
Sb-124	1.17E-06	1.67E-06	4.98E-06	1.06E-05
Sb-125	4.26E-07	5.80E-07	1.66E-06	3.53E-06
Te-127m	1.10E-06	1.57E-06	4.69E-06	1.00E-05
Te-129m	2.90E-06	4.14E-06	7.56E-06	2.64E-05
I-131	3.53E-06	5.04E-06	1.51E-05	3.21E-05
I-133	7.73E-07	1.10E-06	3.30E-06	7.03E-06
Te-132	1.53E-06	2.08E-06	5.57E-06	1.19E-05
Cs-134	1.21E-05	1.08E-04	3.23E-04	6.87E-04
Cs-137	7.14E-05	6.24E-05	1.87E-04	3.97E-04
Ba-140	1.33E-06	1.86E-06	5.55E-06	1.18E-05
La-140	3.37E-10	4.82E-10	1.44E-09	3.06E-09
Ce-141	7.18E-10	1.02E-09	2.94E-09	6.05E-09
Ce-144	2.63E-08	3.74E-08	1.12E-07	2.39E-07
Eu-152	3.90E-08	5.20E-08	1.33E-07	1.51E-07
Eu-154	7.86E-08	1.12E-07	3.36E-07	7.15E-07
Eu-155	7.87E-09	1.04E-08	2.72E-08	4.83E-08
Eu-156	1.71E-09	2.35E-09	6.23E-09	1.12E-08

GI-LLI - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
H-3	1.05E-07	1.06E-07	2.03E-07	3.08E-07
Cr-51	6.69E-07	6.05E-07	4.72E-07	4.11E-07
Mn-54	1.40E-05	1.21E-05	8.98E-06	7.31E-06
Co-57	4.44E-06	4.44E-06	4.04E-06	3.92E-06
Co-58	1.51E-05	1.34E-05	1.05E-05	8.97E-06
Fe-59	3.40E-05	3.24E-05	2.78E-05	2.57E-05
Co-60	4.02E-05	3.66E-05	2.93E-05	2.57E-05
Zn-65	9.70E-06	8.47E-06	6.41E-06	5.33E-05
Rb-86	4.16E-06	4.41E-06	4.31E-06	4.35E-06
Sr-89	4.94E-05	5.24E-05	5.11E-05	5.16E-05
Sr-90	2.19E-04	2.33E-04	2.29E-04	2.31E-04
Y-90	1.02E-04	1.13E-04	1.17E-04	1.20E-04
Sr-91	2.70E-05	3.66E-05	5.30E-05	5.92E-05
Y-91	7.76E-05	8.24E-05	8.02E-05	8.10E-05
Zr-95	3.09E-05	3.00E-05	2.66E-05	2.50E-05
Nb-95	2.10E-05	1.95E-05	1.62E-05	1.46E-05
Ru-103	2.16E-05	2.13E-05	1.89E-05	1.80E-05
Ru-106	1.78E-04	1.88E-04	1.82E-04	1.83E-04
Ag-110m	6.04E-05	5.45E-05	4.33E-05	3.77E-05
Sb-124	7.95E-05	7.80E-05	6.94E-05	6.60E-05
Sb-125	1.97E-05	1.93E-05	1.71E-05	1.64E-05
Te-127m	2.27E-05	2.41E-05	2.34E-05	2.36E-05
Te-129m	5.79E-05	6.12E-05	5.94E-05	5.97E-05
I-131	1.57E-06	1.62E-06	1.54E-06	1.51E-06
I-133	2.22E-06	2.58E-06	2.95E-06	3.08E-06
Te-132	7.71E-05	7.00E-05	4.50E-05	3.81E-05
Cs-134	2.59E-06	2.45E-06	2.07E-06	1.91E-06
Cs-137	2.11E-06	2.12E-06	1.96E-06	1.91E-06
Ba-140	4.18E-05	4.38E-05	4.21E-05	4.20E-05
La-140	9.25E-05	9.82E-05	9.84E-05	9.77E-05
Ce-141	2.42E-05	2.54E-05	2.47E-05	2.48E-05
Ce-144	1.65E-04	1.75E-04	1.70E-04	1.71E-04
Eu-152	2.56E-05	2.17E-05	1.84E-05	1.59E-05
Eu-154	5.48E-05	5.39E-05	4.81E-05	4.58E-05
Eu-155	9.60E-06	9.63E-05	8.69E-05	8.37E-05
Eu-156	7.26E-05	7.36E-05	6.83E-05	6.67E-05

BONE - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Zn-65	4.84E-06	5.76E-06	1.37E-05	2.79E-05
Sr-89	3.08E-04	4.47E-04	1.33E-03	2.84E-03
Sr-90	3.34E-02	4.77E-02	1.43E-01	3.04E-01
Y-90	9.62E-09	1.37E-08	4.11E-08	8.69E-08
Sr-91	5.67E-06	8.07E-06	2.40E-05	5.00E-05
Y-91	1.41E-07	2.01E-07	6.02E-07	1.21E-06
Zr-95	3.04E-08	4.12E-08	1.16E-07	2.26E-07
Nb-95	6.22E-09	8.22E-09	2.25E-08	4.57E-08
Ru-103	1.89E-07	2.69E-07	8.05E-07	1.71E-06
Ru-106	2.75E-06	3.92E-06	1.17E-05	2.41E-05
Ag-110m	1.60E-07	2.24E-07	6.71E-07	1.43E-06
Sb-124	2.80E-06	3.96E-06	1.18E-05	2.52E-05
Sb-125	1.97E-06	2.82E-06	8.41E-06	1.79E-05
Te-127m	8.39E-06	1.20E-05	3.58E-05	7.62E-05
Te-129m	1.24E-05	1.78E-05	5.31E-05	1.13E-04
Te-132	2.52E-06	3.49E-06	1.01E-05	2.08E-05
Cs-134	6.22E-05	8.37E-05	2.34E-04	4.57E-04
Cs-137	8.17E-05	1.17E-04	3.49E-04	7.43E-04
Ba-140	2.03E-05	2.84E-05	8.31E-05	1.71E-04
La-140	2.50E-09	3.48E-09	1.01E-08	2.11E-08
Ce-141	9.36E-09	1.33E-08	3.97E-08	7.87E-08
Ce-144	4.88E-07	6.96E-07	2.07E-06	4.42E-06
Eu-152	1.95E-07	2.78E-07	8.31E-07	1.77E-06
Eu-154	1.23E-06	1.75E-06	5.23E-06	1.11E-05
Eu-155	8.60E-08	1.74E-07	4.82E-07	5.42E-07
Eu-156	1.37E-08	1.92E-08	5.62E-08	1.14E-07

THYROID - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
H-3	1.05E-07	1.06E-07	2.03E-07	3.08E-07
Cr-51	3.72E-09	4.96E-09	1.49E-08	3.72E-08
Sb-124	7.21E-09	9.61E-09	2.88E-08	7.21E-08
Te-127m	2.31E-06	3.07E-06	9.22E-06	2.31E-05
Te-129m	4.47E-06	5.95E-06	1.79E-05	4.47E-05
* I-131	2.34E-03	3.11E-03	9.31E-03	2.33E-02
Te-132	2.52E-06	2.33E-06	6.56E-06	1.64E-05
I-133	5.20E-04	6.93E-04	2.08E-03	5.20E-03

*The dose conversion factor has been adjusted for the dose commitment received during the time period prior to reaching the maximum concentration in the milk.

KIDNEY - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
H-3	1.05E-07	1.06E-07	2.03E-07	3.08E-07
Cr-51	1.02E-09	1.46E-09	3.07E-09	5.58E-09
Zn-65	1.03E-05	1.44E-05	3.03E-05	5.51E-05
Zr-95	1.53E-08	1.91E-08	4.02E-08	7.31E-08
Nb-95	3.42E-09	4.72E-09	9.92E-09	1.80E-08
Ru-103	7.80E-07	1.11E-06	2.34E-06	4.25E-06
Ru-106	5.31E-06	7.56E-06	1.58E-05	2.85E-05
Ag-110m	3.21E-07	4.58E-07	9.62E-07	1.75E-06
Te-127m	3.63E-05	5.19E-05	1.09E-04	1.98E-04
Te-129m	6.17E-05	8.81E-05	1.85E-04	3.36E-04
Te-132	1.57E-05	2.12E-05	4.15E-05	7.49E-05
Cs-134	4.79E-05	6.48E-05	1.36E-04	2.47E-04
Cs-137	3.83E-05	5.48E-05	1.15E-04	2.09E-04
Ce-141	2.94E-09	4.18E-09	8.68E-09	1.48E-08
Ce-144	1.22E-07	1.75E-07	3.67E-07	6.67E-07
Eu-152	2.75E-07	2.74E-07	4.73E-07	5.02E-07
Eu-154	6.64E-07	9.48E-07	1.99E-06	3.62E-06
Eu-155	5.63E-08	6.57E-08	1.30E-07	1.47E-07
Eu-156	7.08E-09	9.69E-09	1.94E-08	3.26E-08

LIVER - INGESTION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
H-3	1.05E-07	1.06E-07	2.03E-07	3.08E-07
Mn-54	4.61E-06	6.53E-06	1.48E-05	3.92E-05
Co-57	1.75E-07	2.38E-07	4.93E-07	1.27E-06
Co-58	7.45E-07	1.05E-06	2.38E-06	6.30E-06
Fe-59	1.02E-05	1.40E-05	3.17E-05	8.40E-05
Co-60	2.14E-06	2.95E-06	6.68E-06	1.77E-05
Zn-65	1.54E-05	2.13E-05	4.83E-05	1.28E-04
Rb-86	2.11E-05	2.98E-05	6.70E-05	1.76E-04
Sb-124	5.53E-09	7.83E-08	1.77E-07	4.70E-07
Te-127m	3.20E-06	4.53E-06	1.03E-05	2.72E-05
Te-129m	5.78E-06	8.19E-06	1.85E-05	4.92E-05
Te-132	1.63E-06	2.21E-06	4.47E-06	1.18E-05
Cs-134	1.48E-04	1.99E-04	4.51E-04	1.20E-03
Cs-137	1.11E-04	1.58E-04	3.57E-04	9.45E-04
Ce-141	6.33E-09	8.88E-09	1.98E-08	4.83E-08
Ce-144	2.06E-07	2.93E-07	6.62E-07	1.76E-06
Eu-152	4.44E-08	5.90E-08	1.12E-08	1.79E-07
Eu-154	1.16E-07	1.64E-07	3.72E-07	9.87E-07
Eu-155	1.22E-08	1.68E-08	3.48E-08	9.23E-08
Eu-156	1.06E-08	1.44E-08	3.01E-08	7.06E-08

WHOLE BODY - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Rb-88	2.41E-08	3.40E-08	9.90E-08	2.05E-07
Sr-89	1.09E-06	1.56E-06	4.66E-06	8.15E-06
Sr-90	7.62E-04	8.35E-04	1.74E-03	1.85E-03
Y-90	7.01E-09	1.00E-08	2.99E-08	6.30E-08
Sr-91	3.13E-10	4.39E-10	1.24E-09	2.47E-09
Ru-103	8.23E-08	1.12E-07	2.90E-07	4.85E-07
Ru-106	1.09E-06	1.55E-06	4.57E-06	7.77E-06
I-131	2.56E-06	3.30E-06	7.37E-07	1.40E-05
I-133	5.65E-06	7.78E-07	2.08E-06	4.00E-06
Te-132	2.02E-08	2.74E-08	7.12E-08	1.26E-07
Cs-134	9.10E-05	6.86E-05	6.07E-05	5.32E-05
Cs-136	1.38E-05	1.71E-05	3.14E-05	3.78E-05
Cs-137	5.35E-05	3.89E-05	3.47E-05	3.25E-05
Cs-138	4.05E-08	5.58E-08	1.50E-07	2.84E-07
Ba-140	3.21E-07	4.40E-07	1.17E-06	2.07E-06
La-140	5.73E-09	7.82E-09	2.04E-08	3.68E-08
Ce-141	1.91E-07	2.71E-07	7.83E-07	1.42E-06
Ce-144	2.30E-05	3.28E-05	9.77E-05	1.26E-04

GI-LLI - INH/ .ATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Rb-88	4.18E-19	3.65E-15	4.66E-09	2.42E-07
Sr-89	4.37E-05	4.64E-05	4.52E-05	4.57E-05
Sr-90	9.02E-05	9.56E-05	9.28E-05	9.36E-05
Y-90	6.32E-05	6.99E-05	7.24E-05	7.43E-05
Sr-91	2.39E-05	3.24E-05	4.70E-05	5.24E-05
Ru-103	1.38E-05	1.36E-05	1.21E-05	1.15E-05
Ru-106	1.14E-04	1.20E-04	1.16E-04	1.17E-04
I-131	7.85E-07	8.11E-07	7.68E-07	7.56E-04
I-133	1.11E-06	1.29E-06	1.48E-06	1.54E-06
Te-132	6.37E-05	5.79E-05	3.72E-05	3.15E-05
Cs-134	1.30E-06	1.22E-06	1.04E-06	9.53E-07
Cs-136	1.46E-06	1.36E-06	1.13E-06	1.02E-06
Cs-137	1.05E-06	1.06E-06	9.78E-07	9.53E-07
Cs-138	2.33E-13	3.38E-11	7.29E-08	6.26E-07
Ba-140	2.73E-05	2.86E-05	2.75E-05	2.74E-07
La-140	5.73E-05	6.09E-05	6.10E-05	6.06E-05
Ce-141	1.50E-05	1.58E-05	1.53E-05	1.54E-05
Ce-144	1.02E-04	1.08E-04	1.05E-04	1.06E-04

BONE - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Sr-89	3.80E-05	5.43E-05	1.62E-04	2.84E-04
Sr-90	1.24E-02	1.35E-02	2.73E-02	2.92E-02
Y-90	2.61E-07	3.73E-07	1.11E-06	2.35E-06
Sr-91	7.74E-09	1.10E-08	3.28E-08	6.83E-08
Ru-103	1.91E-07	2.63E-07	7.55E-07	1.44E-06
Ru-106	8.64E-06	1.23E-05	3.68E-05	6.20E-05
I-131	3.15E-06	4.43E-06	1.30E-05	2.71E-05
I-133	1.08E-06	1.52E-06	4.48E-06	9.46E-06
Te-132	3.25E-08	4.50E-08	1.30E-07	2.66E-07
Cs-134	4.66E-05	6.28E-05	1.76E-04	3.83E-04
Cs-136	4.88E-06	6.44E-06	1.76E-05	3.45E-05
Cs-137	5.98E-05	8.38E-05	2.45E-04	3.92E-04
Cs-138	4.14E-08	5.82E-08	1.71E-07	3.61E-07
Ba-140	4.88E-06	6.84E-06	2.00E-05	4.00E-05
La-140	4.30E-08	5.99E-08	1.74E-07	3.61E-07
Ce-141	2.49E-06	3.55E-06	1.06E-05	1.98E-05
Ce-144	4.29E-04	6.11E-04	1.83E-03	2.28E-03

THYROID - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
I-131	1.49E-03	1.83E-03	4.39E-03	1.06E-02
I-133	2.69E-04	3.65E-04	1.04E-03	2.54E-03
Te-132	2.37E-08	3.07E-08	8.58E-08	1.99E-07

KIDNEY - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Ru-103	7.29E-07	9.29E-07	1.90E-06	3.03E-06
Ru-106	1.67E-05	2.38E-05	4.97E-05	7.61E-05
I-131	7.66E-06	1.05E-05	2.13E-05	3.70E-05
I-133	3.23E-06	4.49E-06	9.16E-06	1.60E-05
Te-132	1.82E-07	2.44E-07	4.79E-07	7.39E-07
Cs-134	3.59E-05	4.69E-05	8.93E-05	1.36E-04
Cs-136	1.07E-05	1.38E-05	2.58E-05	4.03E-05
Cs-137	2.78E-05	3.80E-05	7.63E-05	1.23E-04
Cs-138	6.00E-08	8.28E-08	1.68E-07	2.93E-07
Ba-140	2.09E-09	2.85E-09	5.71E-09	9.59E-09
Ce-141	7.83E-07	1.11E-06	2.31E-06	3.75E-06
Ce-144	1.06E-04	1.51E-04	3.17E-04	3.84E-04

LIVER - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Rb-88	4.84E-08	6.82E-08	1.52E-07	3.98E-07
I-131	4.47E-06	6.14E-06	1.30E-05	3.17E-05
I-133	1.85E-06	2.56E-06	5.49E-06	1.37E-05
Te-132	2.69E-08	3.63E-08	7.36E-08	2.66E-07
Cs-134	1.06E-04	1.41E-04	2.74E-04	5.02E-04
Cs-136	1.83E-05	2.42E-05	4.62E-05	9.61E-05
Cs-137	7.76E-05	1.06E-04	2.23E-04	4.37E-04
Cs-138	7.76E-08	1.07E-07	2.27E-07	5.58E-07
Ba-140	6.13E-09	8.38E-09	1.75E-08	4.00E-08
La-140	2.17E-08	2.95E-09	6.08E-08	1.43E-07
Ce-141	1.69E-06	2.37E-06	5.28E-06	1.19E-05
Ce-144	1.79E-04	2.53E-04	5.72E-04	8.65E-04

LUNG - INHALATION DOSE CONVERSION FACTORS (mrem/pCi)

Isotope	Adult	Teen	Child	Infant
Sr-89	1.75E-04	3.02E-04	5.83E-04	1.45E-03
Sr-90	1.20E-03	2.06E-03	3.99E-03	8.03E-03
Y-90	2.12E-05	3.66E-05	7.07E-05	1.92E-04
Sr-91	4.56E-06	7.59E-06	1.44E-05	3.76E-05
Ru-103	6.31E-05	9.79E-05	1.79E-04	3.94E-04
Ru-106	1.17E-03	2.01E-03	3.87E-03	8.26E-03
Te-132	3.60E-05	5.61E-05	1.02E-04	2.43E-04
Cs-134	1.22E-05	1.83E-05	3.27E-05	5.69E-05
Cs-136	1.50E-06	2.22E-06	3.93E-06	8.40E-06
Cs-137	9.40E-06	1.51E-05	2.81E-05	5.09E-05
Cs-138	6.07E-09	9.84E-09	1.84E-08	4.67E-08
Ba-140	1.59E-04	2.54E-04	4.71E-04	1.14E-03
La-140	1.70E-05	2.68E-05	4.94E-05	1.20E-04
Ce-141	4.52E-05	7.67E-05	1.47E-04	3.69E-04
Ce-144	9.72E-04	1.67E-03	3.23E-03	7.03E-03

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-5.01

ON-CALL TECHNICAL SUPPORT STAFF LOGISTICS

APPROVED Peter F. Santoro
Lead Manager,
Technical Support

REVISION 2

DATE February 1982

CONCURRENCE R C Rodgers
Corporate Nuclear Emergency
Plan Coordinator

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

ON-CALL TECHNICAL SUPPORT STAFF LOGISTICS

1.0 PURPOSE

This procedure defines the responsibilities and duties of the "on-call" Corporate Emergency Technical Support Team to provide the coordination and acquisition of personnel and other support services needed during incidents at nuclear power generating facilities.

2.0 APPLICABILITY

This procedures applies to those Corporate Engineering Organization personnel selected to serve on the NUSCO Technical Support Team. The Technical Support Team consists of twenty (20) personnel.

Five (5) Technical Managers
Five (5) Mechanical Engineers
Five (5) Electric Engineers
Five (5) Core Thermal & Hydraulic Engineers

One (1) technical manager and three (3) engineering support personnel (one each from mechanical, electrical, and core thermal & hydraulics) are scheduled for "radiopager on-call" duty each week.

3.0 REFERENCES

3.1 NUSCO Nuclear Engineering and Operations Procedure, NEO 2.04, Nuclear Incidents Response Plan.

3.2 Haddam Neck Plant Emergency Plan, Revision .

3.3 Millstone Nuclear Power Station Emergency Plan (Revision , January 1, 1981).

3.4 Corporate Organization for Nuclear Incidents (CONI) Procedures, Section 1.0.

4.0 DEFINITIONS

4.1 The radiopager "on-call" personnel are those personnel so designated in this procedures who will respond to the period of emergency operations.

4.2 Corporate Emergency Operations Center: that location designated where "radiopager on-call" personnel are to report (Berlin Complex, Room N101).

4.3 Normal Hours: the hours between 0800 and 1630 of each working weekday.

4.4 Off Normal Hours: the hours between 1630 and 0800 each working weekday, and all hours on weekends and holidays.

4.5 Corporate Manager of Technical Support, or designee: see Attachment 1.

4.6 Corporate Mechanical Technical Support, or designee: see Attachment 1.

4.7 Corporate Electrical Technical Support, or designee: see Attachment 1.

4.8 Corporate Core Thermal & Hydraulic Support, or designee: see Attachment 1.

4.9 Radiopaer On-Call Schedule: that time period from 0800 Monday through seven (7) consecutive days, until 0800 the following Monday.

4.10 State of Connecticut Incident Classification: an alphanumeric designation that classifies nuclear plant incidents by event description and notification actions required and protective actions required.

5.0 <u>RESPONSIBILITIES</u>

5.1 All Technical Support Team Members shall be familiar with the CONI procedures in Section 1.0, the operation of the radiopager system, the State of Connecticut Incident Classification Scheme and the Site Emergency Plans for the Haddam Neck Plant and the Millstone Nuclear Power Station.

5.2 The lead Technical Support Manager or his designee shall provide annually to the lead Nuclear Operations Duty Officer a radiopager "on-call" schedule for those individuals listed in Attachment 1. The weekly radiopager "on-call" schedules will be posted in the office of the Vice President, Nuclear Operations and in the designated Corporate Emergency Operations Center. The format is contained in CONI Procedure 1.02.

5.3 The weekly schedules may be varied according to individual circumstances providing the individual does the following.

5.3.1 Arranges for and confirms a replacement from the Technical Support Team.

5.3.2 Notifies the NUSCO Nuclear Operations Duty Officer.

5.3.3 Fills in the appropriate information and initials the weekly "radiopager on-call" schedule posted in the office of the Vice President, Nuclear Operations, to signify that the notifications have been accomplished.

5.4 The Manager of Technical Support shall coordinate all plant/system engineering activities to support resolution of the nuclear plant emergency and report to the Director, Corporate Emergency Operations.

5.5 The mechanical, electrical, and core thermal & hydraulics support team will report to the Corporate Manager of Technical Support, or his designee.

5.6 The Lead Manager of Technical Support or his designee shall maintain a current set of "Op-Critical-Drawings," which will be located in the Reactor Plant Systems Technical files.

6.0 INSTRUCTIONS

6.1 Response to Radiopaging

6.1.1 The on-call Manager of Technical Support and the on-call team members (Level 2-Radiopager) will call the Berlin telephone call-back system and leave the following information: their name, function, time, date, and estimated arrival time at the Berlin office.

6.1.2 All Corporate Technical Support Team "on-call" personnel will respond to the radiopager notification and be in the Berlin Emergency Operations Center (Room N101) within seventy-five (75) minutes of receiving the radiopager notification for the following classes:

"CHARLIE ONE," "CHARLIE TWO," "BRAVO," and "ALPHA."

6.2 Backup to Radiopaging

6.2.1 In the event the radiopager system is inoperative, the Station Shift Supervisor's staff assistant or his alternate, will call the NUSCO Nuclear Operations Duty Officer, who will in turn provide notification by telephone to the senior NU management and the Emergency On-Call Staff (for State of Connecticut Incident Classes: "CHARLIE ONE," "CHARLIE TWO," "BRAVO," and "ALPHA").

The Technical Support Team, Berlin Office telephone extensions and home telephone numbers are given in Attachment 1.

6.2.2 If the radiopager is not operating, spare units can be obtained by either first calling Larry Sheehan:

Office: Berlin Extension
Home:

or call the Lead Technical Manager (Peter Santoro):

Office: Berlin Extension
Home:

6.2.3 In the event backup cannot be established per Section 6.2.2, then malfunctioning radiopager carrier shall call the other members of the Technical Support Team scheduled for duty that week to advise them that telephone contact is required due to an inoperative radiopager. See Attachment 1 for Technical Support Team telephone numbers.

6.3 Testing of Radiopagers

Daily tests of the radiopagers will be done by each of the stations. Individuals using the pager will determine its operability on a daily basis. The daily test pattern is as follows:

	Connecticut Yankee	Millstone
Monday	7 p.m.	11 a.m.
Tuesday	11 a.m.	7 p.m.
Wednesday	7 p.m.	11 a.m.
Thursday	11 a.m.	7 p.m.
Friday	7 p.m.	11 a.m.
Saturday	11 a.m.	7 p.m.
Sunday	11 a.m.	7 p.m.

Note: Batteries should be changed once a week. Spare batteries can be obtained from Larry Sheehan.

6.4 Use of Radiopagers

Per the requirements of Paragraph 5.3, four (4) Technical Support Team members (a manager, and one each from mechanical, electrical, and core thermal & hydraulics) will be carrying a radiopager at all times. Per Section 6.2.3, this provides backup for a malfunctioning radiopager. All four on-call

Technical Support Team members should report to the Berlin Emergency Operations Center (EOC), Room N101, within the seventy-five (75) minute time period.

6.5 Technical Support Team Instructions

6.5.1 After meeting the Berlin call-back requirements of Paragraph 6.1.1, each member of the Technical Support Team on the current on-call schedule shall report to the Corporate Emergency Operations Center, Room N101. Technical Support Team Members should attempt to notify other discipline engineers as soon as possible.

6.5.2 The first "on-call" Technical Support Team member to arrive at the Corporate Emergency Operations Center shall set up the telephones providing a direct link-up with the Station Technical Support Center and initiate contact with the Station Manager of Technical Support or his designee, as appropriate.

Only the first on-call Technical Support Team member to arrive shall remain in the designated Corporate Emergency Operations Center. All other arriving Technical Support Team members shall check in, obtain information on the incident, and proceed to the designated Technical Support work center (W4) to provide appropriate discipline engineering support, unless directed otherwise by the Manager or his designee.

6.5.3 In the event the first Technical Support Team member to arrive at the Berlin Emergency Operations Center is not the "on-call" Technical Support Team Manager, he shall serve in this capacity until the assigned Manager arrives.

Upon the arrival of the manager, the Technical Support Team member will update the manager and proceed to the designated Technical Support work center to provide his appropriate discipline engineering support.

6.5.4 The Technical Support Team Manager or his designee is responsible for coordinating requests of and responses from the Technical Support Team.

6.5.5 After reviewing the action plan(s) with the scheduled on-call Director of the Corporate Emergency Operations Center, the Manager shall contact the Technical Support work center (Office W4 presently G. L. Johnson's office) and establish/maintain telephone contact with the Station Technical Support center using the dedicated telephones located in W4. These telephones are dedicated to:

CY - Operations Supervisor's Office
MP1 - MP1 Computer Room
MP2 - MP2 Computer Room

6.5.6 As key discipline engineering milestones are achieved, the Manager will be responsible for relaying this information to the Director of the Corporate Emergency Operations Center, located in Room N101.

6.5.7 All Technical Support Team discipline engineering information is to be reviewed by the Manager or his designee prior to release to the plant by the supporting discipline engineer(s), and shall be recorded at the Technical Support Station.

6.5.8 All Technical Support Team discipline engineering support functions shall use all available reference materials such as drawings, FSAR, Technical Specifications, Equipment Specifications/Technical Manuals, Op-Critical-Drawings, etc.

6.5.9 All Technical Support Team discipline information pertinent to plant recovery from a potential event shall be assembled in the designated Technical Support Station (W4) and not be removed from this location until the on-call Director of the Berlin Emergency Operations Center has announced that the event is stable.

6.5.10 As the need develops, the Manager may elect to call in additional NUSCO discipline engineering support and outside technical experts/consultants such as the NSSS vendors architect/engineers, etc.

7.0 FIGURES

None.

8.0 ATTACHMENTS

8.1 On-Call Technical Support Staff.

ATTACHMENT 8-1

ON-CALL TECHNICAL SUPPORT STAFF

Function	Name	Home Telephone	Office Telephone	Radiopager No.	Serial No.
	The following on-call personnel may act as the Manager of Technical Support.				
	P. F. Santoro (Lead)				
MANAGERS	R. N. Smart				
	A. R. Roby				
	P. M. Blanch				
	E. A. DeBarba				
	The following on-call personnel may act as the Technical Team, reporting to the Manager of Technical Support.				
MECHANICAL	T. J. Mawson				
	S. J. Weyland				
	R. E. McMullen				
	J. P. Donohue				
	M. Kupinski				
ELECTRICAL	T. A. Shaffer				
	B. A. Tuthill				
	M. F. Samek				
	D. V. Clemons				
	G. R. Pitman				
CORE THERMAL & HYDRAULIC	M. V. Bonaca				
	L. W. Ward				
	A. Gharakhani				
	M. P. Hills				
	C. S. Banwarth				

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-6.01

ON-CALL CORPORATE MANAGER OF RESOURCES, RESPONSIBILITIES AND DUTIES

APPROVED E. R. Foster
Lead Manager, Resources

REVISION 1

DATE November 1981

CONCURRENCE P C Rodgers
Corporate Nuclear Emergency
Plan Coordinator

ON-CALL CORPORATE MANAGER OF RESOURCES, RESPONSIBILITIES AND DUTIES

1.0 PURPOSE

This procedure defines the responsibilities and duties of the Corporate Manager of Resources as they relate to the coordination and acquisition of personnel, equipment, housing, food, purchasing, financial, legal, and other support services needed during the emergency operations at a nuclear power generation facility.

2.0 This procedure applies to the On-Call Corporate Manager of Resources or his designee during the period of emergency operations as defined in reference 3.1.

3.0 REFERENCES

3.1 NUSCO Nuclear Engineering and Operations Procedure NEO 2.04, Nuclear Incidents Response Plan.

3.2 CONI Procedures Section 1.0.

4.0 DEFINITIONS

4.1 The "on-call" personnel are those personnel so designated in this procedure who will respond to the period of emergency operations.

4.2 Emergency Operations Center - That location designated by corporate guidelines where on-call personnel are instructed, by this procedure, to report. (Berlin Complex - Room N101).

4.3 Normal Hours - The hours between 0800 and 1630 of each working weekday.

4.4 Off Normal Hours - The hours between 1630 and 0800 on each working weekday and all hours on weekends and holidays.

4.5 Corporate Manager of Resources - Manager or designee identified in 6.1 below.

4.6 On-call designation is that time period from 0800 Monday morning through 7 (seven) consecutive days until 0800 the following Monday morning.

5.0 RESPONSIBILITIES

5.1 The Corporate Manager of Resources is responsible for the acquisition of personnel, equipment, food, housing, purchasing, financial, legal, and other support services as requested by the Manager of On-site Resources and/or other Managers in the Corporate EOC on a 24-hour/day basis for the duration of emergency operations at a nuclear power facility.

5.2 In the event that any individual equipment or service which the Manager of Resources is asked to provide in support of an emergency operation is estimated to cost more than $100,000, the Corporate Manager of Resources shall specifically inform the Corporate Director of Emergency Operations and obtain his concurrence to proceed.

6.0 INSTRUCTION

6.1 On-Call Berlin Personnel

6.1.1 The following personnel are on-call personnel who may act as the Corporate Manager of Resources:

	Office Extension	Home Telephone
.. Foster, Manager (Lead)		
L. C. Albee		
R. E. Busch		
B. L. Carlson		
A. K. Gulesserian		
R. E. Proulx		

6.1.2 It will be the responsibility of the Corporate Manager of Resources to update this listing as required due to future personnel changes.

6.2 On-Call Schedule

6.2.1 The Lead Corporate Manager of Resources shall provide annually to the lead Nuclear Operations Duty Officer the annual rotating on-call schedule for those individuals listed in Paragraph 6.1. The weekly on-call schedule will be posted in the office of the

Director - Generation Construction; the office of the Vice President, Nuclear Operations and in the Corporate Emergency Operations Center. The formats are given in CONI 1.02.

6.2.2 The weekly on-call schedule may be varied according to individuals' circumstances providing the individual does the following:

6.2.2.1 Notifies his replacement.

6.2.2.2 Notifies his NUSCO Nuclear Operations Duty Officer.

6.2.2.3 Initials the weekly on-call schedule posted at the Vice President - Nuclear Operations office, to signify that the notifications have been accomplished.

6.3 Normal Hours

6.3.1 Those individuals as listed in Subsection 6.1.1 can normally be reached on the listed telephone extensions.

6.3.2 Those individuals as listed in Subsection 6.1.1 not at their extensions can be reached by radiopager.

6.4 Off Normal Hours

6.4.1 During off normal hours, individuals on-call can be reached either by radiopager or at their home telephone numbers.

6.5 Reporting Time Allowance

6.5.1 All on-call personnel as listed in Paragraph 6.1.1 will report immediately to the Corporate Headquarters EOC on notification of an ALPHA, BRAVO, CHARLIE-TWO or CHARLIE-ONE incident, but in no event later than 75 minutes after being notified of the incident.

6.6 Required Reading

6.6.1 All designated Corporate Managers of Resources shall read and understand References 3.1 and 3.2. This information shall enable them to better perform their responsibilities and give them added insight as to the overall emergency operations organization.

6.7 Specific Duties

6.7.1 Immediately upon arrival at the Corporate EOC, the on-call Manager shall establish communication with his work center and the Manager of On-site Resources.

6.7.2 Upon request from the Manager of On-site Resources or any Corporate EOC Manager, arrange for the acquisition of material, manpower, and construction equipment, utilizing the services of the NUSCO Purchasing Department and Stone & Webster Engineering Corporation as applicable.

6.7.3 Utilize the NUSCO Purchasing Department to provide temporary housing and food as required at the site and the Corporate EOC.

6.7.4 Utilize the NUSCO Transportation Department as required to assure prompt delivery of equipment, supplies, and manpower to the site of the emergency.

6.7.5 Obtain through the NUSCO Purchasing Department consulting services as requested by the various Managers.

6.7.6 As necessary, obtain NU legal, insurance, and financial services.

6.7.7 Provide general office support for typing, reproduction, and similar services.

6.7.8 Arrange for manning of the Nuclear Records Center.

6.7.9 Advise the Corporate Director of Emergency Operation of requests for assistance and of responses to such requests.

6.7.10 Actual acquisition of resources shall be the responsibility of the Resources Operations office (W-11) once it is manned.

6.8 Collateral Duties

6.8.1 Upon arrival at the Corporate EOC and in the absence of specific requests for assistance, the Manager shall immediately alert the following personnel in the order stated:

6.8.1.1 At least one additional Corporate Manager of Resource to man the Resources Operations' office. (If reporting time permits, this call should be completed prior to reporting to the EOC.)

6.8.1.2 NUSCO Purchasing Department.

6.8.1.3 Stone & Webster Engineering Corporation.

6.8.1.4 NUSCO Site Construction personnel.

6.8.1.5 Nuclear Records Center personnel.

6.8.1.6 Departmental secretaries and clerks.

6.8.1.7 All other Corporate Managers of Resources.

6.8.2 The Corporate Manager of Resources shall ensure that a rotating schedule is established so that the Corporate EOC and the Work Center are manned for the duration of the emergency.

6.8.3 Collateral duties will be assumed by the Resources Work Center office once it is manned and communications are established with the Corporate EOC.

6.9 Distribution

6.9.1 It will be the responsibility of the lead Corporate Manager of Resources to ensure that copies of NEO 2.04 and CONI Section 1.0 procedures are distributed to those personnel listed in Paragraph 6.1.

7.0 FIGURES

Not applicable.

8.0 ATTACHMENTS

8.1 Purchasing and Materials Management Group, Emergency Service Call.

8.2 NUSCO Security Department On-Call Schedule.

8.3 Transportation Department Call List.

8.4 Legal Department Call List.

8.5 Insurance Department Call List.

8.6 Financial Support List.

8.7 Nuclear Records Center Support List.

8.8 Stone & Webster Support Agreement.

8.9 Stone & Webster Support List.

8.10 CL&P Construction Support List.

ATTACHMENT 8.1

PURCHASING AND MATERIALS MANAGEMENT GROUP

EMERGENCY SERVICE CALL LIST

Name	Office Extension	Home Address	Home Telephone
R. O. Smith Vice President Purchasing and Materials Management			
Materials & Inventory Control			
J. C. Kiefer Director - Materials & Inventory Control			
R. H. Reed System Superintendent - Stores			
P. J. Gillen Field Supervisor - Stores Central Regional Stores Group (including Berlin Central Warehouse			
L. B. LeBrun Field Supervisor - Stores Western Regional Stores Group (including Waterbury Central Warehouse,			
H. W. Wright Field Supervisor - Stores Northern Regional Stores Group			
N. C. Guptil Field Supervisor - Stores Eastern Regional Stores Group			
L. B. LeBrun - Temporary Field Supervisor - Stores Southern Region Stores Group			

Name	Office Extension	Home Address	Home Telephone
R. Pixley Field Supervisor - Stores WMECO Stores Group			
L. E. Muller Field Supervisor - Stores Electric Production Stores Group			
C. Rose Supervisor - Storeroom Construction Stores (3333 Berlin Turnpike)			
J. Begley Supervisor Warehouse Berlin Central Warehouse			
W. F. Sterling, Jr. Asst. Supervisor - Warehouse Berlin Central Warehouse			
R. Klezun Materials Control Supervisor			
M. A. Gaffey Supervising Agent Material Salvage & Disposal			
J. A. Ingala Assistant Material Salvage & Disposal Agent			
Fossil Fuel Purchasing and Traffi			
W. G. McCauley Director - Fuel Purchasing & Supply			
E. D. Roland Fuel Assistant			
A. N. Dall, III Fuel Assistant			
D. S. Carlson Traffic Manager			

Name	Office Extension	Home Address	Home Telephone
Administration & Nuclear Fuel Purchasing			
B. W. Erk, III Manager - Administration & Nuclear Fuel Puchasing			
R. B. Glasson Office Services Supervisor - Purchasing			
Purchases - Centralized Supplies & Information Systems & Services			
R. P. McCormack Manager - Purchases			
M. H. Bell Senior Buyer			
E. O. Cleary Senior Buyer			
D. J. Knapp Senior Buyer			
A. H. Memmott Senior Buyer			
R. O. Rugar Senior Buyer			
M. F. Kozik Buyer			
Purchases - Civil & Mechanical			
E. W. Darling Manager - Purchases			
A. H. Rastallis Purchasing Agent			
J. E. Kmietek Senior Buyer			
G. Plourde Senior Buyer			

Name	Office Extension	Home Address	Home Telephone
T. G. Swanson Senior Buyer			
R. K. Alldredge Buyer			
N. Sweeney Buyer			
Michael E. Puig Assistant Buyer			
A. Tabshey Assistant Buyer			
T. Tubbard Assistant Buyer			

Purchases - Electrical & General Services

Name	Office Extension	Home Address	Home Telephone
F. R. Dieterle Manager - Purchases			
G. E. Thomson Purchasing Agent			
L. H. Olson Senior Buyer			
R. T. Ramm Purchasing Assistant			
R. Osak Assistant Buyer			
N. A. Post Assistant Buyer			
G. M. Ritchey Assistant Buyer			

ATTACHMENT 8.2

NUSCO SECURITY DEPARTMENT

ON-CALL SCHEDULE

10/07/81 - 01/20/82

		Home Phone	Page Number
10/07/81 - 10/14/81	Regina L. Mozdziesz		
10/14/81 - 10/21/81	James M. DeFilippo		
10/21/81 - 10/28/81	John J. Magee		
10/28/81 - 11/04/81	Austin T. Ford		
11/04/81 - 11/11/81	Michael J. Griffin		
11/11/81 - 11/18/81	Regina L. Mozdziesz		
11/18/81 - 11/25/81	James M. DeFilippo		
11/25/81 - 12/02/81	John J. Magee		
12/02/81 - 12/09/81	Austin T. Ford		
12/09/81 - 12/16/81	Michael J. Griffin		
12/16/81 - 12/23/81	Regina L. Mozdziesz		
12/23/81 - 12/30/81	James M. DeFilippo		
12/30/81 - 01/06/82	John J. Magee		
01/06/82 - 01/13/82	Austin T. Ford		
01/13/82 - 01/20/82	Michael J. Griffin		

NOTE: Duty week is from 0800 Wednesday to 0800 Wednesday the following week. All home phone numbers are Area Code 203. Refer to Special Instructions for paging phone numbers.

SPECIAL INSTRUCTIONS:

The Security on-call persons will be using pagers that have voice capability and the following steps will insure proper utilization:

1. Dial the watts number as given from any Connecticut line.

2. After dialing, you will hear ringing followed by a beep tone signal. You then have 10 seconds to give your message "call Brush Hill", give the message twice speaking clearly and slowly. A fast busy signal indicates the end of that period. The message will go out live unless the channel is busy. If the channel is busy, the message will be stored and will automatically be transmitted in a short time.

   The watts number is not to be given out to callers seeking the on-call Security person - get the message and the on-call Security person will call Brush Hill as they have done in the past.

ATTACHMENT 8.3

TRANSPORTATION DEPARTMENT CALL LIST

Listed below are names and telephone numbers of the NU Transportation personnel you requested:

Joseph D. Joy
System Supt. Transportation

Michael F. Kozik
Supv. of Transportation & Garage Services

Phone

Chester V. Gianninoto
Area Supv. Transportation

Phone

Paul C. Robotham
Area Supv. Transportation

Phone

If any additional information is requested, please contact me.

ATTACHMENT 8.4

LEGAL DEPARTMENT CALL LIST

	Office Ext.	Home
W. F. Torrance, Jr.		
R. W. Bishop		

ATTACHMENT 8.5

INSURANCE DEPARTMENT SUPPORT LIST

	Office Ext.	Home
R. M. Seger		
R. R. Ifland		

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

TO N. C. Mikolowsky

July 7, 1981

NPE-81-1780

B. L. Carlson (sd)

FROM L. C. Albee

SUBJECT *NUSCO Emergency Operations*

Confirming our telephone conversation on July 2, 1981, it is conceivable that emergency operations at one of NU's nuclear units may require cash expenditures during off-normal hours.

It is my understanding that if such a need arises, Mr. E. R. Foster or his designee, acting as Manager of Resources under the Emergency Operations Plan, should contact Mr. R. R. Perreault, or in his absence, yourself, for assistance.

LCA:kb

cc: R. R. Perreault

R. M. Davenport

July 2, 1981

NPE-81-1778

L. C. Albee *fa 7/2*

NUSCO Emergency Operations

Confirming our telephone conversation on July 1, 1981, it is conceivable that emergency operations at one of NU's nuclear units may require access to documents in the Nuclear Records Center.

It is my understanding that you maintain an "on-call" system in order to provide such coverage for off-normal working hours, that you will provide a copy of the current and future lists, and that you will advise on-call personnel to respond to requests for assistance from E. R. Foster or his designee, acting as Manager of Resources under the Emergency Operations Plan.

Please advise if further information is required.

LCA:kb

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

TO Distribution *

July 28, 1980

NPE-80-1125

FROM H. R. Nims

SUBJECT Emergency Operations Plan - Standby Contract

Attached is a copy of Purchase Order No. 001271 formalizing arrangements with Stone & Webster Engineering Corporation to provide support of emergency operations at Connecticut Yankee, Millstone 1 or Millstone 2 upon your request. I suggest you keep this document, which includes the Stone & Webster Job Order numbers to be used in the event we find it necessary to utilize this agreement, with your copy of the NUSCO Emergency Operations Procedures.

HRN/cle

Attachment

* E. R. Foster
L. C. Albee
L. A. Chatfield
A. K. Gulesserian
B. L. Carlson

INVOICE DATE	INVOICE NO	DATE PASSED	BY	C-D	INVOICE TOTAL

OFFICE COPY
PURCHASE ORDER
NUMBER
001271

INVOICE TO: NORTHEAST UTILITIES SERVICE CO.

MAIL ALL CORRESPONDENCE AND INVOICES TO PURCHASING DEPT., P. O. BOX 270, HARTFORD, CONN. 06101

DATE JULY 17, 1980

THIS PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, PACKING SHEETS AND BILLS OF LADING.

STONE AND WEBSTER ENGINEERING CORP
MARKETING DEPT
PO BOX 2325
BOSTON MASS 02107

FURNISH AND SHIP TO:
c/o NORTHEAST UTILITIES SERVICE CO
(945

F.O.B.	SHIP VIA	REQ NO	REFER ALL CORRESPONDENCE TO MANAGER PURCHASES ATTN
		644950	E. W. DARLING

CONNECTICUT SALES TAX NOT APPLICABLE, LABOR

CC: D. BLUMENTHAL, H.R. NIMS, E.W. DARLING/ QA CAT. I

QUANTITY	DESCRIPTION	STOCK CODE	PRICE & DISCOUNT
	PROVIDE A STANDBY CONTRACT WITH THE STONE & WEBSTER ENGINEERING CORPORATION INCLUDING ESSENTIAL TERMS AND CONDITIONS TO ASSURE THE IMMEDIATE AVAILABILITY OF THE MILLSTONE UNIT 3 ON-SITE ORGANIZATION TO SUPPORT EMERGENCY OPERATIONS AT THE CONNECTICUT YANKEE, MILLSTONE UNIT 1 OR MILLSTONE UNIT 2 NUCLEAR PLANTS. CONTRACT SHALL REQUIRE STONE & WEBSTER TO RESPOND TO REQUESTS FOR ASSISTANCE FROM H. R. NIMS OR HIS ALTERNATES FUNCTIONING AS MANAGER OF RESOURCES WITHIN THE NU EMERGENCY OPERATIONS PLAN. THE FOLLOWING APPLIES FOR NUCLEAR SAFETY RELATED (QA CAT I) JOBS: WORK SHALL BE PERFORMED UNDER A NUSCO APPROVED QA PROGRAM • SERVICES TO BE PERFORMED IN ACCORDANCE WITH	DIR001	

CORRESPONDENCE

DATE	TO	CONCERNING	BY

P.O. ACK. REC'D ______ SHIPPING DATE ______

INQUIRY SENT	REPLY REC'D	SHIPPING SCHEDULE	SENT STAMP

PS 881 REV 8-78

INVOICE DATE	INVOICE NO	DATE PASSED	BY	C.D.	INVOICE TOTAL

OFFICE COPY
PURCHASE ORDER
NUMBER
001271

INVOICE TO: NORTHEAST UTILITIES SERVICE CO.

MAIL ALL CORRESPONDENCE AND INVOICES TO PURCHASING DEPT., P. O. BOX 270, HARTFORD, CONN. 06101

DATE. JULY 17, 1980

THIS PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, PACKING SHEETS, AND BILLS OF LADING.

STONE AND WEBSTER ENGINEERING CORP

PAGE 02

FURNISH AND SHIP TO:
c/o NORTHEAST UTILITIES SERVICE CO.

(945)

F.O.B.	SHIP VIA	REQ. NO	REFER ALL CORRESPONDENCE TO MANAGER - PURCHASES ATTN
		644950	E. W. DARLING

CONNECTICUT SALES TAX NOT APPLICABLE, LABOR

CC: D. BLUMENTHAL, H.R. NIMS, E.W. DARLING/ QA CAT. I

QUANTITY	DESCRIPTION	STOCK CODE	PRICE & DISCOUNT
	THE TERMS AND CONDITIONS CONTAINED IN THE CONTINUING SERVICE AGREEMENT DATED OCTOBER 15, 1976 AS AMENDED YOUR JO 13730.03 FOR CONN. YANKEE, JO 13730.01 FOR MILLSTONE (MP1) AND 13730.02 FOR MILLSTONE (MP3) CONFIRMING ORDER TO G. KENT ON 2/15/80 - DO NOT DUPLICATE		

CORRESPONDENCE

DATE	TO	CONCERNING	BY

P.O.ACK. REC'D. ______ SHIPPING DATE ______

INQUIRY SENT	REPLY REC'D	SHIPPING SCHEDULE	SENT STKPR

ATTACHMENT 8.9

STONE & WEBSTER SUPPORT LIST

	Office Ext.	Home
P. A. Wild		
L. D. Nace		
W. MacKay		
J. Kappas		

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

July 27, 1981

RECEIVED
JUL 30 1981
G. E. & C. DIV.

TO R. Foster, Millstone

FROM I. A. Wilson IAWilson/PO

SUBJECT Responsibility - System Construction

B. Carlson, Nuclear Eng. & Oper., contacted me on July 22, 1981 and requested I provide you with the names of System Construction Superintendents who have responsibility for NU physical resources. They could respond to emergencies at power plants, substations adjacent to power plants and transmission lines emanating from power plants. Following is a list of the System Construction Superintendents and their responsibilities:

John H. Watson - Responsible for NU Transmission Line Construction.

home phone -

Allen P. Nystrup - Responsible for NU Substation Construction.

home phone

G. James Lee - Responsible for NU General Construction relating to transmission lines and substations.

home phone -

Should any of the above superintendents not be available contact:

Irving A. Wilson - System Superintendent-Construction

home phone

IAW/pab

cc: G. J. Lee
H. R. Nims
A. P. Nystrup
J. H. Watson

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-7.01

MANAGER OF EXTERNAL COMMUNICATIONS LOGISTICS

APPROVED	Lead Manager, External Communications
REVISION	2
DATE	April 1982
CONCURRENCE	Corporate Nuclear Emergency Plan Coordinator

MANAGER OF EXTERNAL COMMUNICATIONS RESPONSIBILITIES

1.0 PURPOSE

This procedure establishes and defines the activities and responsibilities of the Corporate Manager of External Communications in responding to NU nuclear plant incidents classified as CHARLIE-ONE, CHARLIE-TWO, BRAVO or ALPHA as defined in procedure CONI-1.3.

2.0 APPLICABILITY

This procedure applies to the persons assigned as on-call Corporate Managers External Communications, as well as other support personnel.

3.0 REFERENCES

3.1 NUSCO Nuclear Engineering and Operations Procedure NEO 2.04, Nuclear Incidents Response Plan.

3.2 NU Corporate Organization for Nuclear Incidents, Procedure Manual.

3.3 Emergency Plan: Haddam Neck Plant.

3.4 Emergency Plan: Millstone Nuclear Power Station.

4.0 DEFINITIONS

4.1 Classification (of incidents)

ALPHA

BRAVO

CHARLIE-ONE

CHARLIE-TWO

5.0 RESPONSIBILITIES

5.1 While on-call, the designated Corporate Manager, External Communications remains available 24-hours a day to respond to designated incidents within the required time frame of 75 minutes to activate the External Communications function at the Corporate EOC.

5.2 Responds to Radiopager messages announcing activation of the Corporate EOC.

5.3 Establishes and maintains communications as required, between the Corporate EOC and NNECO/CYAPCO, media centers and local, state and Federal offices following activation of corporate EOC.

5.4 Provides an annual on-call schedule to the Lead Nuclear Operations Duty Officer (Lead Corporate Manager of External Communications).

5.5 Maintains Procedure attachments up-to-date (Lead Corporate Manager of External Communications).

6.0 INSTRUCTIONS

6.1 While on-call:

6.1.1 Remain within hearing distance of radiopager.

6.1.2 Remain within range of radiopager transmitter.

6.1.3 Remain within a proximity of the Corporate EOC that permits reporting for duty within 75 minutes of being notified of the incident.

6.2 Respond to radiopager message announcing activation of the Corporate EOC (classification CHARLIE-ONE, CHARLIE-TWO, BRAVO or ALPHA by:

6.2.1 Call the Corporate EOC telephone call-back system and indicate estimated time of arrival at the EOC.

6.2.2 Report to the Director of Corporate Emergency Operations within 75 minutes.

6.3 As soon as possible, establish telephone contact with the Station EOF, the Media Center, and other agencies, as requested. Assist in other communication efforts, as requested.

6.3.1 Work with the Director of Corporate Emergency Operations and Media Center personnel in preparing press releases or other announcements and arranging interviews.

6.3.2 Call in support personnel and assign responsibilities as necessary.

6.3.3 Relay updated information periodically to the other personnel in the corporate EOC.

6.3.4 Assist in maintaining Status Boards and logs.

6.3.5 Assist Corporate Managers with coordination and transmission of messages to appropriate parties.

6.3.6 Assign support personnel to staff the communications work center for utilization of hot-line telephones, telecopies, NOTEPAD terminal, typewriters, etc.

6.3.7 Establish liaison with the Station External Communications Manager via the hot-line telephone as a primary verbal data link.

6.3.8 Assign an on-call support person to assist at the State Armory in Hartford to provide technical communications with the State of Connecticut organization.

6.4 Provide annual on-call schedules.

6.5 Periodically review and update Procedure attachments.

7.0 ATTACHMENTS

7.1 Replacement MEC Form.

7.2 Support Personnel for call-in.

7.3 On-call Staff telephone and address.

7.4 External Communications Shift Schedule.

7.5 MEC Checklist.

7.6 Communications Network, MEC.

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
THE HARTFORD ELECTRIC LIGHT COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

MEMO

Date ________________

TO: NUSCO NUCLEAR OPERATIONS DUTY OFFICER

FROM: R. T. Laudenat

SUBJECT: Corporate Manager of External Communications

The duty Corporate Manager of EXTERNAL COMMUNICATIONS

For ________________ to ________________ has been

Changed from ________________ as originally scheduled

to ________________.

Signed: "Replacement: Duty Corporate MEC ________________

"Replacement" Duty MEC, or the previously scheduled MEC, must hand-carry this form to the Nuclear Operations Duty Officer, or by some other means verify that the Duty Officer is aware of the change.

Please hand-carry a copy of this completed form to R. T. Laudenat (Room W122).

RTL/dbg

CORPORATE MANAGER OF EXTERNAL COMMUNICATIONS

Support Personnel

General Support

Ms. S. M. Oates

Ms. A. L. Kochanowski

Ms. M. J. Bolles

Typing, Secretarial

Ms. P. A. Gravel

Ms. J. F. Powers

ON-CALL CORPORATE EMERGENCY ORGANIZATION

On-Call Staff Telephones and Addresses

EOC Title: Corporate Manager of External Communications

Year: 1981

Name	Home Address	Home Telephone	Business Extension
R. T. [illegible]denat			
R. Osella			
J. R. Himmelwright			
R. M. Kacich			
R. O. Bagley			

Attachment 7.4

EXTERNAL COMMUNICATIONS
NUCLEAR INCIDENT SHIFT SCHEDULE

	Shift 1	Shift 2	Shift 3	Shift 4	Shift 5
Time Period	______	______	______	______	______
MEC	RTL	JRH	RO	ROB	RMK
Asst. MEC	JRH	RO	ROB	RMK	RTL
Lic. Engr.*	______	______	______	______	______
Support Staff	ALK	MJB	SMO	ALK	MJB
Secretarial	PAG	JFP	PAG	JFP	PAG

Shift Rotation starts on shift of On-Call MEC

Initial shift is 6 hours

Subsequent shifts are 4 hours each

		Home Telephone
*Licensing Engineers called in	P. A. Blasioli Unit 1 (BWR)	
	M. P. Cass Unit 2 (PWR)	
	P. G. Shanley CY (PWR)	

Attachment 7.5

MEC Checklist

A. Upon Activation of radiopager:

1. Call in
2. Take event message
3. Call backup MEC
4. Call MEC to support NU Staff at Armory (either R. T. Laudenat or R. Osella)
5. Report to EOC in 75 minutes

B. Upon arrival at EOC:

1. Set up MEC Table Area and Open Log
2. Install phones
3. Do communications system check

    a. Hot Line to Station EOF
    b. Hot Line to Media Center
    c. Outside Line to EOF extension
    d. Company Tie Line to EOF extension

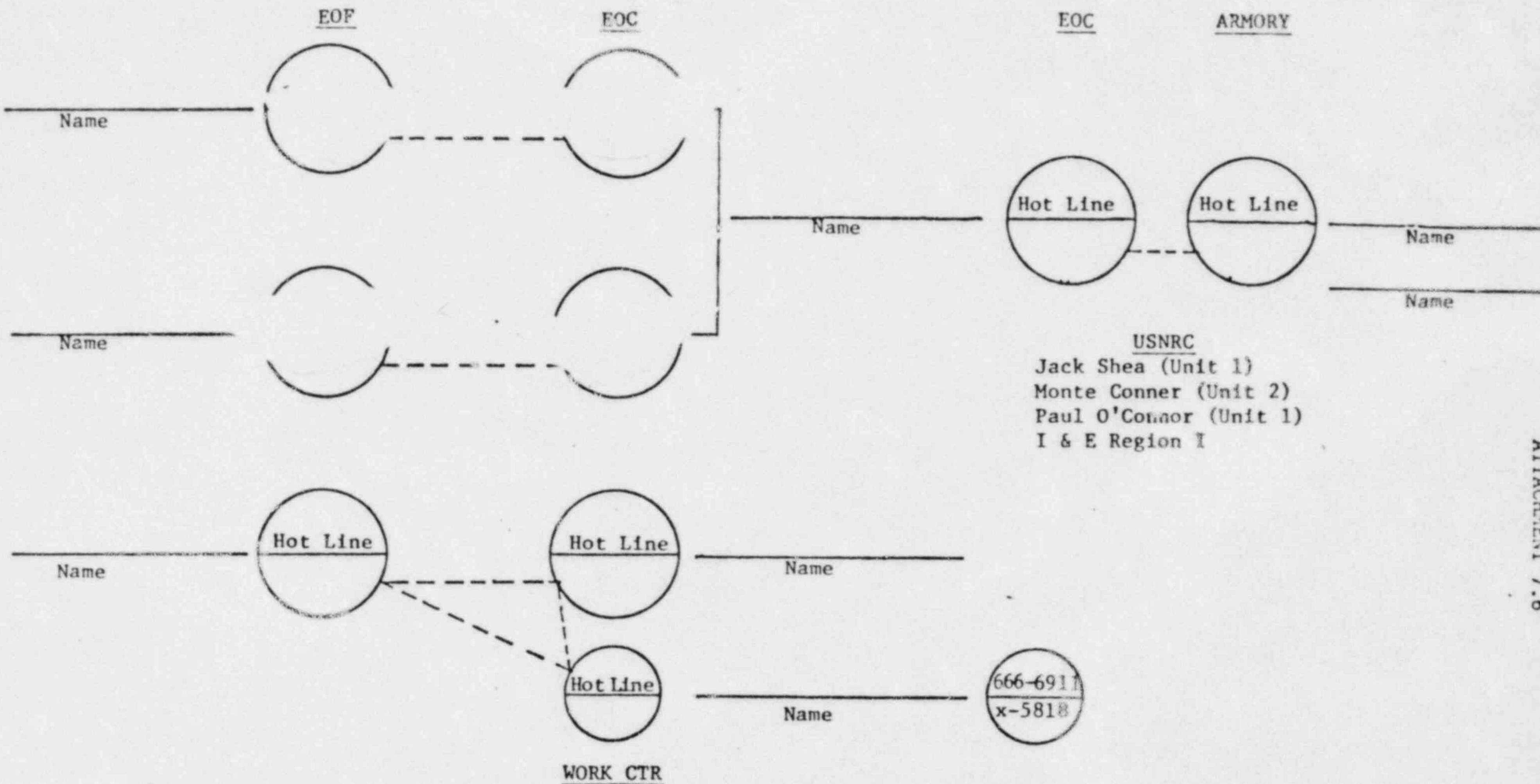
4. When backup MEC arrives, set up Work Area W123
5. Do communications check to Work Area Hot Line and extension
6. Call in Unit Licensing Engineer and Update
7. Call NRC Project Manager
8. Send initial notepad message to INPO
9. Call in support staff if not business hours
10. Establish shift schedule

C. Routine Duties during Incident:

1. Update Media Center hourly or upon significant event
2. Update NRC Project Manager hourly
3. Report to INPO hourly or upon significant event
4. Update Unit Licensing Engineer on potential technical specification violations
5. Review news release for DEO
6. Call in next shift

COMMUNICATIONS NETWORK

Manager, External Communications



ATTACHMENT 7.6

Name	Home	Work	Name	Home	Work
R. T. Laundenat			S. M. Oates		
J. R. Himmelwright			A. L. Kochanowski		
R. Osella			M. J. Bolles		
R. O. Bagley			P. A. Gravel		
R. M. Kacich			J. F. Powers		
Paul Blasioli (Unit 1)			Telecopier		
Mike Cass (Unit 2)					

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI)

PROCEDURE MANUAL

CONI-8.01

ON-CALL PUBLIC INFORMATION STAFF LOGISTICS

APPROVED	Larry R. Dietz Lead Manager Public Information
REVISION	1
DATE	March 1982
CONCURRENCE	RC Rodgers Corporate Nuclear Emergency Plan Coordinator

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI)

PROCEDURE MANUAL

ON-CALL PUBLIC INFORMATION STAFF LOGISTICS

1.0 PURPOSE

This procedure defines the responsibilities and duties of the NUSCO Managers of Public Information as they relate to the coordination and acquisition of personnel and all public informational services needed during emergency operations at a nuclear power generation station.

2.0 APPLICABILITY

This procedure applies to the on-call Managers of Public Information (Public Affairs Duty Officers), during the period of emergency operations, and the supporting staff of the Nuclear Information Communications Team.

3.0 REFERENCES

3.1 Emergency Plan--Haddam Neck Procedures 5.2.2.h and 9.2.9.

3.2 Emergency Plan--Millstone Nuclear Power Station Procedures 5.2.2.h and 9.2.9.

3.3 Procedure CONI 1.02: Corporate Organization for Nuclear Incidence

CONI 1.03: Alerting and Notification Using the Radiopager System

4.0 DEFINITIONS

NOTE: There are two levels of radiopager duty and three Public Affairs Duty Officer (PADO) functions. At all times, one PADO will have Level One Radiopager duty, and two PADOs will have Level Two Radiopager duty.

4.1 Level One Radiopager Holders--A group of persons (see Reference 3.3) who are paged in the event of GOLF, FOX AND ECHO incidents in addition to DELTA, CHARLIE-ONE, CHARLIE-TWO, BRAVO, and ALPHA incidents.

4.2 Level Two Radiopager Holders--A group of persons (see Reference 3.3) who are paged in the event of DELTA (corporate and station emergency organizations are NOT activated), CHARLIE-ONE, CHARLIE-TWO, BRAVO, and ALPHA incidents (corporate and station emergency organizations are activated).

4.3 Nuclear Plant Public Affairs Duty Officer--The on-call System Communications personnel responsible for assuming position of Manager of Public Information/Site-EOF.

4.4 Corporate-EOC Public Affairs Duty Officer--The on-call System Communications personnel responsible for assuming position of Manager of Public Information/Corporate-EOC.

4.5 Media Center Public Affairs Duty Officer--The on-call System Communications personnel responsible for assuming the position of Manager of Public Information/Media Center.

4.6 Site-EOF--Emergency Operations Facility at Millstone Point or Emergency Operations Facility at Connecticut Yankee.

4.7 Corporate EOC--Emergency Operations Center at Corporate Headquarters, Berlin, Connecticut.

4.8 Media Center--Primary media contact point. Located at Hartford Armory, 360 Broad Street, Hartford, Connecticut.

5.0 RESPONSIBILITIES

5.1 Responsible for gathering information, translating it with a concise and easily understood form, and disseminating it to appropriate government officials, the media and general public.

6.0 INSTRUCTIONS

6.1 Level One Public Affairs Duty Officer (PADO-1) shall hold level one radiopager.

6.1.1 PADO-1 shall remain within hearing range of radiopager.

6.1.2 PADO-1: Respond to radiopager message announcing GOLF, FOX, ECHO, DELTA incident by:

1. Calling the station telephone answering system to receive detailed information on the incident (leave name, time and title at end of message).
2. For all but ECHO security-related incidents, call the Governor's office.
3. Making other notification calls if required.
4. Providing information to NU management, if requested.

6.1.3 PADO-1: Respond to radiopager message announcing a CHARLIE-ONE, CHARLIE-TWO, BRAVO or ALPHA incident by:

1. Calling the station telephone answering system to receive detailed information on the incident (leave name, time, title at the end of message).

2. Calling the Governor's office and the Corporate-EOC to confirm that they have received notification of incident.

3. Proceeding to appropriate location (either nuclear site, corporate headquarters or Hartford Armory; see 6.3, 6.4, 6 5) and assuming position.

4. Completing incident report.

5. Making other appropriate notification calls.

6. Mobilizing additional staff as needed.

6.2 Level Two Public Affairs Duty Officer (PADO-2) shall hold level two radiopager.

6.2.1 PADO-2 shall remain within hearing range of radiopager.

6.2.2 PADO-2: Respond to radiopager message announcing a CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA incident by:

1. Calling the station telephone answering system to receive detailed information on the incident (leave name, time, title at end of message).

2. Proceeding to appropriate location (either nuclear site, corporate headquarters or Hartford Armory; see 6.3, 6.4, 6.5) and assuming position.

6.3 Nuclear Plant Public Affairs Duty Officer (NP-PADO)--In the event of a class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency, the NP-PADO shall assume the position of Manager--Public Information/Site-EOF.

6.3.1 NP-PADO shall remain within hearing range of radiopager.

6.3.2 NP-PADO shall remain within a distance of BOTH nuclear sites such that he can report to either site within 60 minutes of hearing the initial radiopager notification of class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency.

6.3.3 As Manager--Public Information/Site-EOF, he is responsible for supplying information to Manager--Public Information/Corporate-EOC.

6.4 Corporate-EOC Public Affairs Duty Officer (C-PADO)--In the event of a class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency, the C-PADO shall assume the position of Manager--Public Information/Corporate-EOC.

6.4.1 C-PADO shall remain within hearing range of radiopager.

6.4.2 C-PADO shall remain within a distance of Corporate-EOC such that he can report to Corporate-EOC within 75 minutes of hearing the initial radiopager notification of class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency.

6.4.3 As Manager--Public Information/Corporate-EOC, he serves as the primary liaison and information link between Manager--Public Information/Site-EOF and Manager--Public Information/Media Center.

6.4.4 Manager--Public Information/Corporate-EOC is responsible for preparing news releases for review and approval by the Director--Corporate-EOC prior to public dissemination by the Media Center.

6.5 Media Center Public Affairs Duty Officer (MC-PADO)--In the event of a class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency, the MC-PADO shall assume the position of Manager--Public Information/Media Center.

6.5.1 MC-PADO shall remain within hearing range of radiopager.

6.5.2 MC-PADO shall remain within a distance of the Hartford Armory Media Center such that he can report to the Hartford Armory Media Center within 60 minutes of hearing the initial radiopager notification of class CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA emergency.

6.5.3 As Manager--Public Information/Media Center, he is responsible for NU's presence at the Media Center and serves as informational liaison between the Corporate-EOC and the official NU spokesperson.

7.0 FIGURES

None.

8.0 ATTACHMENTS

None.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-9.01

NOTIFICATION OF AND COMMUNICATIONS WITH UPPER MANAGEMENT
AND THE ON-CALL ORGANIZATION

APPROVED [signature]
Lead Nuclear Operations
Duty Officer

REVISION 2

DATE February, 1982

CONCURRENCE R C Rodgers
Corporate Nuclear Emergency
Plan Coordinator

NOTIFICATION AND COMMUNICATIONS PROCEDURE

1.0 PURPOSE

This procedure has been developed to provide a positive channel of communication to Northeast Utilities Upper Management and the Corporate Emergency Organization for information relating to events at Northeast Utilities (NU) nuclear generating stations. The primary means of communication will be the radiopager notification system from the stations with a backup means provided by telephone notification of senior NU management by the NUSCO Nuclear Operations Duty Officer.

2.0 APPLICABILITY

This procedure applies to all persons assigned as on-call NUSCO Nuclear Operating Duty Officers and shall be applied to each incident, at NU nuclear generating stations, which requires notification of senior NU management, Public Officials and/or the news media as defined in Millstone Administrative Control Procedure ACP 1.07, Connecticut Yankee Emergency Plan Procedure EPP1.5-2 and in NU System Directive on Notification and Communications Initiatives for Significant Events at NU Nuclear facilities dated May 28, 1981.

3.0 REFERENCES

3.1 Connecticut Yankee, Emergency Plan Procedure EPP 1.5-2.

3.2 Millstone, Administrative Control Procedure ACP 1.07 Communications and Outside Assistance Procedure.

3.3 Procedure CONI 1.02: Corporate Organization for Nuclear Incidents.

3.4 Procedure CONI 1.03: Alerting and Notification Using the Radiopager System.

4.0 DEFINITIONS

4.1 Incident Class - a phonetic designation that classifies nuclear station incidents by event description, notification actions required, and protective actions required (see reference 3.4, Figure 7.1, "State of Connecticut Nuclear Incident Classification Scheme").

4.2 Level One Radiopager Holders - a group of persons (see reference 3.4, Attachment 8.1, "Corporate Level One Radiopager List") who are paged in the event of GOLF, FOX, and ECHO incidents in addition to DELTA, CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA incidents.

4.3 Level Two Radiopager Holders - a group of persons (see reference 3.4, Attachment 8.2, "Corporate Level Two Radiopager List") who are paged in the event of DELTA (corporate and station emergency organizations are not activated) CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA incidents (corporate/station emergency organizations are activated).

4.4 Senior NU management - the group of persons listed on the Corporate Level One Radiopager List.

5.0 RESPONSIBILITIES

5.1 Vice President Nuclear Operations

5.1.1 Responsible for promptly forwarding to the Senior Vice President, Nuclear Engineering and Operations Group, information which he may receive relative to significant events at NU nuclear operating stations which occur during normal working hours.

5.1.2 Responsible for determining nuclear generating station status each normal workday morning and notifying senior NU management via a daily report.

5.2 NUSCO Nuclear Operations Duty Officer

5.2.1 Responsible for being familiar with the operation of the radiopager system and the State of Connecticut Incident Classification Scheme.

5.2.2 Responsible for responding to questions from senior NU management to provide, as necessary, clarifying details on the incident in between radiopager notifications.

5.2.3 Responsible for providing notification by telephone to the Corporate On-Call Organization (for CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA events only) senior NU management on nuclear station incidents in the event the radiopager system is inoperative.

5.2.4 Responsible for preparing, verifying and posting the weekly on-call schedule in accordance with Reference 3.3.

6.0 INSTRUCTIONS

NUSCO Nuclear Operations Duty Officer

6.1 Basic duties:

6.1.1 Remain within hearing distance of the radiopager.

6.1.2 Remain within range (see reference 3.4, Figure 7.5, "Radiopagers Approximate Range") of the radiopager transmitter.

6.1.3 Remain within a distance of the corporate EOC that permits reporting to the Berlin complex within 75 minutes of hearing the radiopager initial notification message.

6.1.4 Provide Brush Hill operator with on-call schedule (and daily changes thereof) of NUSCO Nuclear Operations Duty Officer to facilitate use of communications between NU senior management and the NUSCO Nuclear Operations Duty Officer.

6.1.5 During off-normal hours, record the time of all calls attempted and completed during the notification process and file the information for future reference.

6.2 Respond to radiopager messages announcing a GOLF, FOX, ECHO, or DELTA incident by:

6.2.1 Calling the station telephone answering system to receive detailed information on the incident (leave name and time at end of message).

6.2.2 Obtain additional information on each incident by telephone from the station duty officer.

6.2.3 When contacted by the SSSA/STA personnel and informed of the Corporate Level One radiopager holders who have not responded to the radiopager message, immediately contact these personnel and notify them of the incident (applies only to NUSCO Nuclear Operations Duty Officer and above on the Corporate Level One Radiopager List).

NOTE: During normal working hours the only official NUSCO responder to a Level One radiopager message will be the NUSCO Nuclear Operations Duty Officer who will notify senior NU management via a supplement to the daily report which will include the Incident Report Form as an attachment.

6.2.4 If called by senior NU management, provide the additional information obtained in 6.2.2.

6.3 Respond to radiopager message announcing a CHARLIE-ONE, CHARLIE-TWO, BRAVO, or ALPHA incident by:

6.3.1 Performing all duties specified in section 6.2.

6.3.2 Calling the corporate EOC telephone call-back system and leaving their name, time, and estimated time of arrival at the Berlin office.

6.3.3 Attempting to notify at least one more Nuclear Operations Duty Officer to proceed to the Berlin EOC.

6.3.4 Proceeding to the corporate EOC, interrogating the call-back recorder, and notifying all Level Two radiopager holders (who have not responded to the radiopage) of the incident.

6.4 Respond to radiopager testing by:

6.4.1 See reference 3.4, section 6.5, "Testing of Radiopager."

6.5 Perform the following backup notification procedure when the radiopager system is inoperable:

6.5.1 Receive detailed information on each incident when notified by telephone by the station duty officer.

6.5.2 During normal working hours, notify by phone the On-CaLL Organization (if a CHARLIE-ONE, CHARLIE-TWO, BRAVO, ALPHA event) notify senior NU management via a supplement to the daily report which will include the Incident Report Form as an attachment (and proceed to the corporate EOC for incident classifications CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA).

6.5.3 After normal working hours, notify senior NU management (see reference 3.4, Attachment 8.1, "Corporate Level One Radiopager List") and the On-Call Corporate Organization (for CHARLIE-ONE, CHARLIE-TWO, BRAVO and ALPHA events) by telephone (and proceed to the corporate EOC for incident classifications CHARLIE-ONE, CHARLIE-TWO, BRAVO, and ALPHA).

7.0 FIGURES

None.

8.0 ATTACHMENTS

None.

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE MANUAL

CONI-10.01

EMERGENCY AND TELEPHONE COMMUNICATIONS TEST PROCEDURE

APPROVED ______________________
Supv. Radiological Protection Section

REVISION 1

DATE February, 1982

CONCURRENCE R C Rodgers
Corporate Nuclear Emergency
Plan Coordinator

CORPORATE ORGANIZATION FOR NUCLEAR INCIDENTS (CONI) PROCEDURE

EMERGENCY AND TELEPHONE COMMUNICATIONS TEST PROCEDURE

1.0 PURPOSE

This procedure provides instructions for the monthly test of the Emergency Telephone Communications and quarterly test of the offsite telephone numbers used in the implementation of the Emergency Plan.

2.0 APPLICABILITY

This procedure applies to the NUSCO Emergency Telephone Communications System.

3.0 REFERENCES

3.1 Millstone EPIP 4602 - Communications Telephone Test.

3.2 Connecticut Yankee EPP 1.5-34 Emergency Telephone Testing.

4.0 DEFINITIONS

4.1 ESS - Environmental Services Section

4.2 CEOC - Corporate Emergency Operations Center

4.3 SEOC - State Emergency Operations Center

4.4 EOF - Station Emergency Operations Facility

4.5 TSC - Technical Support Center

4.6 CMPI - Corporate Manager of Public Information

4.7 CMEC - Corporate Manager of External Communication

4.8 CMRCA - Corporate Manager of Radiological Consequence Assessment

4.9 CMTS - Corporate Manager of Technical Support

4.10 CMRES - Corporate Manager of Resources

4.11 DCEO - Director of Corporate Emergency Operations

5.0 RESPONSIBILITIES

5.1 The Manager, Radiological Assessment Branch (RAB) is responsible for coordinating the implementation and maintenance of this procedure to ensure operation of emergency communication systems.

5.2 The Supervisor, Radiological Protection Section (RAB) is responsible for assigning staff to perform the surveillance described in this procedure and for maintaining surveillance records.

6.0 INSTRUCTIONS

6.1 The test should be scheduled for the first Wednesday of each month:

Millstone @ 10 AM
NUSCO @ 11 AM
Haddam Neck @ 2 PM

6.1.1 Notify Hal Clow ext @ Haddam Neck
Notify Craig Conklin ext @ Millstone
Notify Frank Grandone @ State EOC
Notify State OCP Communications Officer @ State Media Center

6.1.2 Notify the secretaries of each work center:

a. Lorraine D'Amico ext.
b. Karen Wallers ext.
c. Karrol Wiater ext.
d. Pam Gravel ext.
e. Joan Mercuri ext.

6.1.3 Obtain the key for the Corporate EOC (N101) and connect all phones (hot-lines and standard phones).

6.1.4 Obtain 4 spare phones from and connect as follows:

a.
b.

6.2 Test from MP & CY Stations (10 AM & 2 PM)

6.2.1 Stand-by in N101 with each secretary in the work centers to answer calls from the station and return the calls from each location:

a.
b.
c.
d.
e.
f.

6.2.2 Record the test results on Form 1.

6.3 Test within NUSCO (11 AM)

6.3.1 From N101 test and receive return calls for the following:

6.3.1.1 BCEC State EOC

6.3.1.2 CMEC State Media Center

6.3.1.3 For each of the outside lines and internal extensions in N101 pick up one and dial another.

6.3.2 From each of the Senior VP offices test and receive return calls for the following:

6.3.2.1 State EOC

6.3.2.2 Corporate EOC (N101)

6.3.3 From the Radiological Assessment Work Center Test and receive return call from:

a. ESS (Middletown)

Note: Call the ESS at the Middletown Station, ext. to tell them you are going to test the hot line phone.

6.3.4 Record the test results on Form 2.

6.4 Report any trouble to the NUSCO operator. After hours call 1-420-3131 to report problems. If you are reporting problems with any of the phones in W-270, notify the Senior Vice President/ Executive Vice President secretaries. If there are significant problems, notify Rick O'Donnell (Ext.

6.5 Return all phones and keys to their original locations.

6.6 Quarterly Test of Offsite Call List

6.6.1 Call each of the telephone numbers indicated on Form 3 and document the results.

6.6.2 All discrepancies shall be corrected including the update of Form 3 and all applicable plans and procedures.

6.6.3 The Supervisor, Radiological Protection Section shall review the quarterly test documentation.

7.0 FIGURES

Not Applicable

8.0 ATTACHMENTS

8.1 a. Form ia Monthly-Emergency Hot Line Test (MP)

8.1 b. Form 1b Monthly-Emergency Hot Line Test (CY)

8.2 Form 2 Monthly Emergency Telephone Test (Corporate EOC)

8.3 Form 3 Quarterly Offsite Call List Test

FORM 1A - MONTHLY EMERGENCY TELEPHONE TEST (MP)

		Test Results OK	Problem
1.	Station → CMPI	____	____
	Return Call from	____	____
2.	Station → CMEC	____	____
	Station → CMEC	____	____
	Return Call from	____	____
	Return Call from	____	____
3.	Station → CMRCA	____	____
	Station → CMRCA	____	____
	Return Call from	____	____
	Return Call from	____	____
4.	Station → CMTS	____	____
	Station → CMTS	____	____
	Return Call from	____	____
	Return Call from	____	____
5.	Station → CMRES	____	____
	Station → CMRES	____	____
	Return Call from	____	____
	Return Call from	____	____
6.	Station → DCEO	____	____
	Station → DCEO	____	____
	Station → DCEO	____	____
	Station → DCEO	____	____
	Return Call from	____	____
	Return Call from	____	____
	Return Call from	____	____
	Return Call from	____	____

FORM 1B - MONTHLY EMERGENCY TELEPHONE TEST (CY)

		Test Results	
		OK	Problem
1.	Station → CMPI		
	Return Call from		
2.	Station → CMEC		
	Station → CMEC		
	Return Call from		
	Return Call from		
3.	Station → CMRCA		
	Station → CMRCA		
	Return Call from		
	Return Call from		
4.	Station → CMTS		
	Station → CMTS		
	Return Call from		
	Return Call from		
5.	Station → CMRES		
	Station → CMRES		
	Return Call from		
	Return Call from		
6.	Station → DCEO		
	Station → DCEO		
	Station → DCEO		
	Station → DCEO		
	Return Call from		
	Return Call from		
	Return Call from		
	Return Call from		

FORM 2 MONTHLY EMERGENCY TELEPHONE TEST
(Corporate EOC-N101)

Date __________ Time __________ By ______________________________

Check phones for voice reception/transmission, indicator light and bell ring.

A. Hotline Telephones

	Test Results OK	Test Results Problem
1. DCEO to State EOC	______	______
Return Call	______	______
2. CMEC to State Media Center	______	______
Return Call	______	______
3. W270 to State EOC	______	______
Return Call	______	______
4. W270 to Corporate EOC	______	______
Return Call	______	______
5. W274 to State EOC	______	______
Return Call	______	______
6. W274 to Corporate EOC	______	______
Return Call	______	______
7. W276 to State EOC	______	______
Return Call	______	______
8. W276 to Corporate EOC	______	______
Return Call	______	______
9. CMRCA to ESS	______	______
Return Call	______	______

B. Internal Extensions and Outside Lines

Test Results OK	Test Results Problem	Test Results OK	Test Results Problem
______	______	______	______
______	______	______	______
______	______	______	______
______	______	______	______
______	______	______	______

FORM 3 QUARTERLY OFFSITE LIST TEST

Organization	Tel. #	Person Contacted	Comments
U.S. NRC (Region I)			
INPO			
U.S. Coast Guard			
State Police:			
Colchester			
Montville			
Westbrook			
State DEP			
State OCP			
Amtrak			
Chester			
Colchester			

Organization	Tel. #	Person Contacted	Comments
Deep River			
Durham			
East Haddam			
East Hampton			
East Lyme		Contacted by Waterford Police Essex	
Essex			
Groton (City)			
Groton (Town)			
Haddam			
Hebron			
Killingworth			
Ledyard			
Lyme			

FORM 3 QUARTERLY OFFSITE CALL LIST TEST (Continued)

Organization	Tel. #	Person Contacted	Comments
Madison			
Marlborough			
Middlefield			
Middletown			
Montville			
New London		Contacted by Waterford Police	
Old Lyme			
Old Saybrook			
Portland			
Salem			
Waterford		Contacted by Station	

Fisher's Island

Plum Island
Suffolk County, NY

Middlesex Mem. Hospital

Lawrence & Mem. Hospita

Radiation Mgt. Corp.

Travelers Weather Servic

General Dynamics (EB)

UNC Naval Products, Inc.

Chemical Waste Management(
of Massachusetts

FORM 3 QUARTERLY OFFSITE CALL LIST TEST (Con't.)

Organization	Tel. #	Person Contacted	Comments
Westbrook			
Fisher's Island			
Plum Island Suffolk County, NY			
Middlesex Mem. Hospital			
Lawrence & Mem. Hospita			
Radiation Mgt. Corp.			
Travelers Weather Servic			
General Dynamics (EB)			
UNC Naval Products, Inc.			
Chemical Waste Management(of Massa husetts			

Organization	Tel. #	Person Contacted	Comments
Teledyne Isotopes, Inc.			
Daitco, Inc. (Bus Co.)			
Nichols Bus Service			
Beebe School Transportation			
Shipman's Fire Equipment			

Completed by ______________________

(print)

Date ______________________