

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-A11), Rev. 2 C-1

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI –A-0011, R/2, C-1

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
2	C-1		Entire Document

[illegible]

ACTIVATION OF THE BACKUP EMERGENCY OPERATIONS FACILITY

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SCOPE OF REVISION:

- Rev. 2 -
- Deleted RMT radio guidance and instructions for activating BEOF phone lines. Instructions in <Emergency Response Telephone Directory> referenced.
  - Revised Backup EOF Activation Checklist.
  - Deleted specific guidance of obtaining additional office furniture.
  - Inserted action under Offsite Radiation Advisor to establish open HPN line with the NRC.
  - Expanded required actions for Regulatory Affairs Coordinator.
  - Expanded Facility Communicator action to address establishing ENS line and "5-Way" conference network, and activating BEOF "hot spares".
  - Inserted records capture statement.
  - Entire instruction reworded as required to improve clarity.
  - Deleted Facility Access Control Layout attachment.

Change History

PIC Number: 1                      Affected Pages: i, iii, 1, 3, 5, 6, 10, 11, 13, 14

Summary of Change:

1. Deleted reference to EPI-A4 and A5 which were consolidated into and superseded by EPI-A2
  2. Health Physics and HP were replaced with Radiation Protection and RP as appropriate. CRRA-00-1159-001 with a 12/14/00 date mandates these changes.
  3. Deleted reference to Centerior
  4. Replaced CEI reference with FirstEnergy
  5. Attachment 2 - relocated State and Local County offices to the North part of the building combining the offices with the conference room.
  6. Attachment 3 - B.2, changed the access to CADAP from vaxstation 4000 model 90 to computer workstation
  7. Attachment 4 - Replaced RMT Communicator in the "Minimum BEOF Staffing requirements" with the Environmental Liaison position. Replaced the Environmental Liaison position in the "Positions Not Required To Declare BEOF Operational" with a Communicator.
  8. Replaced acronym ERIS with ICS
-

ACTIVATION OF THE BACKUP EMERGENCY OPERATIONS FACILITY

1.0 PURPOSE

This instruction provides guidance on the activation of the Backup Emergency Operations Facility (BEOF), once it is determined that the onsite Emergency Operations Facility (EOF) either is or will soon be considered unavailable due to equipment failure or habitability concerns. Operation of the BEOF shall be conducted in accordance with those instructions provided for the onsite EOF in <EPI-A8>.

2.0 REFERENCES

2.1 Source References:

1. Emergency Plan for PNPP, Docket Nos. 50-4401, 50-441.

2.2 Use References:

1. Emergency Plan Implementing Instruction (EPI) A8: "Emergency Operations Facility Activation"
2. Preparedness Support Instruction (PSI) 0008: "Determining the Availability of the Perry Plant On-Site Emergency Response Facilities"
3. Emergency Plan Implementing Instruction (EPI) B1: "Emergency Notification System"
4. Emergency Plan Implementing Instruction (EPI) A2: "Emergency Actions Based On Event Classifications"
5. Emergency Plan Implementing Instruction (EPI) B7a: "Automated Offsite Dose Calculations"
6. Emergency Response Telephone Directory
7. Emergency Public Information Organization Manual
8. Commitments addressed in this document:

None

### 3.0 DEFINITIONS

#### 3.1 Backup Emergency Operations Facility (BEOF)

The alternate location for the onsite EOF which can be utilized for the management of overall company emergency response, coordination of emergency support activities with offsite agencies and authorities, and direction of Company radiological monitoring and assessment capabilities, in the event the onsite EOF becomes unavailable. The BEOF is at the Ashtabula Service Center (ASSC) which is located on State Route 84 in Saybrook, approximately 2 miles east of State Route 45.

A map to the ASSC is provided in Directions to the Ashtabula Service Center (Attachment 1). A figure illustrating the facility arrangement is provided in BEOF Layout (Attachment 2), and a listing of available equipment is contained in BEOF Equipment Capabilities and Limitations (Attachment 3).

#### 3.2 EOF Unavailability

The onsite EOF, located in the Perry Training and Education Center (TEC) shall be considered unavailable whenever in the Acting Emergency Coordinator's judgment the facility is unable to support EOF activities. A discussion on EOF availability is contained in <PSI-0008>.

#### 3.3 Activation/Activate

In regards to any emergency response facility, the term ACTIVATION shall refer to that time period from the decision to mobilize or ACTIVATE a facility to the decision to declare the facility OPERATIONAL.

#### 3.4 Operational

In regards to any emergency response facility, the term OPERATIONAL shall refer to the decision to declare a facility functional and ready to perform its stated function(s).

### 4.0 RESPONSIBILITIES

4.1 **Operations Manager/Shift Supervisor:** Direct the activation of the BEOF in lieu of the onsite EOF should it be determined that the onsite EOF either is or will soon be unavailable.

#### 4.2 **Emergency Coordinator:**

1. Direct the activation of the BEOF in relief of the onsite EOF should it be determined that the onsite EOF either is or will soon be considered unavailable.
2. Ensure that responsibility for the non-delegatable Emergency Coordinator duties is clearly understood at all times.

- 4.3 BEOF Staff: Ensure that the responsibilities and actions outlined in <EPI-A8>, where applicable, are performed in conjunction with this instruction.

## 5.0 ACTIONS

### 5.1 Activation of the BEOF in Lieu of the Onsite EOF

#### 5.1.1 Operations Manager/Shift Supervisor:

1. Notify Emergency Response Organization (ERO) personnel of the activation of BEOF as part of the actions required under <EPI-A2> ensuring that the ERO Pager Messages form (PNPP No. 9100) contained in <EPI-B1> indicates the activation of the BEOF in lieu of the onsite EOF.
2. Direct that a Security Officer be dispatched to the onsite EOF to inform EOF staff members reporting to the EOF mistakenly or as part of personnel accountability, that the BEOF is being activated.
3. Direct that a Radiation Protection (RP) Technician be dispatched to the BEOF to supervise personnel monitoring and decontamination activities.
4. During the hours of 2330 to 0630 hours, notify the Duty Supervisor for the ASSC that the BEOF is being activated using the pager and home phone numbers listed in the <Emergency Response Telephone Directory>.

#### 5.1.2 Emergency Coordinator:

1. Direct the activation of the BEOF utilizing the Backup EOF Activation Checklist (PNPP No. 9101, Attachment 4), and declare the BEOF operational once adequately staffed.
2. Coordinate the activities of BEOF staff to ensure the responsibilities outlined in <EPI-A8> are met for the proper classification and assessment of the emergency event.

#### 5.1.3 EOF Manager:

1. Direct the activation of the BEOF telephone lines ("hot spares"), using the directions provided in the <Emergency Response Telephone Directory> under "Communications Equipment Operating Guidelines".

NOTE: Auto-dialer located in Communicators' Area should be used for activation of "hot spares".



2. Verify that the facility communicators have established a conference network with the State and local counties, in lieu of the "5-way" line, per the <Emergency Response Telephone Directory> under "Communications Equipment Operating Guidelines".
  3. Coordinate the manning and activation of the BEOF utilizing the Backup EOF Activation Checklist.
  4. Contact the TSC Security Coordinator to verify that a Security Officer has been dispatched to the BEOF to control facility access.
    - a. Direct the Security Officer, upon arrival, to establish and control access to the BEOF at the top of the stairway once the BEOF is declared operational, using the access log and facility badges stored inside the EOF Manager's drawer.
  5. Verify that a Communicator has contacted the Nuclear Regulatory Commission (NRC) via commercial telephone and that a bridge has been established on the Emergency Notification System (ENS) circuit.
  6. Utilize telecopier and xerox on 1st floor to support BEOF activities, as needed.
- NOTE: A spare telephone jack has been installed at entrance to Supply Room for a 2nd telecopier.
7. Utilize office space and telephones available on the first floor of the ASSC Service Building to support NRC Site Team and State activities.
  8. Upon de-activation of the BEOF, contact the Alltel Marketing Department, using the <Emergency Response Telephone Directory>, to request the de-activation of the "hot spare" telephone lines.
  9. Perform the actions outlined in <EPI-A8>, as applicable, in support of BEOF operation.

## 5.1.4

**Plant Operations Advisor:**

1. Assign the Plant Operations Assistant to monitor the Status Board Circuit to obtain plant system status and operational data from the TSC.
2. Coordinate with the EOF Manager the relocation of plant drawings and additional procedures, as needed, from the onsite EOF to the BEOF.

3. Perform the actions outlined in <EPI-A8>, as applicable, in support of BEOF operation.

**5.1.5 Offsite Radiation Advisor:**

1. Establish the data link and verify the operability of the Computer-Aided Dose Assessment Program (CADAP) and associated printer per <EPI-B7a>.
2. Contact the TSC Radiation Protection Coordinator to verify that an RP Technician has been dispatched to the BEOF to provide radiological monitoring of facility.
  - a. If warranted, request from the TSC Radiation Protection Coordinator (RPC) that dosimetry delivered from the onsite EOF Decontamination Room to the BEOF.

NOTE: Due to the ASSC's distance from the Perry Plant, no dosimetry will be stored at the BEOF.

3. When a release has occurred or is in progress, direct available RP technician(s) to set-up a frisker station by the main entrance to the ASSC Service Building.
4. Utilize the Warehouse Garage for personnel monitoring and decontamination.

NOTE: Basic decontamination supplies are located on the 2nd floor of the Service/Administration Building. Refer to BEOF Decontamination Area Layout (Attachment 5).

5. Contact the NRC from the Dose Assessment Room, and request to be bridged onto the Health Physics Network (HPN) with the TSC. The NRC phone numbers are listed in the <Emergency Response Telephone Directory> under "Offsite Notification Numbers".

NOTE: Dial the prefix "9+1" when using a CENTREX line.

6. Perform the actions outlined in <EPI-A8>, as applicable, in support of BEOF operation.

**5.1.6 Regulatory Affairs Coordinator:**

1. Verify that the NRC, State of Ohio, and local counties have been notified of the activation of the BEOF and are aware of the location of the ASSC.
2. Contact the Lake County Emergency Operations Center (EOC), using the <Emergency Response Telephone Directory> under "Offsite Notification Numbers", and request that the BEOF be placed on the Executive Discussion Line (EDL).

3. Perform the actions outlined in <EPI-A8> in support of BEOF operation.

5.1.7 **Information Liaison:**

1. Perform the actions outlined in the <Emergency Public Information Organization Manual> in support of BEOF operation.

5.1.8 **Facility Communicators:**

1. If the arrival of the EOF Manager is delayed, contact the Alltel CSC, and request the activation of BEOF phone "hot spares" per the instructions listed in the <Emergency Response Telephone Directory> under "Communications Equipment Operating Guidelines".

NOTE: Auto-dialer located in Communicators' Area should be used to activate "hot spares".

2. Set up the "5-Way Conference Network", per the <Emergency Response Telephone Directory> under "Communications Equipment Operating Guidelines"; perform a roll call to ensure all EOC's are on the line prior to making the first offsite notification.
3. Contact the NRC Operations Center using the number listed on the auto-dialer label or in the <Emergency Response Telephone Directory> under "Offsite Notification Numbers"; request that the call be bridged onto the NRC ENS Circuit.

NOTE: Dial the prefix "9-1" when using a CENTREX telephone line to contact the NRC.

4. When assigned to FirstEnergy 800 MHz (RMT) Radio, utilize BEOF Motorola Desk Top Unit Instructions contained in the <Emergency Response Telephone Directory> under "Communications Equipment Operating Guidelines".
5. Perform the actions outlined in <EPI-A8>, as applicable, in support of BEOF operation.

5.1.9 **All BEOF Staff Personnel:**

1. Report to the ASSC when notified or directed to the BEOF, using the directions provided in Attachment 1.
2. Upon arrival at the BEOF, perform a whole body frisk using the survey instrument available at the BEOF Access, if directed, using the instructions posted at the BEOF access and paying particular attention to hands and feet.

3. Log into the BEOF at the Access Control Point after the facility is declared operational.

NOTE: Due to the distance of the ASSC from the Perry Plant, no dosimetry will be issued.

4. Assist in the activation of the BEOF per this instruction or as instructed upon your arrival.

## 5.2 Activation of the BEOF in Relief of the Onsite EOF

### 5.2.1 Emergency Coordinator (at the onsite EOF) shall implement either Option 1 or 2:

1. Continue to operate the onsite EOF until the BEOF is operational, per the following:

NOTE: This option should be considered for situations where existing or projected radiological conditions outside the EOF significantly hamper site access, or for a loss of normal electrical power to the EOF where Uninterrupted Power Supply (UPS) remains available and radiological conditions do not require HVAC operation. (A 90-minute emergency lighting capability is available in the EOF.)

- a. Direct the EOF Manager using available support staff to contact personnel utilizing the <Emergency Response Telephone Directory> to staff the BEOF.
- b. Relocate needed staff and equipment (i.e., plant drawings, procedures, etc.) from the onsite EOF to the ASSC once the BEOF is operational, and EOF responsibilities have been transferred to the BEOF.
- c. Deactivate the onsite EOF and release remaining personnel ensuring appropriate precautions and actions are taken to monitor personnel and vehicles for contamination.

### OR

2. Transfer the Emergency Coordinator responsibilities back to the TSC, and relocate the EOF staff to the BEOF.

NOTE: This option should be considered for situations where the continued, effective operation of the onsite EOF is not possible due to equipment unavailability or situations in which its continued operation may affect the health and safety of EOF personnel (i.e., loss of HVAC during a significant radiological release).

5.2.2 **Personnel Staffing the BEOF:** Perform the actions listed in Sections 5.1.2 through 5.1.9.

5.3 Records

The following records are generated by this document:

Quality Assurance Records

Backup EOF Activation Checklist (PNPP No. 9101)

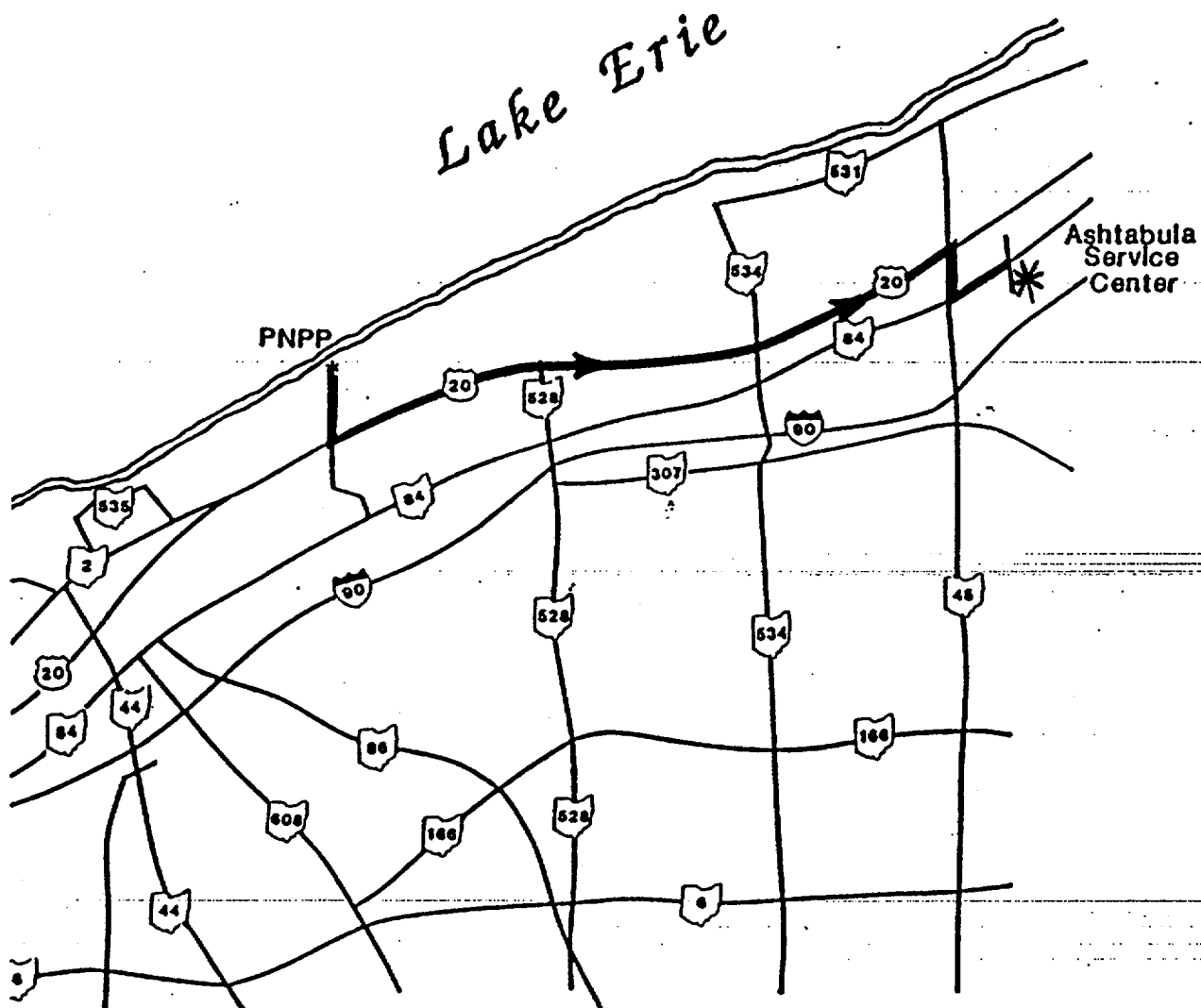
Non-Quality Records

None

DIRECTIONS TO THE ASHTABULA SERVICE CENTER

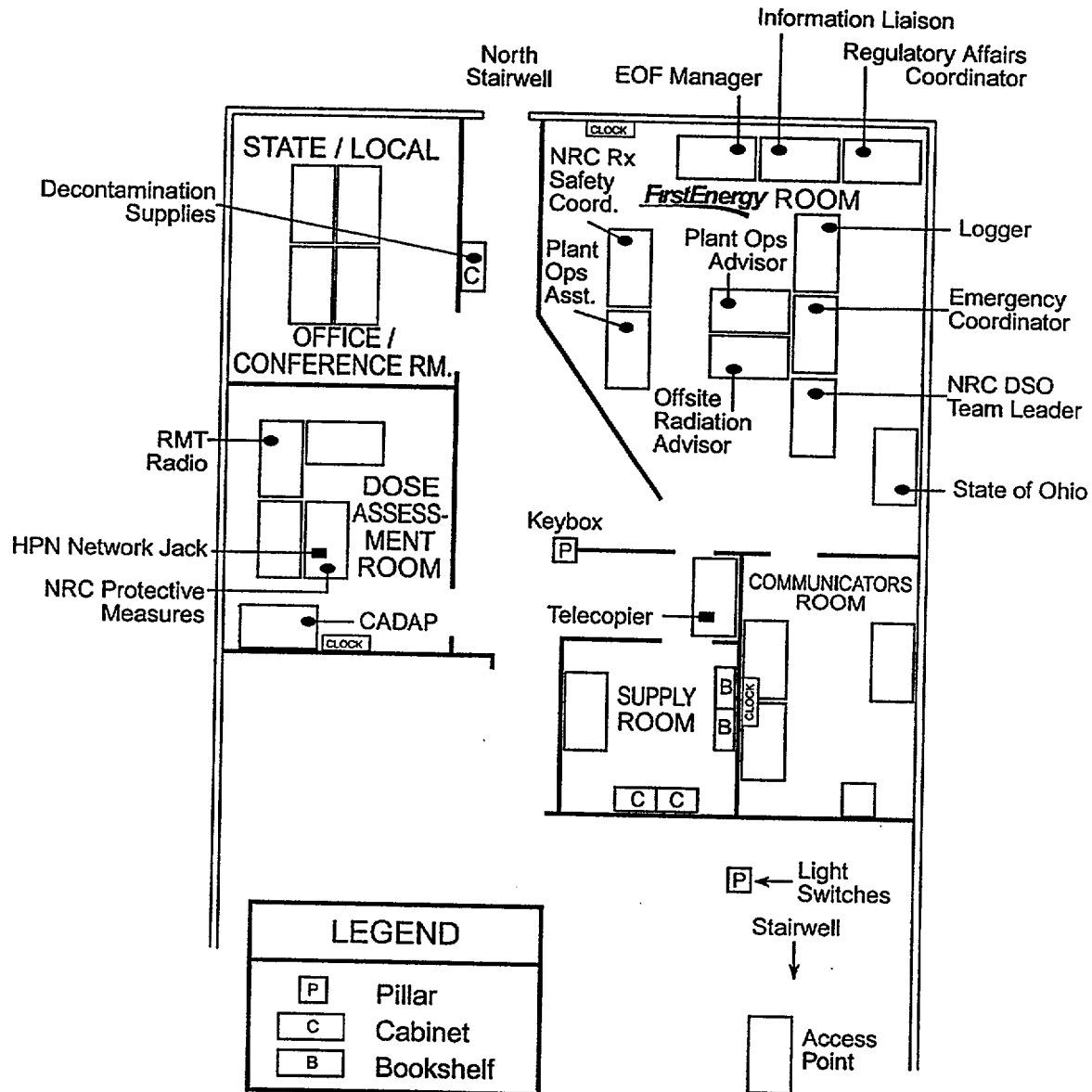
**LOCATION:** The ASSC is located on State Route 84 in Saybrook Township (Ashtabula County), approximately 2.5 miles east of the intersection with State Route 45.

**PARKING INSTRUCTIONS:** Upon arriving at the ASSC, park in the main lot located on the west side of the Service Building. Walk around back of Service Building to main entrance, then proceed to BEOF on second floor.



# BACKUP EMERGENCY OPERATIONS FACILITY LAYOUT

## ASHTABULA SERVICE CENTER SECOND FLOOR



BEOF EQUIPMENT CAPABILITIES AND LIMITATIONS

A. Communications

1. Dedicated Lines: None. Company CENTREX lines used.

Limitations: Commercial lines are used in lieu of dedicated lines.

- Conference bridge established in lieu of "5-Way" Circuit.
- NRC request to bridge call over CENTREX phone into ENS circuits.
- Conference call (open line) established in lieu of "3-Way" Intra-Facility Circuit.

2. Radio: BEOF will have access to FirstEnergy 800 MHz Trunked System for the direction and control of Perry Radiation Monitoring Teams (RMTs).

Limitations: No access to the Plant Radio System.

3. Public Announcing (PA) Systems: Intra-facility PA.

Limitations: No access to the Plant Page System.

B. Data Acquisition

1. Plant Operational Data: No access to ERIS.

Limitations: Information via Statusboard Ringdown Circuit to Control Room.

2. Dose Assessment: Access to CADAP via a computer workstation and modem ICADAP link.

C. Equipment and Supplies

1. Procedures/Instructions, Manuals, etc.:

- a. Emergency Plan Implementing Instructions (EPIs)
- b. PNPP Technical Specifications
- c. Plant Emergency Instructions (PEIs)
- d. Off-Normal Instructions (ONIs)



BEOF EQUIPMENT CAPABILITIES AND LIMITATIONS

- e. Preparedness Support Instructions
- f. Emergency Response Telephone Directories

Limitations: Full set of Operations Manual is not available.

- 2. Plant Drawings: None

Limitations: Plant drawings will not be kept at the BEOF and must be relocated from the onsite EOF to the BEOF if needed.

- 3. Radiation Monitoring: Survey meters ("friskers") at access point for personnel monitoring and area surveys. No dosimetry pre-staged.

Limitations:

- o No portal radiation monitor.
- o No installed facility area or airborne radiation monitors.

## BACKUP EOF ACTIVATION CHECKLIST

### (TO BE COMPLETED BY THE EOF MANAGER)

PNPP No. 9101 Rev. 12/20/00

EPI-A11

- A. ☐ Turn on room lights and unlock lockers and file cabinets. [NOTE: Master padlock key located in keybox by copier.]
- B. Assess personnel resources available in Backup EOF and assign the duties listed below to available communicators and support staff. Conduct additional callouts as needed.
- ☐ Contact ALLTEL using Communicator Area auto-dialer and request activation of Backup EOF telephone line ("hot spares").
- ☐ Establish conference bridge to State and local counties (refer to "5-Way Conference Network")  
NOTE: Directions for activating "hot spares" and establishing conference bridge are contained in the Emergency Response Telephone Directory under "Communications Equipment Operating Guidelines".
- ☐ Contact the NRC via commercial telephone and request that Backup EOF be bridged on ENS Circuit.
- ☐ Plug in and test FAX machine (stored in locker). [NOTE: Additional copier & FAX located on first floor]
- ☐ Connect telephones and distribute procedures and other materials at various desks as labeled.  
NOTE: Supplies/phones for each position are stored in separate file cabinet drawers. Procedures are stored in Supply Area.]

C. Verify BEOF manning levels:

Minimum BEOF Staffing Requirements:

- ☐ Emergency Coordinator  
☐ Plant Operations Advisor  
☐ Offsite Radiation Advisor  
☐ Dose Assessor #1  
☐ Regulatory Affairs Coordinator  
☐ EOF Manager  
☐ "5-Way" Communicator  
☐ ENS Communicator  
☐ Environmental Liaison

POSITIONS NOT REQUIRED TO DECLARE BEOF OPERATIONAL:

- ☐ Plant Operations Assistant  
☐ Communicator  
☐ Dose Assessor #2  
☐ HPN Communicator  
☐ Information Liaison  
☐ Support Staff #1 - Operations Manager's Log  
☐ Support Staff #2 - Plant Technical Data Board  
☐ Support Staff #3 - Plant Radiological Data Board  
☐ Support Staff #4 - EOF Clerk / Messenger

D. Direct available communicators to test the following circuits:

- ☐ "3-Way" phone (GREEN)      ☐ Facility PA      ☐ CEI 800 MHz RMT Radio  
☐ Status Board Line      ☐ HPN phone (Dose Assessment Room)

E. ☐ BEOF Access Controller stationed. [NOTE: Notify Security Coordinator or SNSO if security officer is not yet stationed.]

NOT REQUIRED TO DECLARE FACILITY OPERATIONAL

F. Facility wall clocks in the FirstEnergy Room, Dose Assessment Room, & Communicators' Room synchronized with ICS.

Submitted By \_\_\_\_\_ / / @ \_\_\_\_\_ hours  
 EOF Manager Date Time

## BACKUP EOF ACTIVATION CHECKLIST

(TO BE COMPLETED BY THE EMERGENCY COORDINATOR)

PNPP No. 9101 Rev. 12/20/00

EPI-A11

1. ☐ When the minimum staffing requirements are met and the Backup EOF is ready to be declared OPERATIONAL brief Backup EOF staff on current plant conditions, emergency actions underway, Control Room needs, and TSC priorities.
2. ☐ Announce over the Facility PA System that "the Backup EOF is OPERATIONAL". Record time Backup EOF was declared OPERATIONAL in logbook.
3. ☐ Inform the TSC Operations Manager and Shift Supervisor that the Backup EOF is now OPERATIONAL, and request that an applicable Plant PA announcement be made from the TSC or Control Room.
4. ☐ Establish when the following Emergency Coordinator duties will be transferred to the Backup EOF:
  - event classification per EPI-A1
  - offsite notifications per EPI-B1
  - offsite protective action recommendations (PARs) per EPI-B8

☐ Notify the EOF Manager prior to assuming offsite notification responsibilities.

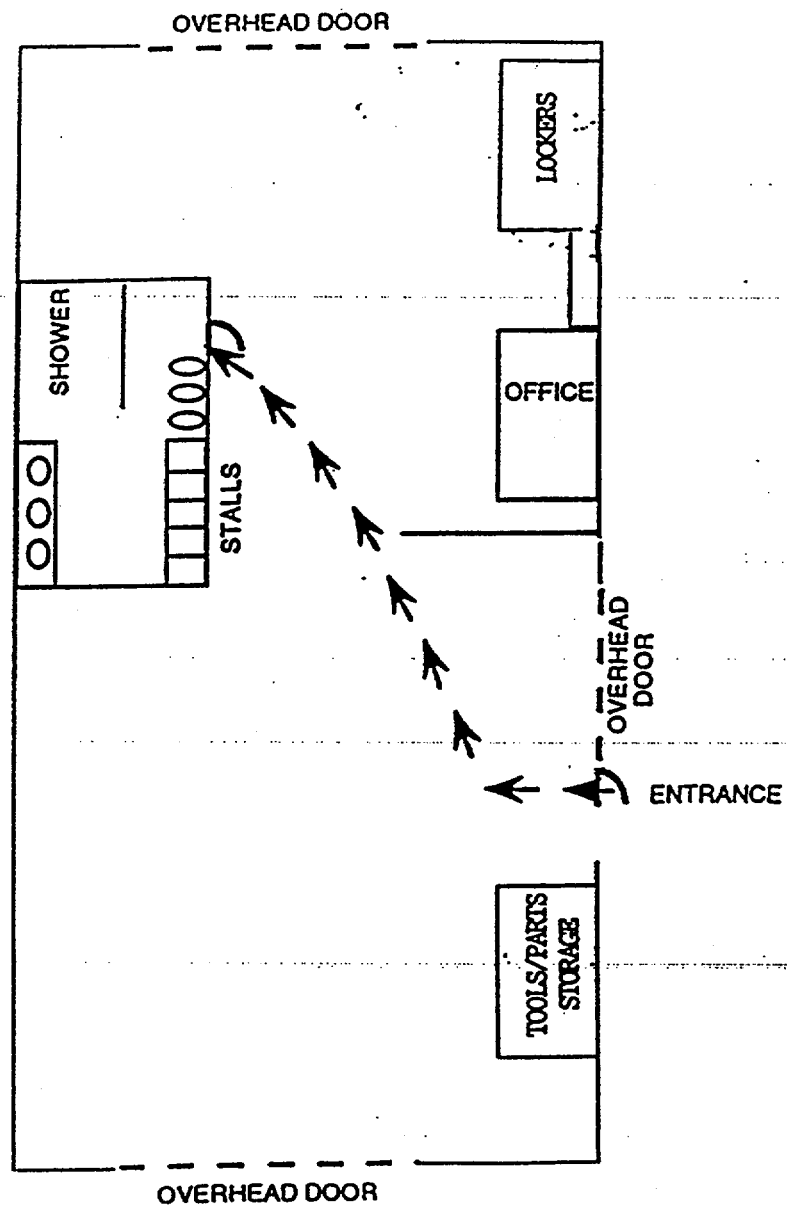
☐ Notify the Offsite Radiation Advisor prior to assuming responsibility for offsite PARs.
5. Announce over the Facility PA the transfer of Emergency Coordinator duties from the TSC to the Backup EOF, record transfer in logbook, and post the transfer of responsibilities on facility status board:

☐ Event Classification      ☐ Offsite Notifications      ☐ Offsite Protective Action Recommendations

Declared Operational: \_\_\_\_\_ @ \_\_\_\_\_ hours  
Emergency Coordinator      Date      Time

BEOF DECONTAMINATION AREA LAYOUT

(located in Warehouse Garage)



**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title Emergency Plan Implementing Instruction (EPI-B1), Rev. 10 C-4

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0001, R/10, C-4

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
10	C-4	i - 2, 15-33 - Last	

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL  
INFORMATION  
ONLY

**PNPP**

## Emergency Plan Implementing Instruction

No.

060

TITLE: EMERGENCY NOTIFICATION SYSTEM

REVISION: 10 EFFECTIVE DATE: 8-5-98

PREPARED: Joseph D. Anderson 4-7-98  
/ Date

### EFFECTIVE PIC'S

[illegible]

EMERGENCY NOTIFICATION SYSTEM

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SCOPE OF REVISION:

Periodic Review - Required

- Rev. 10 - 1. Replaces ANI with Nuclear Electric Insurance Limited (NEIL) for notification of nuclear insurer.  
 2. Incorporates State of Ohio Supplemental Actions form.  
 3. Inserts ENS/HPN Circuit sample questions (IN #98-08).  
 4. Add distribution instructions to Initial and Follow-up Notification forms.



SCOPE OF REVISION (Cont.):

- Rev. 10 - 5. Follow-up Notification form revised to address PAR under Block #8 and to clarify general information listed under Block #7.
6. Pager Messages form revised to address PIRT and JPIC activation.
  7. Deletes requirement for EPU to generate and distribute a post-event closeout summary to the State of Ohio and local counties.
  8. Eliminates reference to EPIs-A3, A4, and A5, which were consolidated into and superseded by EPI-A2.
  9. Deletes specific section references to EPI-A1.
  10. Deletes specific guidance on the completion of Block #8 on the Follow-up Notification Form (FNF).

Change History

PIC Number: 1                      Affected Pages: i, iv, 19, 20, 22, 23, 24

Summary of Change:

1. Incorrect revision to PNPP No. 7794 and 7795 were incorporated into Procedure. The changes that are on these forms, have been approved by PORC.
- 

PIC Number: 2                      Affected Pages: i, iv, 17, 18

Summary of Change:

1. Incorporates scenario for limited mobilization of ERO in support of an E-Plan event declared at the Davis-Besse Station.
  2. Revises FFD question on Pager Messages form (PNPP No. 9100) for use of PBX/OPX Voice Mail Methods to address consumption of alcohol within 5 hours.
- 

PIC Number: 3                      Affected Pages: i, iv, 1, 2

Summary of Change:

1. Changing references to PAP-0224 to NOP-LP-1002.
- 

PIC Number: 4                      Affected Pages: i, iv, 1, 15, 17, 18, 22, 23, 24,  
29, 30, 31, 32, 33

Summary of Change:

1. EPI-A2 incorrectly titled.
  2. Changed CEI reference to FirstEnergy.
  3. Attachment 1, PNPP No. 9100, added PIRT to the narrative for message number 8.
  4. Attachment 4, PNPP No. 7795, Sheet 1 of 2, corrected communicator instruction; Step b was missing. Step 8.b of the form was changed; "above normal" was inserted, replacing "Elevated".
  5. Attachment 8, PNPP No. 7880, was revised by the State of Ohio.
  6. Attachment 9, PNPP No. 7881, was revised by the counties based on the State of Ohio's revised form.
  7. Attachment 10, PNPP No. 10062, was revised by the State of Ohio.
-

## EMERGENCY NOTIFICATION SYSTEM

### 1.0 PURPOSE

Provide guidance and outline responsibilities for notifications of local County, State, and Federal agencies, and Industry support organizations.

Notification of on-call Emergency Response Organization (ERO) personnel will be initiated per <EPI-A2> using an ERO Pager Messages form (PNPP No. 9100, Attachment 1), and conducted by the Secondary Alarm Station (SAS) per <SPI-0032>.

### 2.0 REFERENCES

#### 2.1 Source References:

1. Emergency Plan for Docket Nos. 50-440, 50-441
2. NRC Information Notice 98-08: Information Likely to be Requested if an Emergency is Declared

#### 2.2 Use References:

1. NUREG-0654: Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants
2. Emergency Response Telephone Directory
3. EPI-A1: Emergency Action Levels
4. EPI-A2: Emergency Actions Based On Event Classification
5. EPI-A6: Technical Support Center Activation
6. EPI-A8: Emergency Operations Facility Activation
7. EPI-A10: Re-entry/Recovery
8. EPI-B7a: Automated Offsite Dose Calculations
9. EPI-B9: Emergency Records
10. NOP-LP-1002: Fitness for Duty Program
11. PAP-1604: Reports Management
12. PAP-1701: Records Management Program

13. PSI-0007: Reporting Emergency Plan - Related Communications Equipment Problems
14. SPI-0032: Notification of Key Emergency Response Organization Personnel
15. Commitments addressed in this document:

H00011	P00001	P00008	<u>P00041</u>	P00102
<u>H00012</u>	P00002	P00031	P00062	
L01556	P00005	P00039	P00083	

### 3.0 DEFINITIONS

#### 3.1 Transitory Event

An event which was determined to be classifiable in accordance with <EPI-A1>, but becomes a lower classifiable event before being identified and declared, i.e., Alert vs. Site Area Emergency.

### 4.0 RESPONSIBILITIES

#### 4.1 Shift Supervisor

1. Direct the immediate notification of on-call ERO personnel to ensure the prompt activation of required emergency facilities.
2. Direct the timely and accurate notification of local county, State, and Federal officials and other support organizations, of the entry into the Emergency Plan, change in event classification, or issuance of an offsite Protection Action Recommendation (PAR) for the general public.
3. Resolve any fitness for duty problems involving key ERO personnel required to respond to the Perry Plant in support of the emergency event per <NOP-LP-1002>.
4. Coordinate the transfer of responsibility for offsite agency and ERO notifications to the TSC Operations Manager once the Technical Support Center (TSC) is operational.

#### 4.2 TSC Operations Manager

1. Ensure the coordinated turnover of offsite agency and Perry Plant ERO notification responsibilities from the Control Room Shift Supervisor to the TSC per <EPI-A6>, and the subsequent transfer of only offsite notification duties to the Emergency Operations Facility (EOF) when operational.

2. Utilize the forms contained in packets stored with the <Emergency Response Telephone Directory> to perform the following:
  - a. Track Emergency Coordinator action as required by <EPI-A2> using the appropriate event checklist.
  - b. Draft, or direct available staff to draft an Initial Notification form, and approve form per Section 5.1.2.
  - c. Direct a Control Room Communicator to report with the approved Initial Notification form to the TSC to perform the required notifications to the NRC, State of Ohio, and local counties.
  - d. Complete, or direct available staff to complete an ERO Pager Message form, and approve.
  - e. Direct Site Protection to report to the Unit 1 Remote Shutdown Panel to pickup the completed form and to initiate ERO callouts from the Central Alarm Station (CAS).
  - f. Direct a second Communicator or CRA, if available, to establish an open line with the NRC using available telephone instruments.

Telephone numbers for the NRC Operations Center are labeled on instruments. User must dial "9 + 1", prior to dialing number listed on label.

- g. Use available forms to complete follow-up notifications to the NRC, State of Ohio, and local counties per Section 5.1.5.

5.4.2 Facility Communicator(s) shall:

1. Report to the Unit 1 Remote Shutdown Panel when directed.
2. Utilize communications in the TSC FirstEnergy Room to perform offsite notifications to the NRC, State of Ohio, and local counties per Section 5.3, when the Initial Notification form is approved by the Shift Supervisor.
3. Use available telephone instruments to establish an open line with the NRC from the Remote Shutdown Panel, if directed by the Shift Supervisor.

Telephone numbers for the NRC Operations Center are labeled on instruments. User must dial "9 + 1", prior to dialing number listed on label.

4. Continue to perform subsequent follow-up notification from the TSC as directed by the Shift Supervisor, until the TSC is declared operational and offsite notification responsibilities transferred to the TSC.

## 5.5 Records

### 5.5.1 Records Handling

1. The records generated by emergency response personnel will be collected and maintained by Emergency Planning (EPU) pursuant to <EPI-B9>. The Emergency Records Package will be transferred to Records Management pursuant to <PAP-1701>.

### 5.5.2 Records Capture

The following records are generated by this document:

#### Quality Assurance Records

ERO Pager Messages (PNPP No. 9100)  
Initial Notification (PNPP No. 7794)  
Follow-Up Notification (PNPP No. 7795)  
Industry Event Notification (PNPP No. 9596)  
Communication Record Sheet (PNPP No. 8264)  
State of Ohio Protective Action Recommendations (PNPP No. 7880)  
County Protective Action Decisions (PNPP No. 7881)  
State of Ohio Supplemental Actions (PNPP No. 10062)

#### Non-Quality Records

Notification Guidelines (PNPP No. 8677)

# PAGER MESSAGES

PNPP No. 9100 Rev. 12/18/00

EPI-B1/SPI-0032

**CONTROL ROOM/TSC INSTRUCTIONS:**

Select appropriate message in Block #1; complete brief status in Block #2; sign as approved, and forward to SAS.

**SAS OPERATOR INSTRUCTIONS:**

- If PBX or OPX Voice Mail method is used (for E-Plan ERO callouts only), in lieu of the Dialogic Call out System, record the following information in succession on voice mail message per <SPI-32>; otherwise follow Dialogic System protocol as outlined in <SPI-32>.
  - Block #1 - Message narrative\*      Block #2 - Event conditions      Block #3 - Fitness for duty statement

1. Message No./Narrative (Select One):

(√)	No.	Event Code	Message Narrative*	(√)	No.	Event Code	Message Narrative*
	01	1111	Unusual Event - No facilities required.		14	4444	General Emergency - OSC, TSC, Backup EOF, and JPIC to be activated.
	02	1111	Unusual Event - PIRT to be activated.		15	5555	Event Termination (No Recovery Entered).
	03	1111	Unusual Event - OSC, TSC, and PIRT to be activated.		16	5555	Event Termination (Recovery Phase Entered).
	04	2222	Alert - OSC, TSC, and PIRT to be activated.				Facility Augmentation/Non-E-Plan Scenarios
	05	2222	Alert - OSC, TSC, and PIRT already activated; no additional facilities required.		17	5555	OSC to be activated.
	06	3333	Site Area Emergency - EOF and JPIC to be activated; no additional facilities required.		18	5555	TSC to be activated.
	07	3333	Site Area Emergency - Backup EOF and JPIC to be activated (TSC & OSC already activated).		19	5555	PIRT to be activated.
	08	3333	Site Area Emergency - OSC, TSC, EOF, PIRT, and JPIC to be activated.		20	5555	OSC, TSC and PIRT to be activated.
	09	3333	Site Area Emergency - OSC, TSC, Backup EOF, and JPIC to be activated.		21	5555	EOF to be activated.
	10	4444	General Emergency - OSC, TSC, EOF, and JPIC already activated.		22	5555	Backup EOF at Ashtabula Service Center to be activated.
	11	4444	General Emergency - EOF and JPIC to be activated (TSC and OSC already activated).		23	5555	JPIC to be activated.
	12	4444	General Emergency - Backup EOF and JPIC to be activated (TSC & OSC already activated).				Drill/Test Use Only
	13	4444	General Emergency - OSC, TSC, EOF, and JPIC to be activated.		24	9999	Unannounced Pager Test (Shift Supervisor approval not required)

(√)	No.	Event Code	Message Narrative
	55	8005898002	Unplanned Shutdown - Forced Outage Situation
	60	8005898002	Davis-Besse Event Support

2. Conditions are as follows: \_\_\_\_\_

☐ Forced Outage Organization meeting schedule for: (if applicable): \_\_\_\_\_

 \_\_\_\_\_ at \_\_\_\_\_  
 (Time) (Specific Location)

3. Record the following ONLY if the PBX or OPX Voice Mail is to be used:

"At the end of this message please state that you are NOT filling the position if:

- you are NOT fit for duty;
- you have consumed alcohol within the past 5 hours, OR
- you can NOT respond within 10 minutes of your response goal."

 Approved: \_\_\_\_\_  
 Date Time Shift Supervisor/TSC Operations Manager

 Delivered/Called into SAS: \_\_\_\_\_  
 Circle One Time

 Activated By SAS: \_\_\_\_\_  
 Date Time Name

## PAGER MESSAGES

PNPP No. 9100 Rev. 12/18/00

EPI-B1/SPI-0032

### Quick Summary of Dialogic Activation

1. **Dial** access number: 259-\_\_\_\_\_ (Refer to sealed envelope in ERO Directory)
2. **Enter** password as soon as system answers: \_\_\_\_\_ (Refer to sealed envelope)
3. **Enter** scenario number: \_\_\_\_\_
  - Confirm scenario number - 9 for YES; 6 for NO.
4. When prompted, "Scenario will be queued as an [EMERGENCY/TEST/DRILL]. Do you want to change it?", **press** 9 for YES; 6 for NO.  
  
**EMERGENCY/DRILL:** Scenario Nos. 1 thru 23, 55, and 60  
**TEST:** Scenario No. 24
5. When prompted, "Record on the Fly Message # \_\_\_\_\_ Segment ID or press \* to record," **press \*** and **record** the message statement (as listed in Block #2 on front page of form).
  - Confirm recording - **Press** 9 for YES; 6 for NO.
6. When prompted, confirm scenario number, that it's an emergency/drill/test, the event code, and on-the-fly message. **Press** 9 for YES, 6 for NO, then hang up if correct to initiate system.



# INITIAL NOTIFICATION

PNPP No. 7794 Rev. 7/23/98

EPI-B1

## COMMUNICATOR INSTRUCTIONS:

- A. Ensure items 1-8 are completed, and Emergency Coordinator has approved release of information.  
 B. Pickup the "5-Way" Ringdown. As parties answer, perform a roll call to verify that the State and county agencies listed below are on-line; record time contacted below. If party does NOT answer, initiate a separate call per EPI-B1.

TIME CONTACTED	5-WAY USED?		TIME CONTACTED	5-WAY USED?	
	YES	NO		YES	NO
ASHTABULA COUNTY _____	<input type="checkbox"/>	<input type="checkbox"/>	LAKE COUNTY _____	<input type="checkbox"/>	<input type="checkbox"/>
GEAUGA COUNTY _____	<input type="checkbox"/>	<input type="checkbox"/>	STATE OF OHIO _____	<input type="checkbox"/>	<input type="checkbox"/>

- Once State and county agencies have been contacted, initiate call on NRC ENS Circuit. TIME CONTACTED: \_\_\_\_\_  
 C. Transmit data below. When completed, record the name of contact on back of form; request a call back if the 5-Way or ENS was NOT used.  
 D. Communicator(s) Name: (1) \_\_\_\_\_ (2) \_\_\_\_\_  
 E. [TSC & EOF ONLY] Forward a copy of completed form to the Information Liaison and Regulatory Affairs Coordinator.

Please obtain an Initial Notification form to copy this transmission. Communications on the "5-Way" and ENS Circuits are being recorded. (Pause 5-10 seconds to allow agencies to obtain form before continuing.)

### 1. This is the Perry Nuclear Power Plant:

☐ Control Room ☐ Technical Support Center (TSC) ☐ Emergency Operations Facility (EOF) ☐ Backup EOF

(State your NAME and ERO POSITION TITLE.)

2. This is a(n): ☐ Actual Emergency ☐ Drill

3. Date: \_\_\_\_\_ Time: \_\_\_\_\_ hours

4. ☐ a. A(n) ☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY has been declared at \_\_\_\_\_ hours on \_\_\_\_/\_\_\_\_/\_\_\_\_ based on EAL(s): \_\_\_\_\_

(Use both blocks a & b when simultaneously classifying and terminating from an Unusual Event or Alert.)

☐ b. The emergency situation has been terminated at \_\_\_\_\_ hours on \_\_\_\_/\_\_\_\_/\_\_\_\_.  
 (Time) (Date)

(Use block c when classifying after a transitory event.)

☐ c. A transitory event has occurred which would have required the declaration of a(n):

☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

but was mitigated prior to classification. Current event status is at a(n):

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY

declared at \_\_\_\_\_ hours on \_\_\_\_/\_\_\_\_/\_\_\_\_ based on EAL(s): \_\_\_\_\_  
 (Time) (Date)

(Use block d when revising a protective action recommendation.)

☐ d. General Emergency protective actions are being changed.

5. Brief non-technical description of event: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. ☐ a. NO unplanned radioactive release has occurred.

☐ b. An unplanned radioactive release is in progress.

### 7. Utility recommended protective actions:

☐ a. None.

☐ b. Evacuation of people in Subareas: 1 2 3 4 5 6 7 Lake (circle)

☐ c. Sheltering of people in Subareas: 1 2 3 4 5 6 7 Lake (circle)

8. I repeat, this a(n): ☐ Actual Emergency ☐ Drill

Notification is due at: \_\_\_\_\_ hours at \_\_\_\_/\_\_\_\_/\_\_\_\_; \_\_\_\_\_  
 (Time) (Date) EMERGENCY COORDINATOR APPROVAL (signature)

## INITIAL NOTIFICATION

PNPP No. 7794 Rev. 7/23/98

EPI-B1

## COMMENTS:

## COMMON OFFSITE ACRONYMS:

SD Sheriff's Department  
HP Highway Patrol  
OSHP Ohio State Highway Patrol  
EOC Emergency Operations Center  
EMA Emergency Management Agency  
OEMA Ohio Emergency Management Agency

## COMMUNICATOR USE ONLY:

If the "5-Way" Ringdown or ENS Circuit was NOT used; a verification call back is required.

	PERSON CONTACTED	JOB TITLE	TIME OF CALL BACK (if applicable)
Ashtabula County			<input type="checkbox"/> NA;
Geauga County			<input type="checkbox"/> NA;
Lake County			<input type="checkbox"/> NA;
State of Ohio			<input type="checkbox"/> NA;
Nuclear Regulatory Commission			<input type="checkbox"/> NA;

NRC ENS/HPN SAMPLE QUESTIONS

1. Is there any change to the classification of the event? If so, what is the reason?
2. What is the ongoing/imminent damage to the facility, including affected equipment and safety features?
3. Have toxic or radiological releases occurred or been projected, including changes in the release rate? If so, what is the projected onsite and offsite releases, and what is the basis of assessment?
4. What are the health effect/consequences to onsite/offsite people? How many onsite/offsite people are/will be affected and to what extent?
5. Is the event under control? When was control established, or what is the planned action to bring the event under control? What is the mitigative action underway or planned?
6. What onsite protective measures have been taken or planned?
7. What offsite protective actions have been recommended to State/local officials?
8. What is the status of State/local/other Federal agencies' responses, if known?
9. If applicable, what is the status of public information activities, such as alarm, broadcast, or press?

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ENS - Emergency Notification System  
HPN - Health Physics Network

# FOLLOW-UP NOTIFICATION

Page 1 of 2

PNPP No. 7795 Rev. 12/18/00

EPI-B1

**COMMUNICATOR INSTRUCTIONS:**

- A. Ensure Items 1-8 are completed, Page 2 of 2 attached (if applicable per block 8), and Emergency Coordinator has approved release below. If party does NOT answer, initiate a separate call per EPI-B1.

TIME CONTACTED	5-WAY USED?	YES	NO	TIME CONTACTED	5-WAY USED?	YES	NO
ASHTABULA COUNTY _____		<input type="checkbox"/>	<input type="checkbox"/>	LAKE COUNTY _____		<input type="checkbox"/>	<input type="checkbox"/>
GEAUGA COUNTY _____		<input type="checkbox"/>	<input type="checkbox"/>	STATE OF OHIO _____		<input type="checkbox"/>	<input type="checkbox"/>

- Once State and county agencies have been contacted, initiate call on NRC ENS Circuit. TIME CONTACTED: \_\_\_\_\_
- B. Transmit data below on Page 1 of 2, and simultaneously FAX Page 2 of 2 (if applicable).
- C. When completed, record the name of contact on back of form; request a call back if the 5-Way or ENS was NOT used.
- D. Verify receipt of FAX. Use "5-Way" or ENS to verbally transmit Page 2 of 2 if FAX receipt NOT confirmed.

E. Communicator(s) Name: (1) \_\_\_\_\_

(2) \_\_\_\_\_

F. [TSC &amp; EOF ONLY] Forward a copy of completed form to the Information Liaison and Regulatory Affairs Coordinator.

Please obtain an Follow-up Notification form to copy this transmission. Communications on the "5-Way" and ENS Circuits are being recorded. (Pause 5-10 seconds to allow agencies to obtain form before continuing.)

## 1. This is the Perry Nuclear Power Plant:

☐ Control Room ☐ Technical Support Center (TSC) ☐ Emergency Operations Facility (EOF) ☐ Backup EOF

(State your NAME and ERO POSITION TITLE.)

2. This is a(n): ☐ Actual Emergency ☐ Drill

3. Date: \_\_\_\_\_ Time: \_\_\_\_\_ hours

## 4. The emergency classification remains at a(n):

☐ UNUSUAL EVENT ☐ ALERT ☐ SITE AREA EMERGENCY ☐ GENERAL EMERGENCY

5. Reactor is: ☐ at power ☐ decreasing power ☐ in hot shutdown ☐ in cold shutdown ☐ in refueling mode  
 Prognosis is: ☐ stable ☐ improving ☐ degrading

## 6. Brief non-technical description of event: \_\_\_\_\_

## 7. General Information:

- ☐ a. Evacuation of non-essential personnel has been initiated. Completed at \_\_\_\_\_ (time).  
 • Offsite assembly for monitoring and decontamination purposes required: ☐ Yes ☐ No
- ☐ b. Fire department has been requested. Currently on-site: ☐ Yes ☐ No
- ☐ c. Ambulance has been requested. Currently on-site: ☐ Yes ☐ No
- ☐ d. Other: \_\_\_\_\_
- ☐ e. NOT APPLICABLE

## 8. Radiological Summary:

- ☐ a. No abnormal elevated radiation levels detected out the plant vents requiring consideration of offsite protective actions. Notification is completed at this time. NO Page 2 of 2.  
 This is a(n): ☐ actual emergency ☐ drill.
- ☐ b. Above normal radiation levels detected out the plant vents. No offsite protective action recommended.  
 Refer to Page 2 of 2: ☐ FAXed ☐ To Follow This is a(n): ☐ actual emergency ☐ drill.
- ☐ c. Offsite PAR issued based on: ☐ General Emergency classification. ☐ Actual/projected doses.  
 Refer to page 2 of 2. ☐ Faxed ☐ To Follow This is a(n): ☐ actual emergency ☐ drill.

Notification is due at: \_\_\_\_\_ hours at \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_;  
 (Time) (Date)

EMERGENCY COORDINATOR APPROVAL (signature)

**FOLLOW-UP NOTIFICATION**

PNPP No. 7795 Rev. 12/18/00

EPI-B1

**COMMENTS:****COMMON OFFSITE ACRONYMS:**

SD Sheriff's Department  
 HP Highway Patrol  
 OSHP Ohio State Highway Patrol  
 EOC Emergency Operations Center  
 EMA Emergency Management Agency  
 OEMA Ohio Emergency Management Agency

**COMMUNICATOR USE ONLY:**

If the "5-Way" Ringdown or ENS Circuit was **NOT** used; a verification call back is required.

	PERSON CONTACTED	JOB TITLE	Time Of Call Back (if applicable)	Page 2 of 2 FAX Received (if applicable)
Ashtabula County			<input type="checkbox"/> NA;	<input type="checkbox"/> NA;
Geauga County			<input type="checkbox"/> NA;	<input type="checkbox"/> NA;
Lake County			<input type="checkbox"/> NA;	<input type="checkbox"/> NA;
State of Ohio			<input type="checkbox"/> NA;	<input type="checkbox"/> NA;
Nuclear Regulatory Commission			<input type="checkbox"/> NA;	<input type="checkbox"/> NA;

**FOLLOW-UP NOTIFICATION**

Page 2 of 2

PNPP No. 7795 Rev. 12/18/00

EPI-B1

**9. Meteorological Data:**

- ☐ (a) Wind speed \_\_\_\_\_ mph.  
☐ (b) Wind direction from degrees.  
☐ (c) Stability Class \_\_\_\_\_  
☐ (d) Precipitation: ☐ Yes ☐ No

**10. Recommended Protective Actions:**

- ☐ (a) Evacuation of people as follows:  
Subareas: 1 2 3 4 5 6 7 Lake (circle)  
☐ (b) Sheltering of people as follows:  
Subareas: 1 2 3 4 5 6 7 Lake (circle)  
☐ (c) Other: \_\_\_\_\_

**11. Recommended protective actions based on: (EPI-B8)**

- ☐ (a) A General Emergency has been declared.  
☐ (b) Calculations based on elevated radiation levels out plant vents.  
☐ (c) Actual field monitoring team levels.  
☐ (d) Potential release calculations.

**12. Offsite Release information:**

- ☐ (a) Airborne release.  
☐ (b) Liquid release: \_\_\_\_\_  
☐ (c) Actual start time: \_\_\_\_\_ hours.  
☐ (d) Estimated start time: \_\_\_\_\_ hours.  
☐ (e) Release duration: \_\_\_\_\_ hours.  
☐ (f) Time since reactor power < 4%: hours.

**13. Release Rates**

	VENT	MONITOR READING	RANGE		FLOWRATE (cfm)
<input type="checkbox"/> (a)	UNIT 1	E	<input type="checkbox"/> HI/MID (uCi/cc)	<input type="checkbox"/> LOW (cpm)	
<input type="checkbox"/> (b)	UNIT 2	E	<input type="checkbox"/> HI/MID (uCi/cc)	<input type="checkbox"/> LOW (cpm)	
<input type="checkbox"/> (c)	TB/HB	E	<input type="checkbox"/> HI/MID (uCi/cc)	<input type="checkbox"/> LOW (cpm)	
<input type="checkbox"/> (d)	OFFGAS	E	<input type="checkbox"/> HI/MID (uCi/cc)	<input type="checkbox"/> LOW (cpm)	

**14. Source term used for calculation, based on core condition:**

- ☐ No Damage ☐ Clad Damage ☐ Fuel Melt ☐ Iso. Sample

**15. Non-noble gas reduction factors:**

- ☐ (a) Suppression Pool Temp < 212F  
☐ (b) Suppression Pool Temp > = 212F  
☐ (c) 0.5 -24 Hour Holdup  
☐ (d) > 24 Hour Holdup  
☐ (e) Containment Spray  
☐ (f) Fuel Pool Scrubbing  
☐ (g) Primary System Plateout  
☐ (h) Unfiltered  
☐ (i) Filtered  
☐ (j) FHBVS

**16. Projected offsite dose at \_\_\_\_\_ based on a \_\_\_\_\_ hour release duration: (Time of Calc)**

	A	B	C	D	E
DISTANCE	SECTOR(S)	TEDE DOSE RATE (REM/HOUR)	TEDE (REM)	CHILD THYROID DOSE RATE (REM/HOUR)	CHILD THYROID DOSE (REM)
Site Boundary					
2 Miles					
5 Miles					
10 Miles					

**17. Field Survey Data:** ☐ Not applicable

A		B	C	D	E
#	TIME TAKEN	DISTANCE (miles)	SECTOR (S)	GAMMA DOSE RATE (REM/HOUR)	CHILD THYROID DOSE (REM) BASED ON _____ HRS IMMERSION
1.					
2.					
3.					
4.					

**18. Estimate of any surface contamination:**

- ☐ (a) Contamination readings are at normal levels at this time.  
☐ (b) \_\_\_\_\_

**19. DRD to TEDE conversion factor is:** \_\_\_\_\_**20 I repeat:** ☐ This is a drill. ☐ This is an actual emergency.

**INDUSTRY EVENT NOTIFICATION**

PNPP No. 9596 Rev. 6/15/98

EPI-B1

**NOTE:** The following guidelines may be used at the Emergency Coordinator's discretion to notify and update INPO and NEIL on event conditions, and to request equipment or technical expertise through INPO. Notification to INPO and NEIL do not take priority over required notification to the State of Ohio, Local Counties, and NRC.

Approved for Transmission: \_\_\_\_\_

*EOF Emergency Coordinator or TSC Operations Manager***A. Required Information (complete each step)****1. Notification Status (check one):**☐ a. Actual Event☐ b. Drill or Exercise**2. Event Location (plant name and unit):**

PERRY PLANT, UNIT 1

**3. Caller's Name:** \_\_\_\_\_**Position:** \_\_\_\_\_☐ Control Room

(440) 259-3648

FAX: (440) 280-8005

☐ TSC

(440) 259-3073

FAX: (440) 280-8006

☐ EOF

(440) 259-2965

FAX: (440) 280-8007

☐ Backup EOF

(440) 994-8274

FAX: (440) 994-8322/8323

**4. Emergency Coordinator is:** \_\_\_\_\_

located in the :

☐ Control Room (440) 280-5763☐ TSC (440) 280-5727☐ EOF (440) 280-5745☐ Backup EOF (440) 994-8352**5. Event Classification:**☐ Unusual Event☐ Site Area Emergency☐ Termination☐ Alert☐ General Emergency☐ Recovery**6. Reason for Declaration:** \_\_\_\_\_**BLOCK #7 TRANSMITTED ONLY TO INPO****7. INPO Assistance Requested:** ☐ None (unless previously requested) ☐ Refer to checklist below**TYPE:** ☒ Facilitating technical information flow to the nuclear industry by maintaining the  
**NUCLEAR NETWORK.**☐ Dispatching an INPO Liaison to the affected plant/utility to facilitate utility interface with INPO and its industry resources.☐ Locating replacement equipment and/or industry personnel with special technical expertise:

Point of Contact: TSC Plant Technical Engineer @ (440) 280-5730

**B. Additional Information: (CONTINUE ON TO NEXT PAGE)**

## INDUSTRY EVENT NOTIFICATION

PNPP No. 9596 Rev. 6/15/98

**EPI-B1**

**IF AND WHEN TIME ALLOWS, PROVIDE A BRIEF SUMMARY OF PLANT STATUS**

- | 1. Plant Conditions/Trends: | Status as of | hours                               | Trend (circle one) |
|-----------------------------|--------------|-------------------------------------|--------------------|
| a. Fuel Cladding Barrier:   |              |                                     | ↑ ↔ ↓              |
| b. RCS Barrier:             |              |                                     | ↑ ↔ ↓              |
| c. Containment Barrier:     |              |                                     | ↑ ↔ ↓              |
| d. Reactor Power:           | %            | Mode: 1 2 3 4 5 Refuel (circle one) |                    |
| e. Core Cooling Status:     |              |                                     | ↑ ↔ ↓              |
| f. Electrical Power Status: |              |                                     | ↑ ↔ ↓              |

## 2. Offsite Radiological Release Information:

☐ Not Applicable; no abnormal release in progress!

- a. Release Duration: Started @ \_\_\_\_\_ hours Terminated @ \_\_\_\_\_ hours (NA if not isolated)  
Duration: \_\_\_\_\_ hours (estimated or actual)

- b. Meteorological Conditions: wind direction \_\_\_\_\_ (from)  
wind speed \_\_\_\_\_ mph  
stability class \_\_\_\_\_

**c. Protective Actions implemented by local counties.**

☐ No protective actions recommended.

☐ Evacuation Subareas:

☐ **Shelter Subareas:**

Based on: ☐ General Emergency Default ☐ CNTMT Activity ☐ Projected / Actual Dose

**3. Other Event Information:**

**END OF NOTIFICATION**

**Message Acknowledged By:**

Individual Contacted	Title	Time Contacted
	INPO:	
	NEIL:	



# NOTIFICATION GUIDELINES

PNPP No. 8677 Rev. 2/15/95

EPI-B1

1. If one contact does not respond to a "5-way callout", do not wait more than 10 seconds before starting the message.
2. When contacting a party over a PBX/OPX line and an answering service answers, record the date/time the service was contacted on the form cover sheet.
3. Only "Boldfaced" items should be read when notifying the State, and Counties; a number and letter reference should be used for all other items. However, when notifying the NRC the whole sentence for each item must be read.
4. Use the phonetic alphabet wherever possible, (eg. 5.c-5. Charlie). See the phonetic alphabet table below.
5. Read messages at a normal pace in a clear, loud voice. For blocks with two or more sentences, the pace at which the message is transmitted should be slowed; however, you must remember that too slow of a pace can also be a detriment - USE YOUR OWN JUDGEMENT.
6. When talking to the County Sheriff Department dispatchers, be aware that they may leave temporarily to handle police/fire emergency calls.
7. Remind all parties to raise their voice when they wish to talk.
8. When communicating with the NRC, PNPP Form No. 6912 (see PAP-1604) should be referenced as a guide towards anticipating the information which may be requested.
9. When the message is complete, ask all parties if a repeat back is necessary.
10. When asking for a contact's name/title, absolute correct spelling is not necessary.

## PHONETIC ALPHABET TABLE

A - Alpha	E - Echo	I - India	M - Mama	Q - Quebec	V - Victor
B - Bravo	F - Foxtrot	J - Juliett	N - November	R - Romeo	W - Whiskey
C - Charlie	G - Golf	K - Kilo	O - Oscar	S - Sierra	X - X-Ray
D - Delta	H - Hotel	L - Lima	P - Papa	T - Tango	Y - Yankee
				U - Uniform	Z - Zebra

## OFFSITE ACRONYMS

ACP - Access Control Point	FRMAC - Federal Radiological Monitoring and Assessment Center
ARC - American Red Cross	ODA - Ohio Department of Agriculture
DOE - U.S. Department of Energy	ODH - Ohio Department of Health
EMA - Emergency Management Agency	ODOT - Ohio Department of Transportation
EOF - Emergency Operations Center	OEMA - Ohio Emergency Management Agency
EPA - Environmental Protection Agency	ONG - Ohio National Guard
EPZ - Emergency Planning Zone	OSHP - Ohio State Highway Patrol
FAA - Federal Aviation Administration	SOP - Standard Operating Procedure
FEMA - Federal Emergency Management Agency	TCP - Traffic control Point
FRC - Federal Response Center	USDA - U.S. Department of Agriculture
	USDOT - U.S. Department of Transportation

**COMMUNICATION RECORD SHEET**

PNPP No. 8264 Rev. 10/93

EPI-B1

<b>INQUIRY/REQUEST</b>	TO: _____ (Name/Point of Contact) _____ (Position/Title/Location) _____
	FROM: _____ (Name of Requestor) _____ (Position/Title/Location) _____
	DATE: ____ / ____ / ____ TIME ____ hrs.
	SUBJECT: _____
	QUESTION/TASK: _____
	_____
	_____
	_____
	_____
	_____
REPLY REQUESTED: <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>INQUIRY RESPONSE</b>	RESPONSE: _____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
RESPONSE PREPARED BY: _____ at ____ / ____ / ____ (Name) (Date) (Time)	
RESPONSE DELIVERED TO: _____ at ____ / ____ / ____ (Name) (Date) (Time)	

# STATE OF OHIO PROTECTIVE ACTION RECOMMENDATIONS

PNPP No. 7880 Rev. 2/21/00

EPI-B1

MESSAGE START TIME

**FOR UTILITY USE ONLY**

1. This is a DRILL./This is NOT A DRILL.

2. This is \_\_\_\_\_ , \_\_\_\_\_  
(Name) (Title)

3. The State of Ohio recommends the following for the General Public:

a. EVACUATE

Subarea(s) \_\_\_\_\_

Other \_\_\_\_\_

b. SHELTER

Subarea(s) \_\_\_\_\_

Other \_\_\_\_\_

c. NO PROTECTIVE ACTIONS ARE NECESSARY.

d. OTHER \_\_\_\_\_  
\_\_\_\_\_4. PRECAUTIONARY ACTIONS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. This above recommendations are based upon: a. PLANT CONDITIONS b. RELEASE DATA

6. This recommendation is effective as of \_\_\_\_\_ , \_\_\_\_\_  
(Time) (Date)

MESSAGE STOP TIME:

COMMUNICATOR:

DISTRIBUTION: CONTROL ROOM: WHITE - SHIFT SUPV. CANARY/PINK - NA  
TSC: WHITE - OPS. MGR. CANARY - RAD PROT. COORD. PINK - REGULATORY AFFAIRS COORD.  
EOF: WHITE - EMERG. COORD. CANARY - OFFSITE RAD. ADV. PINK - REGULATORY AFFAIRS COORD.

**"RECOMMENDATION ONLY"**

**COUNTY PROTECTIVE ACTION DECISIONS**

PNPP No. 7881 Rev. 2/21/00

EPI-B1

MESSAGE START TIME

**FOR UTILITY USE ONLY**

1. This is a DRILL./This is NOT A DRILL.
2. This is \_\_\_\_\_ , \_\_\_\_\_  
(Name) (Title)
3. The \_\_\_\_\_ County/ies Commissioners recommend the following for the General Public:
  - a. EVACUATE  
Subarea(s) \_\_\_\_\_  
Other \_\_\_\_\_
  - b. SHELTER  
Subarea(s) \_\_\_\_\_  
Other \_\_\_\_\_
  - c. NO PROTECTIVE ACTIONS ARE NECESSARY.
  - d. OTHER \_\_\_\_\_
4. PRECAUTIONARY ACTIONS: \_\_\_\_\_
5. The above recommendation DO/DO NOT affect existing protective actions.
6. The above recommendations are based upon:
  - a. STATE AND UTILITY RECOMMENDATIONS
  - b. OTHER \_\_\_\_\_
7. This recommendation is effective as of \_\_\_\_\_ , \_\_\_\_\_  
(Time) (Date)
8. The sirens will be activated at \_\_\_\_\_  
(Time)
9. The EAS will be activated at \_\_\_\_\_ and the message/s to be broadcasted will be:  
(Time)  
A B C D E F G H I J  
(Circle As Appropriate)

MESSAGE STOP TIME:

COMMUNICATOR:

DISTRIBUTION: CONTROL ROOM: WHITE - SHIFT SUPV. CANARY/PINK - NA  
TSC: WHITE - OPS. MGR. CANARY - RAD PROT. COORD. PINK - REGULATORY AFFAIRS COORD.  
EOF: WHITE - EMERG. COORD. CANARY - OFFSITE RAD. ADV. PINK - REGULATORY AFFAIRS COORD.

# STATE OF OHIO SUPPLEMENTAL ACTION FORM

PNPP No. 10062A Rev. 2/24/00

EPI-B1

## THE FOLLOWING ACTIONS WERE TAKEN BY THE STATE AT THE ALERT.

☐ Original☐ Update

MESSAGE START TIME: \_\_\_\_\_

THIS IS A DRILL/THIS IS NOT A DRILL

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time: \_\_\_\_\_

☐ 1. ODOT, ODNR, and USCG have been requested to assist in restricting Lake Erie traffic as of \_\_\_\_\_☐ 2. State and Federal Parklands have been requested to close effective at: \_\_\_\_\_☐ 3. An aircraft has been dispatched as of: \_\_\_\_\_

ETA Utility \_\_\_\_\_

ETA JPIC \_\_\_\_\_

Destination of passengers:

☐ JPIC☐ EOF/ECC☐ County☐ 4. State Radiological Monitoring Teams have been dispatched as of: \_\_\_\_\_

Destination is: Columbiana County EOC

ETA: \_\_\_\_\_

Fremont Airport

ETA: \_\_\_\_\_

Lake County EOC

ETA: \_\_\_\_\_

☐ 5. The Communications Van has been dispatched as of: \_\_\_\_\_

Destination is: Campground Rd.

ETA: \_\_\_\_\_

SR 590/Elmore Eastern Rd.

ETA: \_\_\_\_\_

Ledgemont Elementary

ETA: \_\_\_\_\_

☐ 6. State Liaisons have been dispatched as follows:

County: \_\_\_\_\_

ETA: \_\_\_\_\_

County: \_\_\_\_\_

ETA: \_\_\_\_\_

County: \_\_\_\_\_

ETA: \_\_\_\_\_

☐ 7. Contiguous governments (Michigan, Pennsylvania, Canada) have been notified as of: \_\_\_\_\_☐ 8. The State of Ohio Assessment Room has been activated as of: \_\_\_\_\_☐ 9. The State of Ohio Assessment Room is operational as of: \_\_\_\_\_☐ 10. Other:

MESSAGE STOP TIME:

COMMUNICATOR:

Distribution: Control Room: White - Shift Supv.

Canary/Pink - N/A

TSC: White - OPS Mgr.

Canary - Rad Prot. Coord.

Pink - Regulatory Affairs Coord.

EOF: White - Emerg. Coord.

Canary - Offsite Rad. Adv.

Pink - Regulatory Affairs Coord.

**STATE OF OHIO SUPPLEMENTAL ACTION FORM**

PNPP No. 10062B Rev. 2/24/00

EPI-B1

THE FOLLOWING ACTIONS **WERE** TAKEN BY THE STATE OF OHIO AT THE  
**SITE AREA EMERGENCY.**

☐ Original☐ Update

MESSAGE START TIME: \_\_\_\_\_

THIS IS A DRILL/THIS IS NOT A DRILL

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time: \_\_\_\_\_

1. The Director of the Ohio Department of Agriculture recommends that as a precaution, **livestock and poultry be brought inside and placed on stored feed and protected water** in all townships and municipalities within 5 miles of the plant.

Effective as of: \_\_\_\_\_

2. ODOT, ODNR, and USCG have been requested to assist in restricting Lake Erie traffic as of: \_\_\_\_\_

3. State and Federal Parklands have been requested to close effective as of: \_\_\_\_\_

4. Based on plant conditions, the Governor has declared a **State of Emergency** effective as of: \_\_\_\_\_

5. The Federal Aviation Administration has been contacted to restrict air space in the EPZ effective as of: \_\_\_\_\_

6. Appropriate Railroads have been contacted to restrict rail traffic effective at: \_\_\_\_\_

7. FEMA has been requested to implement the **Federal Radiological Response Plan** effective at: \_\_\_\_\_

8. The DOE has been contacted as of: \_\_\_\_\_ and requested to activate the **Federal Radiological Monitoring and Assessment Center**. Aerial monitoring will be available as of: \_\_\_\_\_

9. The State Emergency Operations Room has been activated as of: \_\_\_\_\_

10. The State Emergency Operations Room is operational as of: \_\_\_\_\_

11. Other:

MESSAGE STOP TIME:

COMMUNICATOR:

Distribution: Control Room: White - Shift Supv.

TSC: White - OPS Mgr.

EOF: White - Emerg. Coord.

Canary/Pink - N/A

Canary - Rad Prot. Coord.

Canary - Offsite Rad. Adv.

Pink - Regulatory Affairs Coord.

Pink - Regulatory Affairs Coord.

**STATE OF OHIO SUPPLEMENTAL ACTION FORM**

PNPP No. 10062C Rev. 2/24/00

EPI-B1

THE FOLLOWING ACTIONS **WERE** TAKEN BY THE STATE OF OHIO AT THE  
**GENERAL EMERGENCY.**

☐ Original☐ Update

MESSAGE START TIME: \_\_\_\_\_

THIS IS A DRILL/THIS IS NOT A DRILL

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time: \_\_\_\_\_

1. The Director of the Ohio Department of Health recommends that **dose limits for emergency workers REMAIN THE SAME.**
2. The Director of the Ohio Department of Health recommends that **dose limits for emergency workers BE CHANGED** as follows:
  - a. from 25 rem to \_\_\_\_\_.
  - b. from 10 rem to \_\_\_\_\_.
  - c. from 5 rem to \_\_\_\_\_ (cannot be lower than 1)
3. The Director of the Ohio Department of Health DOES NOT recommend that emergency workers and the institutionalized take KI (potassium iodide)
4. The Director of the Ohio Department of Health recommends that emergency workers and the institutionalized TAKE KI (potassium iodide) for subarea (s) \_\_\_\_\_.
5. The Director of the Ohio Department of Agriculture recommends that as a precaution, livestock and poultry be brought inside and placed on stored feed and protected water in all townships and municipalities within 10 miles of the plant. Effective as of: \_\_\_\_\_.
6. Other:

MESSAGE STOP TIME:

COMMUNICATOR:

Distribution: Control Room: White - Shift Supv.  
TSC: White - OPS Mgr.  
EOF: White - Emerg. Coord.

Canary/Pink - N/A  
Canary - Rad Prot. Coord.  
Canary - Offsite Rad. Adv.

Pink - Regulatory Affairs Coord.  
Pink - Regulatory Affairs Coord.

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B4), Rev. 9 C-1

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081



**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0004, R/9, C-1

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
9	C-1		Entire Document

060

[illegible]

# FIRST AID AND MEDICAL CARE

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SCOPE OF REVISION:

Periodic Review - Required

- Rev. 9 -
1. Revises responsibilities to address use of certified EMTs, and to clarify Fire Protection Unit and Site Protection Section responsibilities.
  2. Updates references to address consolidation of FAT training into SAI-0014 and elimination of SFI-0050 for periodic inventories.
  3. Revises definitions to clarify FAT complement, assignment of FAT Leader, and use of certified EMT.
  4. Actions inserted based on assessment of injuries in to "Emergency Response" and "Ambulatory Patient" categories.
  5. Reference to the Site Dispensary and walk-in first aid stations inserted for "ambulatory patients."
  6. Instruction revised in its entirety to clarify and streamline SAS, FAT, and HP actions.
  7. Eliminates requirement to dressout ambulance with herculite covering.

Change History

PIC Number: 1                      Affected Pages: i, ii, iv, 1, 2, 3, 5, 7, 8, 10, 11,  
12, 13,

Summary of Change:

1. Health Physics and HP were replaced with Radiation Protection and RP as appropriate.
  2. Delete reference to PAP-1122 "On-Call Plant Support" from the use reference and from Section 5.2.4a, the procedure has been deleted.
  3. Added "Integrated On-Call Report" to the use reference
  4. Sections 5.3.3.4 and 5.8.1a - Corrected the reference from the 599' CC Radiological Restricted Area to 620' CC Radiological Restricted Area
-

## FIRST AID AND MEDICAL CARE

### 1.0 PURPOSE

To provide organizational responsibilities, administrative controls, and guidance for the response of the Perry Plant First Aid Team (FAT) to the scene of an injury onsite and to outline the notification requirements for offsite medical support. This instruction does not serve as a company policy statement on the medical care and treatment of an individual at the Perry Plant.

### 2.0 REFERENCES

#### 2.1 Source References:

1. Emergency Plan for PNPP Docket No. 50-440, 50-441
2. "Decontamination and Treatment of the Radioactivity Contaminated Patient at Lake East and West Hospitals"

#### 2.2 Use References:

1. Security Administrative Instruction (SAI) 0014: "Security Training Program"
2. Centerior Energy Company, Safety and Health Compliance Directive: "Exposure Control Plan for Bloodborne Pathogens"
3. Emergency Plan Implementing Instruction (EPI) B11: "Emergency Dosimetry Issue"
4. Plant Administrative Procedure (PAP) 1604: "Reports Management"
5. Integrated On-Call Report
6. Security Post Instruction (SPI) 0010: "Vehicle Access"
7. Ohio Revised Code (ORC), Section 3303.15
8. Nuclear Operating Administrative Procedure (NOP) LP-3001: "Safety and Health Program"
9. Security Post Instruction (SPI) 0027: "Security Operations - Organization Duties and Responsibilities"
10. Commitments addressed in this document:

P00013      P00057

### 3.0 DEFINITIONS

#### 3.1 Emergency Care

Immediate and temporary care that is administered to the victim of an accident or sudden illness until the services of more qualified medical personnel can be obtained.

#### 3.2 First Aid Team (FAT)

The FAT will be manned by two on-shift members of the plant staff, who, as a minimum, are trained to American Red Cross Standard First Aid and to American Red Cross Cardiopulmonary Resuscitation (CPR). Training requirements for Site Protection Section FAT members are outlined in <SAI-0014>.

A member of the on-shift FAT will assume the role of FAT Leader. However, when available, a certified Emergency Medical Technician (EMT) will assume primary responsibility for patient care and assessment and treatment of injuries.

#### 3.3 Certified Emergency Medical Technician

A site employee who possesses a current valid Emergency Medical Technician's (EMT) certificate issued by the State of Ohio and has been approved to function under local medical control as stated in Section 3303.15 of the Ohio Revised Code.

### 4.0 RESPONSIBILITIES

#### 4.1 Control Room Shift Supervisor

1. Ensure that appropriate FAT personnel are requested to be dispatched to aid in the treatment of injured individual(s).
2. Ensure that appropriate offsite emergency organizations are notified, as required.

#### 4.2 Secondary Alarm Station (SAS) Operator

1. Serve as a communications link between the scene and the Control Room regarding the medical status of a victim(s).
2. Serve as the communications link between Lake County Central Communications ("911") and the Perry Plant when requesting offsite fire department/ambulance support.
3. Notify and direct the FAT and Radiation Protection (RP) personnel to the scene of the injury.

#### 4.3 First Aid Team (FAT)

1. Respond to medical emergencies and render emergency care within their level of training or in support of certified EMT.
2. Render medical care and decontamination of equipment/area, and ensure timely completion of documentation in compliance with <Exposure Control Plan for Bloodborne Pathogens>.

#### 4.4 Radiation Protection Personnel

1. Evaluate the radiological conditions at the emergency scene and recommend actions to the FAT concerning the radiological aspects associated with sick or injured personnel.
2. Provide radiological assistance in surveying, decontaminating, and transporting contaminated, sick, or injured personnel.
3. Communicate the radiological status of victim(s) to Control Room Shift Supervisor and SAS prior to the victim(s) leaving the Protected Area.

#### 4.5 Primary Vehicle Access Control Point (PACP) Officer

1. Ensure dosimetry is issued to offsite emergency personnel (i.e., ambulance or other fire department personnel) in accordance with <EPI-B11>.

#### 4.6 Responsible Supervisor

1. Ensure a #NOP-LP-3001-01 Form "Employees First Notice of Injury/Illness" is submitted to the Safety Unit per NOP-LP-3001.

#### 4.7 Health Center

1. Render appropriate care for the assessment and treatment of ambulatory patients.
2. Contact the Secondary Alarm Station (SAS) to request an offsite ambulance in response to a medical incident outside the Protected Area.

#### 4.8 Certified Emergency Medical Technician

1. Assume primary responsibility from the FAT for the medical evaluation, treatment, and transfer of an injured victim.
2. Complete First Aid Team Report (PNPP No. 7346, Attachment 1) when care is provided by EMT at scene.



4.9 Supervisor, Security Training Unit

1. Ensure that active Site Protection Section (SPS) FAT members are qualified, and evaluate and correct any training concerns as identified.
2. Maintain and periodically inventory FAT responder kits and equipment stations per repetitive task program.

4.10 Fire Protection Coordinator

1. Ensure that EMT members are qualified, and maintain an updated listing of certified EMTs and paramedics.
2. Provide means for field identification and ranking of PNPP-certified EMTs and paramedics.
3. Maintain medical equipment designated for EMT or above use, and correct deficiencies when necessary.
4. Perform a periodic review of care quality provided for first aid incidents.

5.0 ACTIONS

5.1 Injured Person or Individual Discovering an Injured Person

1. Report the following information to the SAS or the Control Room using the quickest possible means:
  - a. Identify yourself by name.
  - b. Location of casualty.
  - c. Injury description.
  - d. Number and names of personnel involved, if known.
  - e. Assistance required, if known.
  - f. Any other pertinent information (contaminated area or personnel, other emergency conditions).

-- If trained, render basic life saving medical aid (ABC - airway maintenance, breathing control, circulation), until the arrival of the FAT.
2. Maintain communications with the SAS or Control Room and follow instructions to await FAT arrival or to report to a walk-in first aid station (located in PACP) or Health Center (Dispensary).

## 5.2 Control Room Shift Supervisor

1. When notified that a medical emergency exists, direct the SAS Operator to alert the FAT and, if the injury scene is in a Radiologically Restricted Area (RRA), to notify the on-shift RP Supervisor or Technician-In-Charge.
2. Dispatch an Operator to the accident location if the emergency involves actual or potential damage to plant systems.
3. Direct SAS Operator to immediately notify you when it is determined that the victim(s) will be transported to a local hospital.
  - a. Authorize the use of an alternate landing site, other than the Training Education Center (TEC) helistop, for the Life-Flight helicopter when requested, if this action will not affect plant operation or personnel safety.

NOTE: Life Flight services, through an agreement with Metro Health Medical Center, are only available for the transport of non-radiologically contaminated injuries.

- b. Ensure that the on-shift RP Supervisor or Technician-In-Charge notifies you of the radiological status of the victim(s) prior to the victim(s) leaving the Protected Area.
4. Upon being notified that the victim(s) being transported offsite is considered radiologically contaminated, perform the following:
  - a. Contact an Emergency Planning Unit (EPU) Representative using an <Integrated On-Call Report>, and direct individual to notify the State of Ohio and Lake County Emergency Management Agencies (EMAs) of the incident.

NOTE: If the injury(ies) occur during evening hours, this notification can be deferred until the start of business the next day.

  - b. Perform a 4 hour notification to the NRC per <PAP-1604> in accordance with 10CFR50.72(b)(2)(v).
5. Contact the victim's supervisor if he has not already been notified.

### 5.3 Secondary Alarm Station (SAS) Officers

5.3.1 Determine if the nature of the reported injury requires an emergency response or if the patient is ambulatory using the following guidelines:

1. Proceed to "emergency response" actions in Step 5.3.2 if any of the following criteria are met:
  - o Obstructed airway or difficulty breathing
  - o Circulation concerns or major bleeding
  - o Cardiac-related injuries
  - o Electrical shock-related injuries
  - o Trauma evident
  - o Burns to greater than 2% of body or affecting the face or chest
  - o SAS Operator's judgment
2. Proceed to "ambulatory patient" action in Step 5.3.3 if the following criteria are met:
  - o Minor Abrasion or laceration
  - o Skin rash, with no signs of breathing problems
  - o Minor burns
  - o Illness, without previous injury or exposure
  - o Wellness check-up

5.3.2 Perform the following "Emergency Response" actions:

1. Send out one "alert" tone over Plant Radio Channels 3, 4, and 5.
2. Announce the location and nature of the emergency simultaneously over Channels 3, 4, and 5, and verify that FAT members acknowledge the announcement.
3. Announce over the Plant PA for any available certified EMT or paramedic to respond to the injury scene.
4. When the injury is in the RRA or involves an actual or potential for radiological contamination, notify the on-shift HP Supervisor or Technician-In-Charge of the location and nature of the emergency. <P00013>
5. Notify the Shift Supervisor, SNSO, and Site Dispensary.
6. When an ambulance is requested by the FAT or the injury/illness description indicates the need for offsite support, perform the following:
  - a. Contact the Lake County Emergency Communications Center by dialing "911", and if known, notify them whether the victim(s) is potentially or actually contaminated.

- b. Notify the Shift Supervisor, SNSO, and Security Officers at the Primary Vehicle Access Control Point that an ambulance has been requested. <P00057>
  - c. Direct FAT to notify SAS immediately when it is determined that the victim(s) will require transport to an off-site hospital.
7. Periodically apprise the Shift Supervisor of the condition of victim and radiological status.
    - a. Inform the Control Room Shift Supervisor when notified by the FAT that life-flight transport has been requested, and relay any requests for an alternate landing site (other than the TEC helistop) to the Shift Supervisor for approval.
  8. Notify the Shift Supervisor, SNSO, and PACP Security Officers when informed by the FAT that the victim will be transported to a hospital.

NOTE: The primary hospital used in support of the Perry Plant is Lake East Hospital in Painesville with Lake West Hospital in Willoughby serving as backup.

9. Prior to the ambulance leaving the Protected Area, verify with the Security escort that the hospital has been notified on the radiological status of victim.

NOTE: Communications with hospital on the assessment and treatment of injuries will be through offsite ambulance personnel.

5.3.3 Perform the following actions for an "Ambulatory Patient":

1. Ascertain and document the following information:
  - Patient's name and Unit 1 badge number
  - Extent of known injuries
2. Direct individual to report to the Health Center (when staffed) or the walk-in first aid station located in the PACP.
3. Notify Medical Services if patient directed to the Health Center or on-duty SNSO if directed to PACP walk-in first aid station.
4. Notify the 620' CC Radiological Restrict Area (RRA) Control Point if injury/illness is in the RRA or involves a potential for radiological contamination.
5. Notify the individual's supervisor of the incident.

#### 5.4 First Aid Team

1. Upon tone-out, proceed to the scene of the incident or to a designated assembly area with the appropriate medical equipment.
2. Evaluate the extent of the injury and render appropriate medical aid taking the necessary universal precautions to prevent contact with blood and other potentially infectious materials (PIMs).

NOTE: When available, a certified EMT will assume the lead for the assessment of injuries and treatment of victim.

3. Identify RP support available at the injury scene for incidents within an RRA, and contact SAS immediately to request RP support if not yet available.
4. Relay the name, badge number, extent of injuries, and radiological status of injured or sick individual to the SAS as it becomes available.
5. Request ambulance support through the SAS, and identify location for transfer.
  - a. Brief ambulance personnel on the victim's condition, extent of injuries, and radiological status prior to transferring responsibility for victim.
6. When it is determined that the victim does not require immediate transport to an offsite medical facility, is ambulatory and not contaminated, aid should be continued in the Health Center (Dispensary), if staffed, or the PACP walk-in First Aid Station.
  - a. If an individual refuses needed medical attention, request that SAS notify the individual's immediate supervisor, Control Room Shift Supervisor, and Dispensary before releasing individual.
7. Complete a First Aid Team Report (Attachment 1) for victim.

NOTE: When an EMT provides care, the First Aid Team Report must be completed by the responding EMT. Sufficient detail must be provided as to the individual's injuries and what occurred to cause the injuries.

8. Periodically apprise the SAS on the medical condition of victim.
9. Notify the SAS immediately when Metro Life-Flight is contacted by ambulance personnel.
  - a. Relay requests for any alternate landing site (other than the TEC Helistop) to the SAS for Control Room Shift Supervisor approval.

10. Upon the departure of the ambulance or transfer of victim(s) to the Site Dispensary, perform the following:
  - a. Decontaminate equipment/area per the <Exposure Control Plan for Bloodborne Pathogens>.
  - b. Turn in completed First Aid Team Report to the SNSO.
  - c. Ensure that equipment used is restored to satisfactory condition for emergency use and that supplies used are replaced.
  - d. Document any exposure incident to blood or any potentially infectious material per the <Exposure Control Plan for Bloodborne Pathogens>.

#### 5.5 Supervisor, Nuclear Security Operations (SNSO)

1. Direct a Lead Security Officer, if available, to the injury scene to support the FAT and to control access at the scene.
2. Expedite the entry of ambulance into the Protected Area, including the timely issuance of emergency dosimetry per <EPI-B11>.
3. Coordinate all on-site security operations in support of the emergency condition.
4. Ensure a First Aid Team Report is completed for patients reporting to the PACP walk-in first aid station.

NOTE: A First Aid Team Report is not required for patients reporting to Health Center.

5. Process completed First Aid Team Report in accordance with <SPI-0027>.

#### 5.6 Primary Vehicle Access Control Point (PACP) Officer

1. When notified that an ambulance is responding to the Protected Area, perform the following:
  - o Issue dosimetry to emergency responders per <EPI-B11>.
  - o Unless directed otherwise by the SAS, verify that Ambulance Support Kit is placed on vehicle.

NOTE: Perry Township Fire Department (PTFD) ambulances are equipped with kits to support response to plant.

- o Coordinate emergency vehicle access per <SPI-0010>.

2. When the ambulance exits the Protected Area, perform the following:
  - When a site RP Technician is not accompanying the ambulance, collect the dosimetry, record all information, and notify the Radiation Protection Unit (RPU) in accordance with <EPI-B11>.
  - Verify that ambulance personnel have notified the offsite hospital regarding the radiological status of victim.
3. At the earliest convenience, notify the on-call Emergency Planning Representative to have the emergency equipment kits inventoried.

5.7 On-Shift Radiation Protection Supervisor or Technician-In-Charge

1. Respond to the injury scene to coordinate RP response.
  - a. If unable to respond to the injury scene establish contact with RP technician(s) at the scene using available communications means (i.e., Plant PA, portable radio).
2. Oversee the decontamination of injured individual.
3. For injuries where a complete frisk can not be completed, perform the following prior to the victim(s) leaving the Protected Area:
  - a. Determine whether the victim should be considered contaminated based on contamination levels at the injury scene, contamination levels on victim's co-workers, removal of protective clothing, etc.
  - b. Notify the Control Room Shift Supervisor and FAT Leader that the victim, while not fully frisked, is being considered contaminated or not contaminated.
4. Dispatch additional RP support to accompany victim on ambulance and to the hospital ER if the victim is considered radiologically contaminated.
5. Prior to the ambulance leaving the Protected Area, notify the FAT Leader of the radiological status of the victim including areas of contamination and contamination levels; verify that this status is communicated by the FAT to the Control Room Shift Supervisor and SAS.

5.8 Radiation Protection Technicians Responding to Injury Scene

1. Respond to assess any radiological complications when notified by SAS.
  - a. Pick up a portable radio if available, before entering RRA when responding from the 620' CC Access Point.

2. Assess radiological conditions at the injury scene, and advise the FAT Leader as to whether the victim should be moved due to radiological concerns.
  - a. When premature movement of the victim will unacceptably compound the injury based on the FAT judgment, attempt to either shield the victim and FAT from the radiation source or remove the source.
3. Establish a radiological boundary utilizing available materials and personnel at the scene.
4. Establish contact with RP Supervisor or Technician-In-Charge, if not at the injury scene, and brief him on radiological conditions at the scene and the radiological status of the victim.
5. Perform a whole body frisk of victim(s) when conditions allow and document the results of this survey.
6. Advise the RP Supervisor/Technician-In-Charge and the FAT of the radiological status of the victim.
7. Remove the victim's protective clothing when necessary to reduce contamination spread, after obtaining FAT approval, and re-frisk the victim(s).

NOTE: Ensure every effort, consistent with the well-being of the patient, is made to minimize the spread of contamination to uncontrolled areas and attending personnel. <P00013>

8. Wrap or cover contaminated areas on victim to avoid contamination spread, when on-site decontamination can not be performed without delaying necessary treatment or aggravating the injury.
9. Brief ambulance personnel on the victim's radiological status and RP concerns, and ensure they are appropriately dressed out in protective clothing, if needed.

NOTE: General victim contamination levels are measured in "cpm" by hospital staff.

#### 5.9 Radiation Protection Technician Accompanying Victim(s) in Ambulance

1. Verify that ambulance personnel have notified offsite hospital of radiological status of victim prior to vehicle leaving the Protected Area.
2. Advise ambulance personnel on contamination control practices and warn against the unnecessary spread of contamination during transport.



3. Complete frisking of victim(s), after obtaining ambulance crew approval, if exact radiological status of victim(s) has not yet been determined.
  - a. When frisking determines that contamination exists on victim previously considered not to be contaminated, request that ambulance personnel immediately notify offsite hospital.

4. Upon arriving at the off-site hospital, perform the following:

- a. Brief the hospital ER staff member meeting the ambulance on the radiological status of the victim(s).

NOTE: Whenever possible, hospital staff will meet ambulance at Emergency Room entrance, transfer victim to another gurney, and wrap victim before moving into emergency Room. This method is referred to as a "clean" transfer and eliminates need to line Emergency Room hallway with herculite.

- b. Verify that hospital ER staff are dressed, at a minimum, in the following hospital gown, surgical gloves, a Thermoluminescent Dosimeter (TLD), and pocket dosimeter.
- c. Direct ambulance personnel to return to the vehicle and not to leave the ambulance until crew and vehicle are monitored for radiological contamination.
- d. Assist the hospital ER Treatment Area staff in monitoring the victim for contamination, removal of potentially contaminated clothing, and decontamination.

-- If surgery is required due to the severity of the injury prior to the victim being decontaminated, the RP technician may be requested to accompany the victim into the Operating Room.

- e. Request hospital ER staff, or second RP technician to notify the Perry Plant Control Room, if radiological contamination is detected on victim(s), who was transported prior to the exact radiological status of victim(s) being determined.

- f. Provide guidance to attending ER staff regarding:

- Radiation exposure and protective actions.
- Collection of samples and decontamination procedures.
- Controlling access in/out of the treatment area to prevent the spread of radiological contamination.
- Removal of their protective clothing and in monitoring themselves for contamination.

#### 5.10 Additional Radiation Protection Support Arriving at Hospital

1. Obtain your Company identification badge prior to leaving the Perry Plant site to display to hospital emergency room (ER) Security.
2. Notify the RP technician, who responded with the ambulance, of your arrival.
3. Monitor the ER hallway leading from the ambulance to the treatment area, and release the hallway to hospital personnel for normal access.
4. Monitor the ambulance EMT(s)/paramedics and vehicle(s) for contamination, collect plant dosimetry, and release the ambulance when frisked radiologically clean.
5. Assist in controlling access to the ER Treatment Area and with the monitoring of staff exiting this area.
6. Assist in monitoring the ER Treatment Area for contamination once the victim and ER staff have left the room, and release the treatment area to hospital personnel for normal access when frisked radiologically clean.
7. Bag and return any contaminated waste to the plant.

#### 5.11 Records

##### 5.11.1 Records Handling

The First Aid Team Report is handled in accordance with <SPI-0027> as a SPS Incident Report Form. The SPS Supplemental and Statement Forms may be utilized per <SPI-0027> in documenting FAT response actions.

##### 5.11.2 Records Capture

The following records are generated by this document:

###### Quality Assurance Records

None

###### Non-Quality Records

First Aid Team Report (PNPP No. 7346)

# FIRST AID TEAM REPORT

Report No.

PNPP No. 7346 Rev. 1/2/97

**EPI-B4**

Date: \_\_\_\_\_

**Location: Bldg. \_\_\_\_\_ Elev. \_\_\_\_\_ Specific Area \_\_\_\_\_**

Patient Name: \_\_\_\_\_ Badge No. \_\_\_\_\_ Age \_\_\_\_\_  
(Last) (First) (MI)

Employer: \_\_\_\_\_ Immediate Supr.: \_\_\_\_\_ Ext. \_\_\_\_\_

Times	FAT	OffSite FD
Alerted		
On Scene		
Departed		
Clear		

VITAL SIGNS			
Time	B/P	Pulse	Resp

PUPILS					
Right		Left		Skin Condition	
<input type="checkbox"/>	Normal	<input type="checkbox"/>		<input type="checkbox"/> Cool	<input type="checkbox"/> Pale
<input type="checkbox"/>	Dilated	<input type="checkbox"/>		<input type="checkbox"/> Warm	<input type="checkbox"/> Cyanotic
<input type="checkbox"/>	Constricted	<input type="checkbox"/>		<input type="checkbox"/> Hot	<input type="checkbox"/> Jaundiced
<input type="checkbox"/>	No Reaction	<input type="checkbox"/>		<input type="checkbox"/> Dry	<input type="checkbox"/> Moist

**Chief Complaint:** \_\_\_\_\_

### LEVEL OF CONSCIOUS

Contaminated: ☐ Yes ☐ No

☐ Alert      ☐ Unconscious      ☐ Semi Conscious      ☐ Disoriented

**Medical History (Allergies, Medications, etc.):** \_\_\_\_\_

## VICTIM MANAGEMENT

**Level of Care:** Standard First Aid ☐ EMT ☐ Other: ☐ \_\_\_\_\_

**Ventilation:** \_\_\_\_\_

**Wound Care:** \_\_\_\_\_

**Immobilization:** \_\_\_\_\_

**Positioning:** \_\_\_\_\_

**Additional Comments:** \_\_\_\_\_

Victim Transfer: \_\_\_\_\_ at \_\_\_\_\_ (Time)

## DETAILS

Reported By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Date/Time: \_\_\_\_\_

**First Aid Team Members:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

EMT On-line No.

**(Cont'd. on back)**

## FIRST AID TEAM REPORT

**PNPP No. 7346 Rev. 1/2/97**

**EPI-B4**

**DETAILS: (Cont'd.)**

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B5), Rev. 6 C-6

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0005, R/6, C-6

Control Number 60

Remove the pages listed below and insert enclosed pages:

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
6	C-6	i - 4	

The Cleveland Electric Illuminating Company

PERRY OPERATIONS MANUAL

Emergency Plan Implementing Instruction

PNPP

No. 000

**INFORMATION  
ONLY**

TITLE: PERSONNEL ACCOUNTABILITY/SITE EVACUATION

REVISION: 6 EFFECTIVE DATE: 7-27-95

PREPARED: Joseph D. Anderson 4-2-95  
/ Date

EFFECTIVE PIC's

PIC No.	Type of Change	Effective Date
1	Intent	5-29-96
2	Intent	8-30-96
3	Intent	4-21-97
4	Intent	6-15-98
5	Admin	1-20-00
6	Non-Intent	4-4-01

PERSONNEL ACCOUNTABILITY/SITE EVACUATION

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SCOPE OF REVISION:

- Rev. 6 -
1. Provides flow chart attachments to better delineate ERO response.
  2. Insert wording for pre-recorded "Emergency" message on Exclusion Area Page and Tone Alert Radio Systems.
  3. Incorporates and supersedes POP-1901.
  4. Provides guidance on the activation of county facilities and services to support site personnel without transportation. [PIF #95-455]
  5. Bring procedure up to date with the current format.
  6. Revised in its entirety.
  7. Consolidates former TSC Admin. Asst. duties with TSC Security Coordinator actions.



### Change History

PIC Number: 1                      Affected Pages: ii, 3, 4, 5, 6, 9, 9a, 10, 12, 13, 15, 16, 17, 18

Summary of Change:

1. Addresses use of County monitoring and decontamination centers for site evacuees, in lieu of Company facilities.
- 

PIC Number: 2                      Affected Pages: i, iii, 5, 7, 9

Summary of Change:

1. Changes relocation center for site personnel without transportation from Auburn Career Center to Mentor High School Football Stadium.
- 

PIC Number: 3                      Affected Pages: i, iii, 5, 7, 7a, 8, 13, 14

Summary of Change:

1. Directs TSC and OSC staff to utilize TSC hallway card reader for accountability purposes as part of facility activation.
- 

PIC Number: 4                      Affected Pages: i, iii, 3, 5, 8

Summary of Change:

1. Eliminate reference to the use of onsite tone-alert radio units within the Owner-Controlled Area.
- 

PIC Number: 5                      Affected Pages: i, iii, 1

Summary of Change:

1. Change company name to read FENOC.
- 

PIC Number: 6                      Affected Pages: i, iii, 3

Summary of Change:

1. Added a NOTE stating that it may be prudent to delay implementation of Site Accountability in situations where personnel safety could be jeopardized, such as during a security event or in severe weather. This note is consistent with the note in other EPIs that address accountability.
-

## PERSONNEL ACCOUNTABILITY/SITE EVACUATION

### 1.0 PURPOSE

This instruction outlines actions to be taken during an emergency at the Perry Plant for the accountability of all FirstEnergy Nuclear Operating Company (FENOC) employees, contractors, consultants, and visitors within the site boundary, including those involved in Control Room activities or members of the Emergency Response Organization (ERO).

Personnel accountability will be implemented upon declaration of a Site Area Emergency, or based on the discretion of the Emergency Coordinator, with all personnel within the Protected Area being accounted for within 30 minutes. If the emergency escalates to a General Emergency without having been previously classified as a Site Area Emergency, accountability shall be initiated upon declaring the General Emergency. Once implemented, accountability is to be maintained continuously thereafter until the emergency is terminated or until otherwise directed by the Operations Manager.

### 2.0 REFERENCES

#### 2.1 Source References:

1. Emergency Plan for PNPP Docket Nos. 50-440, 50-441
2. Nuclear Regulation (NUREG) 0654: "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants"

#### 2.2 Use References:

1. Security Post Instruction (SPI) 0023: "Instructions for Personnel Accountability and Site Evacuation"
2. Commitments addressed in this document:

L00406      P00006      P00073

### 3.0 DEFINITIONS

#### 3.1 Accountability

Actions taken to ascertain the whereabouts of persons within the Site Boundary either by means of evacuation or assembly.

### 3.2 Protected Area

The area encompassing the Vital Areas, all areas inside the double perimeter barrier fence and the Primary Access Control Point-(PACP).

### 3.3 Project Support Area

The area within the site boundary encompassed by a security fence which encloses the warehouse building, office buildings, and contractor support areas, and to which access is controlled for security purposes.

### 3.4 Site Boundary

The area within the Owner-Controlled Area, which includes the Protected Area and the Project Support Area, and is encompassed by a security fence surrounding the Perry Plant.

### 3.5 Owner-Controlled Area

Areas owned by the Cleveland Electric Illuminating Company which are located within or adjacent to the Site Boundary security fence.

## 4.0 RESPONSIBILITIES

### 4.1 TSC Operations Manager

1. As acting Emergency Coordinator, ensure the initiation of accountability as required by this instruction.
2. Assume overall authority for the accountability of personnel within the Site Boundary area.

### 4.2 Shift Supervisor

1. Assume the Technical Support Center (TSC) Operations Manager's duties prior to the TSC being declared operational.
2. Ensure the prompt accountability of Control Room staff and on-shift personnel.

### 4.3 TSC Radiation Protection Coordinator: Assess radiological conditions and recommend the use of the designated offsite monitoring/decontamination centers or other areas on-site.

### 4.4 TSC Security Coordinator

1. Coordinate the implementation of accountability measures by the Supervisor, Nuclear Security Operations (NSO) in support of the TSC Operations Manager.

2. Oversee accountability of TSC staff members.
- 4.5 OSC Coordinator: Direct the accountability of personnel responding to or already staffing the Operations Support Center (OSC).
- 4.6 Supervisor, Nuclear Security Operations (SNSO): Direct the actions of the security force personnel in obtaining the accountability of onsite personnel in accordance with <SPI-0023>.
- 4.7 Perry Plant Section Managers: Ensure that Company, Contractor, and consultant personnel are trained in their appropriate response to accountability through General Employee Training (GET), this instruction, or other periodic training as deemed necessary.
- 4.8 Perry Plant Personnel: Follow the requirements of this instruction when personnel accountability is initiated.
- 4.9 Regulatory Affairs Coordinator: Notify local county Emergency Operations Centers (EOCs) when the activation of offsite monitoring/decontamination centers is required in support of site evacuation.

## 5.0 ACTIONS

### 5.1 TSC Operations Manager shall:

- 5.1.1 Determine, based on the TSC Radiation Protection Coordinator's recommendation, whether the offsite monitoring/decontamination centers should be activated to monitor personnel evacuating the site due to a significant radiological release or to assemble contractor/vendor support evacuated from the site during outages.

NOTE: It may be prudent to delay implementation of accountability in situations where personnel safety may be jeopardized, such as a security event or severe weather.

- 5.1.2 Direct the Shift Supervisor to initiate the applicable pre-recorded "Emergency" (Accountability) Message (Attachment 1) on the Exclusion Area Paging (R53) System.

1. Provide additional guidance, if required, to personnel evacuating the site, using the R53 PA feature, for the following:

- designated evacuation routes due to a security contingency
- use of offsite monitoring and decontamination centers

- 5.1.3 Direct the Security Coordinator to perform the following:

1. Deleted

- 5.1.4 If the offsite monitoring/decontamination centers are being activated, direct the Administrative Assistant to notify the NRC, State of Ohio, and local counties on the next Follow-up Notification form (PNPP No. 775) per <EPI-B1>.

5.2 Shift Supervisor shall:

- 5.2.1 Perform the actions outlined in Section 5.1 if the TSC is not yet operational, and utilize TSC staff as they become available to accomplish the actions listed in Sections 5.2 thru 5.4.
- 5.2.2 Activate the applicable pre-recorded "Emergency" message (Attachment 1) on the Exclusion Area Paging (R53) System every five (5) minutes until accountability is completed.
1. Provide additional guidance, if required, to personnel evacuating the site, using the R53 PA feature, for the following:
    - o designated evacuation routes due to a security contingency
    - o use of offsite monitoring and decontamination centers
- 5.2.3 Direct all Control Room staff and Perry Plant Operators (PPOs) located in the Unit 2 Control Room, to promptly use the designated accountability card readers.

Plant management who are not currently staffing an emergency facility may utilize a Control Room accountability card reader in lieu of evacuation.

- 5.2.4 If not yet relocated to the OSC, verify the location and status of PPOs presently dispatched in-plant.

After the OSC is operational, shift personnel such as the Shift I&C/HP/Chemistry Technicians and Perry Plant Operators (PPOs) will be accounted for through the OSC.

1. Complete Personnel Accountability Checklist (PNPP No. 7957, Attachment 2) to account for on-shift PPOs outside the Control Room, and forward to the CAS via the Secondary Alarm Station (SAS). <P00073>
- 5.2.5 Obtain the number of unaccounted for people within the Protected Area from the CAS no later than 30 minutes after accountability was initiated.

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B7b), Rev. 9

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0007b, R/9

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
9	n/a	9	8

# PERRY OPERATIONS MANUAL

**PNPP**

No **0000**

**INFORMATION  
ONLY**

EFFECTIVE DATE: 4-4-01

PREPARED: Louis J. Sosler 11-6-00  
/ Date

[illegible]



MANUAL OFFSITE DOSE CALCULATIONS

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SCOPE OF REVISION:

Periodic Review - Required

- Rev. 9 -
1. Instruction revised in its entirety; no rev bars used.
  2. Addresses upgrade to Onsite MET Tower sensors under DCP No.97-0107.
  3. Insert's reference to Commitment No. S00552.  
[PIFRA #97-1222-001]
  4. Inserts other commitment references already addressed by instruction.
  5. Updated references to current procedures and instructions.

## MANUAL OFFSITE DOSE CALCULATIONS

### 1.0 PURPOSE

This instruction provides backup offsite emergency dose assessment methods and techniques that could be used to estimate the potential offsite consequences of a significant radioactivity release to the environment. This instruction also provides methods for obtaining forecast meteorology and meteorological parameters from the site MET Tower, National Weather Service, or direct observation.

### 2.0 SCOPE

This Instruction should be used to conduct manual off-site dose calculations when the Computer Aided Dose Assessment (CADAP) program is unavailable for use or is not working properly.

### 3.0 RESPONSIBILITIES

#### 3.1 Emergency Coordinator

NOTE: These duties shall be performed by the Operations Manager prior to Emergency Operations Facility (EOF) being operational, or the Shift Supervisor prior to Technical Support Center (TSC) being operational.

1. Review and approve protective actions recommended by Offsite Radiation Advisor.
2. Relay the results of dose projections and appropriate protective action recommendations to the applicable offsite agencies.

#### 3.2 Offsite Radiation Advisor

NOTE: These duties shall be performed by the Radiation Protection Coordinator prior to EOF being operational, or the Shift Technical Advisor, if stationed, prior to TSC being operational.

1. Review appropriate dose calculations performed by the Dose Assessor(s).
2. Review protective action recommendations based on the calculations performed by the Dose Assessor(s), and recommend approval to the Emergency Coordinator.

### 3.3 TSC/EOF Dose Assessor(s)

NOTE: These duties shall be performed by the On-Shift Chemistry Technician prior to TSC or EOF being declared operational.

1. Perform offsite dose calculations, based on the applicable section(s) of this instruction.
2. Develop protective action recommendations in accordance with <EPI-B8>.

### 4.0 REFERENCES

#### 4.1 Source References:

1. Emergency Plan for PNPP Docket Nos. 50-440, 50-441
2. EPI-B9: Emergency Records
3. EPI-A1: Emergency Action Levels
4. EPI-B3: Radiological Surveys for Emergencies

#### 4.2 Use References:

1. EPI-B7a: Automated Offsite Dose Calculations
2. EPI-B8: Protective Actions and Guides
3. Implementation of EPA-400-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents
4. NUS (R. R. Bowers) calculations dated 11/1/93. [CEI Purchase Order No. C-901596]
5. Validation & Verification Report for the Perry Plant CADAP, dated 11/15/93. [Pacific Nuclear Systems, Inc./mbs Consulting Partners]
6. Meteorology and Atomic Energy [1968, USAEC Division of Technical Information]
7. FEMA-REP-2, Guidance on Offsite Emergency Radiation Measurement Systems, dated 9/80.
8. Technical Basis Package for Alternate Offsite Dose Hand Calculations [NUS Corporation File No. 2065-49]
9. Commitments addressed in this document:

B00800    L00438    S00552  
L00063    L00474

## 5.0 DEFINITIONS

### 5.1 Atmospheric Dispersion Parameter

Symbol  $X/Q$  ("chi over q"). The amount of dispersion that has occurred between the point of release and the downwind plume centerline point of interest.  $X/Q$ s are expressed in units of  $\text{sec}/\text{m}^3$ .

### 5.2 Dose Calculations

The evaluation of the consequences of a release of radioactive material which has exposed, or which may expose, emergency response personnel and members of the general public. Dose calculations include projection of offsite doses based on release parameters for both noble gases and iodines that could contribute to Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent-Child Thyroid (CDEct) doses.

### 5.3 Dose Factors

Factors incorporated in calculations to convert the radioactivity concentration at the plume centerline, downwind point of interest to a TEDE for noble gases and a child thyroid dose commitment per hour of inhalation for iodines. The dose factors listed for the various calculation methods often include constants and unit conversion factors in order to reduce the time needed to perform a calculation. The dose factors are based on USNRC Regulatory Guide 1.109 (Rev. 1) and EPA-400-R-92-001.

### 5.4 Ground Level Release

The release of airborne radioactivity from building vents, buildings, or structures (other than an elevated stack or vent). In keeping with NRC guidance, all releases from Perry are considered to be ground level releases. In a ground level release, the radioactivity concentration is highest at the point of release and decreases with distance to downwind locations.

### 5.5 Pasquill Stability Class

A term used to describe the atmospheric conditions relevant to the dispersion of a release. The conditions are categorized into seven classes A through G. Class A is considered to be "very unstable" and correlates to the best dispersion. Class G is very stable, resulting in poor dispersion (and thereby higher offsite concentrations).

### 5.6 Committed Dose Equivalent (CDE)

The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50 year period following the intake.

5.7 Committed Effective Dose Equivalent (CEDE)

The sum of the products of the weighting factors applicable to each of the body organs or tissues and the committed dose equivalent to these organs or tissues. CEDE is the internal dose component of TEDE.

5.8 Deep Dose Equivalent (DDE)

The dose equivalent measured at a tissue depth of 1 cm (1000 mg/cm<sup>2</sup>). DDE is the external dose component of TEDE.

5.9 Total Effective Dose Equivalent (TEDE)

The sum of DDE (external dose) and CEDE (internal dose).

6.0 DETAILS

The following action will be performed by the TSC/EOF Dose Assessor(s) or Shift Chemistry Technician:

6.1 Use Attachment 1, Meteorological and Atmospheric Dispersion (X/Q), to obtain meteorological data from the following sources:

- Perry Meteorological Tower
- National Weather Service (NWS)
- Direct Observation

6.2 Calculate Total Effective Dose Equivalent (TEDE) and Committed Dose Equivalent to the Child Thyroid (CDEct) using the most applicable calculational method:

- Dose Calculations Based on Elevated Effluent Monitor Readings (Attachment 2)
- Dose Calculations Based on Field Measurements (Attachment 3)

6.3 Perform calculations per <EPI-B8> to develop an offsite protective action recommendation (PAR) if projected doses exceed 1 rem Total Effective Dose Equivalent (TEDE) or 5 rem Committed Dose Equivalent-Child Thyroid (CDEct) at the Site Boundary.

6.4 Record accumulated dose utilizing Attachment 4, using a separate Accumulated Dose Calculation Sheet for each downwind sector.

6.5 Contact the National Weather Service (NWS) using Part II of the Emergency Response Telephone Directory to obtain the forecast meteorological data.

NOTE: The NWS should be contacted periodically while performing dose assessments to verify potential changes in meteorological conditions.

6.6 Repeat the dose projection calculations whenever conditions or parameters (monitor readings, MET data, etc.) change during the first few hours following a release and at least once per hour for as long as the release continues.

6.7 Records

The following records are generated by this document:

Quality Assurance Records

Meteorological Data Calculation Sheet: PNPP No. 8036

Effluent Monitor Reading Calculation Sheet: PNPP No. 9429

RMT Field Measurement Calculation Sheet: PNPP No. 8049

RMT Air Sample Calculation Sheet: PNPP No. 8050

RMT Sample Analysis Calculation Sheet: PNPP No. 8052

Accumulated Dose Calculation Sheet: PNPP No. 8054

Non-Quality Records

None

METEOROLOGY AND ATMOSPHERIC DISPERSION

1.0 PURPOSE

This attachment is used to determine current meteorological conditions and X/Q values necessary to calculate offsite dose rates.

2.0 PREREQUISITES

None

3.0 ACTIONS

The following are methods, listed in order of preference, for obtaining meteorological data and X/Q values:

Perry Meteorological Tower (Section 3.1)  
National Weather Service (Section 3.2)  
Direct Observation (Section 3.3)

3.1 Perry Meteorological Tower

MET data can be obtained from the Plant Integrated Computer System (ICS) or locally at the MET Tower. The Integrated Computer System will display the stability class directly on the Meteorological Data screen.

- 3.1.1 Record the wind speed, wind direction, differential temperature, and stability class on the Meteorological Data Calculation Sheet (PNPP No. 8036). In addition, record differential temperature ( $\Delta T$ ) and standard deviation ( $\sigma\theta$ ), only if stability class is not directly available.

NOTE: Wind direction and wind speed are listed below in preferred order:

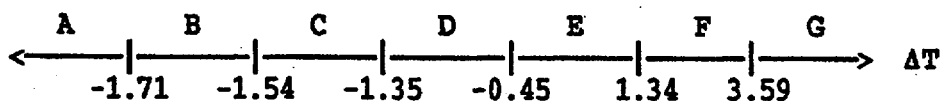
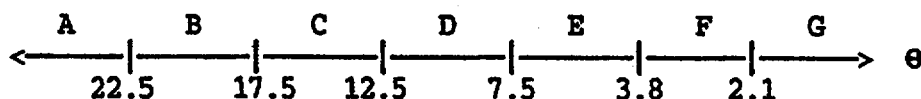
WIND DIRECTION  
- 10m  
- 60m

WIND SPEED  
- 10m  
- 60m, multiplied by one of the following:

- (1) 0.76 if stability class is A, B, C, or D;
- (2) 0.48 if stability class is E, F, or G;
- (3) 0.63 if stability class is unknown

METEOROLOGY AND ATMOSPHERIC DISPERSION (Cont.)

- 3.1.2 If not available from the MET Tower printout, determine the stability class from the delta T or standard deviation ( $\sigma\theta$ ) [in that order] using the number lines below and record on the Meteorological Data Calculation Sheet.

Temperature Change ( $\Delta T$ ) with Height ( $^{\circ}\text{F}/50\text{m}$ )Standard Deviation ( $\sigma\theta$ ), in degrees

Source: Meteorology and Atomic Energy [1968, USAEC Division of Technical Information]

**NOTE:** If value equals number on the division line, use the stability class to the right of the line.

- 3.1.3 Determine the  $X\mu/Q$  values for the site boundary, 2 miles, 5 miles, and 10 miles, or distance of concern, by using the Data Table 1-1 to select the column which corresponds to the stability class; record these  $X\mu/Q$  values onto the Meteorological Data Calculation Sheet.

Data Table 1-1

DISTANCE (miles)	STABILITY CLASS						
	A	B	C	D	E	F	G
Site Boundary	1.10E-5	5.66E-5	1.45E-4	3.63E-4	6.61E-4	1.09E-3	1.66E-3
1	1.86E-6	1.70E-5	4.94E-5	1.36E-4	3.02E-4	5.67E-4	1.06E-3
2	4.49E-7	4.35E-6	1.46E-5	4.25E-5	1.18E-4	2.38E-4	5.21E-4
3	3.17E-7	1.95E-6	7.11E-6	2.12E-5	6.79E-5	1.40E-4	3.23E-4
4	2.49E-7	1.10E-6	4.28E-6	1.30E-5	4.61E-5	9.61E-5	2.27E-4
5	2.06E-7	7.06E-7	2.89E-6	8.83E-6	3.43E-5	7.20E-5	1.73E-4
6	1.77E-7	4.90E-7	2.09E-6	6.46E-6	2.70E-5	5.70E-5	1.38E-4
7	1.56E-7	3.60E-7	1.60E-6	4.95E-6	2.21E-5	4.68E-5	1.14E-4
8	1.39E-7	2.76E-7	1.26E-6	3.94E-6	1.86E-5	3.96E-5	9.67E-5
9	1.26E-7	2.18E-7	1.03E-6	3.21E-6	1.61E-5	3.42E-5	8.38E-5
10	1.16E-7	1.76E-7	8.54E-7	2.68E-6	1.41E-5	3.00E-5	7.38E-5

Source: NUS (R.R. Bowers) calculations, dated 11/1/93.  
[CEI Purchase Order No. C-901596]

- 3.1.4 Divide each  $X\mu/Q$  value by the wind speed to determine  $X/Q$  and record on the Meteorological Data Calculation Sheet.



METEOROLOGY AND ATMOSPHERIC DISPERSION (Cont.)

3.1.5 Enter the data source, date, time and signature of performer on the Meteorological Data Calculation Sheet.

3.2 National Weather Service (NWS)

3.2.1 Contact the NWS using the PNPP Emergency Response Telephone Directory and request the following MET data: <S00552>

- a. General weather forecast for the next 12 to 24 hours.
- b. Wind speed and direction (indicate To/From).
- c. Possibility of a frontal system passing through the area in the next several hours which could cause a change in wind direction.
- d. Sky cover estimate, or a "gross" stability estimate
- e. Possibility of precipitation which could affect deposition from the plume.
- f. Possibility of adverse weather conditions developing which could affect evacuation times. (If weather conditions are currently poor, the possibility of a favorable change which could improve evacuation conditions.)

Record wind speed and direction on the Meteorological Data Calculation Sheet.

3.2.2 Using the Data Table 1-2 (on the following page), identify the Stability Class (A-G) associated with the observed wind speed and sky conditions, and record on the Meteorological Data Calculation Sheet.

\*\*\*\*\*

CAUTION

When uncertain about the choice of Stability Class based on local observations, choose the most restrictive Stability Class that cannot be reasonably excluded. G is the most restrictive Stability Class, and A is the least restrictive Stability Class.

\*\*\*\*\*

METEOROLOGY AND ATMOSPHERIC DISPERSION (Cont.)

Data Table 1-2

Wind Speed mph	Daytime Sun Strength			Night Time	
	Strong	Moderate	Slight	Thin overcast or $\leq 50\%$ low cloud cover	$> 50\%$ low cloud cover
$< 4.5$	A	B	B	F	G
4.5 - 6.6	B	B	C	E	F
6.7 - 11.1	B	C	C	D	E
11.2 - 13.4	C	D	D	D	D
$\geq 13.5$	C	D	D	D	D

Source: Meteorology and Atomic Energy [1968, USAEC Division of Technical Information]

- 3.2.3 Determine the  $X_{\mu}/Q$  values for the site boundary, 2 miles, 5 miles, and 10 miles, or distance of concern, by using Data Table 1-1 below to select the column which corresponds to the stability class; record these  $X_{\mu}/Q$  values onto the Meteorological Data Calculation Sheet.

Data Table 1-1

DISTANCE (miles)	STABILITY CLASS						
	A	B	C	D	E	F	G
Site							
Boundary	1.10E-5	5.66E-5	1.45E-4	3.63E-4	6.61E-4	1.09E-3	1.66E-3
1	1.86E-6	1.70E-5	4.94E-5	1.36E-4	3.02E-4	5.67E-4	1.06E-3
2	4.49E-7	4.35E-6	1.46E-5	4.25E-5	1.18E-4	2.38E-4	5.21E-4
3	3.17E-7	1.95E-6	7.11E-6	2.12E-5	6.79E-5	1.40E-4	3.23E-4
4	2.49E-7	1.10E-6	4.28E-6	1.30E-5	4.61E-5	9.61E-5	2.27E-4
5	2.06E-7	7.06E-7	2.89E-6	8.83E-6	3.43E-5	7.20E-5	1.73E-4
6	1.77E-7	4.90E-7	2.09E-6	6.46E-6	2.70E-5	5.70E-5	1.38E-4
7	1.56E-7	3.60E-7	1.60E-6	4.95E-6	2.21E-5	4.68E-5	1.14E-4
8	1.39E-7	2.76E-7	1.26E-6	3.94E-6	1.86E-5	3.96E-5	9.67E-5
9	1.26E-7	2.18E-7	1.03E-6	3.21E-6	1.61E-5	3.42E-5	8.38E-5
10	1.16E-7	1.76E-7	8.54E-7	2.68E-6	1.41E-5	3.00E-5	7.38E-5

Source: NUS (R.R. Bowers) calculations, dated 11/1/93.  
[CEI Purchase Order No. C-901596]

- 3.2.4 Divide each  $X_{\mu}/Q$  value by the wind speed to determine  $X/Q$  and record on the Meteorological Data Calculation Sheet.
- 3.2.5 Enter the data source, date, time and signature of the performer on the Meteorological Data Calculation Sheet.

METEOROLOGY AND ATMOSPHERIC DISPERSION (Cont.)3.3 Direct Observation

- 3.3.1 Dispatch an individual to an onsite observation point in an area where the wind is not affected by buildings, structures, or other obstructions.
- 3.3.2 Estimate the wind direction (from) by observation and the wind speed by using Data Table 1-3, and record this data on the Meteorological Data Calculation Sheet.

Data Table 1-3

Class	Observation	Approx. Wind Speed
Calm	Smoke rises vertically	1 mph
Light Breeze	Smoke drifts	1-3 mph
Slight Breeze	Leaves rustle, wind felt on face	4-9 mph
Gentle Breeze	Light flags extend, leaves and twigs in constant motion	8-12 mph
Moderate Breeze	Small branches move, dust and dirt stirred up	13-18 mph

Source: Meteorology and Atomic Energy [1968, USAEC Division of Technical Information]

- 3.3.3 Identify the Stability Class (A-G) associated with the observed wind speed and sky conditions using Data Table 1-2 (on the following page), and record on the Meteorological Data Calculation Sheet.

\*\*\*\*\*

CAUTION

When uncertain about the choice of Stability Class based on local observations, choose the most restrictive Stability Class that cannot be reasonably excluded. G is the most restrictive Stability Class, and A is the least restrictive Stability Class.

\*\*\*\*\*

METEOROLOGY AND ATMOSPHERIC DISPERSION (Cont.)

Data Table 1-2

Wind Speed mph	Daytime Sun Strength			Night Time	
	Strong	Moderate	Slight	Thin overcast or $\leq 50\%$ low cloud cover	$> 50\%$ low cloud cover
< 4.5	A	B	B	F	G
4.5 - 6.6	B	B	C	E	F
6.7 - 11.1	B	C	C	D	E
11.2 - 13.4	C	D	D	D	D
$\geq 13.5$	C	D	D	D	D

Source: Meteorology and Atomic Energy [1968, USAEC Division of Technical Information]

- 3.3.4 Determine the  $X_{\mu}/Q$  values for the site boundary, 2 miles, 5 miles, and 10 miles, or distance of concern by using Data Table 1-1 to select the column which corresponds to the stability class; record these  $X_{\mu}/Q$  values onto the Meteorological Data Calculation Sheet.

Data Table 1-1

DISTANCE (miles)	STABILITY CLASS						
	A	B	C	D	E	F	G
Site							
Boundary	1.10E-5	5.66E-5	1.45E-4	3.63E-4	6.61E-4	1.09E-3	1.66E-3
1	1.86E-6	1.70E-5	4.94E-5	1.36E-4	3.02E-4	5.67E-4	1.06E-3
2	4.49E-7	4.35E-6	1.46E-5	4.25E-5	1.18E-4	2.38E-4	5.21E-4
3	3.17E-7	1.95E-6	7.11E-6	2.12E-5	6.79E-5	1.40E-4	3.23E-4
4	2.49E-7	1.10E-6	4.28E-6	1.30E-5	4.61E-5	9.61E-5	2.27E-4
5	2.06E-7	7.06E-7	2.89E-6	8.83E-6	3.43E-5	7.20E-5	1.73E-4
6	1.77E-7	4.90E-7	2.09E-6	6.46E-6	2.70E-5	5.70E-5	1.38E-4
7	1.56E-7	3.60E-7	1.60E-6	4.95E-5	2.21E-5	4.68E-5	1.14E-4
8	1.39E-7	2.76E-7	1.26E-6	3.94E-6	1.86E-5	3.96E-5	9.67E-5
9	1.26E-7	2.18E-7	1.03E-6	3.21E-6	1.61E-5	3.42E-5	8.38E-5
10	1.16E-7	1.76E-7	8.54E-7	2.68E-6	1.41E-5	3.00E-5	7.38E-5

Source: NUS (R.R. Bowers) calculations, dated 11/1/93.  
[CEI Purchase Order No. C-901596]

- 3.3.5 Divide each  $X_{\mu}/Q$  value by the wind speed to determine  $X/Q$  and record on the Meteorological Data Calculation Sheet.
- 3.3.6 Enter the data source, date, time, and signature of performer on the Meteorological Data Calculation Sheet.

## METEOROLOGICAL DATA CALCULATION SHEET

PNPP No. 8036 Rev. 11/9/00

EPI-B7b

DATE	TIME
DATA SOURCE	
LOCATION OF OBSERVATION <i>(if applicable)</i>	TIME OF OBSERVATION <i>(if applicable)</i>
SIGNATURE	REVIEWED BY

WIND DIRECTION (To)

± 180° = WIND DIRECTION (From)

WIND SPEED (mph)

STABILITY CLASS (A-G)

- IF REQUIRED TO DETERMINE STABILITY CLASS:

DIFFERENTIAL TEMPERATURE ( $\Delta T$ )  
(°F/50m)
WIND STANDARD DEVIATION ( $\sigma \theta$ )

$\frac{X_u}{Q}$ for each distance	
Site Boundary	
2 mi.	
5 mi.	
10 mi.	
_____ mi.	

 DIVIDE BY THE WIND  
SPEED

$X/Q$ for each distance (s/m <sup>3</sup> )	
Site Boundary	
2 mi.	
5 mi.	
10 mi.	
_____ mi.	

DOSE CALCULATIONS BASED ON ELEVATED EFFLUENT MONITOR READINGS

1.0 PURPOSE <L00063>

This attachment provides a method for using effluent monitor readings to project dose rates at selected downwind locations.

2.0 PREREQUISITES

2.1 The following data must be available for this method:

- 2.1.1 Effluent Monitor Reading, in cpm or  $\mu\text{Ci/cc}$  Xe-133 equivalent, for effluent release pathway(s) of concern.
- 2.1.2 Effluent Flow Rate, in kcfm, for effluent release pathway(s) of concern.
- 2.1.3 MET data from Perry Meteorological Tower or obtained using alternate sources per Attachment 1.

3.0 ACTIONS

3.1 Perform the following calculation for each plant vent only when a valid HIGH Alarm is received on an effluent radiation monitor (on the low range noble gas channel).

- 3.1.1 Check the plant vent for which the calculation is being performed, and record this data on the Effluent Monitor Reading Calculation Sheet.

NOTE: A separate calculation must be completed for each plant vent pathway of concern.

- 3.1.2 Enter the X/Q value for the Site Boundary obtained using Attachment 1 into block A.
- 3.1.3 Enter monitor reading for the on-scale vent monitor range into block B.
- 3.1.4 Using Data Table 2-1, enter the appropriate monitor conversion factor into block C.
- 3.1.5 Enter the expected release duration (hours) into block D.

NOTE: Use 6 hour (default) if release duration is not known. If the release has been terminated, use the actual duration of the release or '1' (whichever is greater).

DOSE CALCULATIONS BASED ON ELEVATED EFFLUENT MONITOR READINGS (Cont.)

- 3.1.6 Enter the vent flow rate (kcfm) into block E.
- If vent flows are not available from the ICS, use Data Table 2-2 to estimate flow out the affected vent(s).
- 3.1.7 Multiply block A x B x C x D x E x 1000; enter value obtained into block F. (This is the Site Boundary TEDE dose.)
- 3.1.8 Identify the applicable vent reduction (partition) factor from the Data Table 2-3; enter into block G.
- 3.1.9 Multiply block F by block G; enter product into block H. [This is the site boundary CDE - CHILD THYROID ( $CDE_{ct}$ ) dose.]
- If block F is less than 1.0 rem and block H is less than 5.0 rem, no protective actions are required. NO FURTHER ACTION REQUIRED (unless multiple vent radiation monitors are in alarm).
- If block F is greater than or equal to 1.0 rem OR block H is greater than or equal to 5.0 rem, protective actions are required. CONTINUE WITH STEP 3.1.10 ON PAGE 16.

DATA TABLE 2-1 &lt;L00438, L00474&gt;

MONITOR CONVERSION FACTORS								
CONDITION	RANGE	Unit 1/2 LOCA in Drywell	Unit 1/2 LOCA in CNTMT	Unit 1 FHA in FHB	Unit 1/2 FHA in CNTMT	Unit 1 Break Outside CNTMT Auxiliary Bldg.	TB/HB	Off-Gas
Low range HI alarm, and high range > 10 $\mu\text{Ci/cc}$	HIGH ( $\mu\text{Ci/cc}$ )	1.56E-2	2.13E-2	1.62E-2	1.56E-2	2.13E-2	5.95E-1	2.13E-2
Low range HI alarm, and high range < 10 $\mu\text{Ci/cc}$ ; mid range > 0.05 $\mu\text{Ci/cc}$	MID ( $\mu\text{Ci/cc}$ )	2.72E-2	3.70E-2	2.82E-2	2.72E-2	3.70E-2	1.03E+0	3.70E-2
Low range HI alarm	LOW (cpm)	3.07E-9	4.17E-9	3.17E-9	3.07E-9	4.17E-9	1.17E-7	4.17E-9

Source: Validation & Verification Report for the Perry Plant CADAP, dated 11/15/93. [Pacific Nuclear Systems, Inc./mbs Consulting Partners]

Legend: CNTMT - Containment  
 FHB - Fuel Handling Building  
 FHA - Fuel Handling Accident  
 LOCA - Loss of Coolant Accident  
 TB/HB - Turbine Building/Heater Bay

DOSE CALCULATIONS BASED ON ELEVATED EFFLUENT MONITOR READINGS (Cont.)

Data Table 2-3

VENT PARTITION FACTORS						
Unit 1/2 LOCA in Drywell	Unit 1/2 LOCA in CNTMT	Unit 1/2 FHA in FHB	Unit 1/2 FHA in CNTMT	Unit 1 Break Outside CNTMT	TB/HB	Off-Gas
0.318	9.37	1.54	0.318	9.37	33.5	9.37

Source: Validation & Verification Report for the Perry Plant CADAP, dated 11/15/93. [Pacific Nuclear Systems, Inc./mbs Consulting Partners]

Legend: CNTMT - Containment  
 FHB - Fuel Handling Building  
 FHA - Fuel Handling Accident  
 LOCA - Loss of Coolant Accident  
 TB/HB - Turbine Building/Heater Bay

NOTE: For following data is for information only. It is not used in manual dose calculations. These factors are applied by the automated dose calculations.

ACCIDENT/RELEASE PATHSPECTRUM

FHA IN CNTMT	0.01 PARTITION FACTOR-POOL SCRUBBING
LOCA IN DW	0.01 FILTRATION FACTOR-AEGTS/CNTMT VENT.
FHA IN FHB	0.01 PARTITION FACTOR-FUEL POOL SCRUBBING
	0.05 FILTRATION-FHBVS
LOCA IN CNTMT	0.4 PARTITION FACTOR-PRI. SYSTEM PLATEOUT
BREAK OUTSIDE CNTMT/AUX BLDG	0.1 FILTRATION FACTOR-AEGTS/CNTMT-AB VENT
OFF-GAS VENT	0.4 PARTITION FACTOR-PRI. SYSTEM PLATEOUT
	0.01 FILTRATION FACTOR-OG SYSTEM
TURBINE BLDG/HEATER BAY VENT	0.4 PARTITION FACTOR-PRI. SYSTEM PLATEOUT

COMMON ASSUMPTIONS:

## CLAD DAMAGE SPECTRUM/2-HOUR DECAY TIME

- 3.1.10 Record the X/Q values for 2-, 5-, and 10- miles (determined in Attachment 1) into appropriate blocks at the bottom of Effluent Monitor Reading Calculation Sheet.
- 3.1.11 Divide the SB doses (blocks F & H) by block A; then multiply by applicable X/Q values to determine doses at 2-, 5-, and 10- miles.
- 3.2 When multiple vent pathways are being calculated (i.e., steamline break in the Steam Tunnel), sum the TEDE and CDEct (child thyroid) doses on the Effluent Monitor Reading Calculation Sheet(s) to determine a total exposure at the SB, 2-, 5-, and 10- miles.



## DATA TABLE 2-2

PNPP No. 8041 Rev. 1/12/01

EPI-B7b

UNIT 1 PLANT VENT		UNIT 2 PLANT VENT		UNIT 1 TB/HB VENT		UNIT 1 OFF GAS VENT	
System Name Fan Indicator #	Flow Rate (kcfm)	System Name Fan Indicator #	Flow Rate (kcfm)	System Name Fan Indicator #	Flow Rate (kcfm)	System Name Fan Indicator #	Flow Rate (kcfm)
<i>Fuel Handling Bldg.</i>		<i>Intermediate Bldg.</i>		<i>Heater Bay</i>		<i>Off-gas Building</i>	
M40-C002A	1.65 E1 (4)	M33-C002	3.01 E1	1M41-C002A	2.18 E2 (3, 7) 1.98 E2	1M36-C001A	1.65 E1 (6)
M40-C002B	1.65 E1 (4)	Controlled Access And Misc. Equip. Areas		1M41-C002B	2.18 E2 (3, 7) 1.98 E2	1M36-C001B	1.65 E1 (6)
M40-C002C	1.65 E1 (4)						
Smoke Venting System							
Misc. Elec. Areas							
1M49-C001A	1.10 E1 (5)	M21-C001A	1.65 E1				
1M49-C001B	1.10 E1 (5)	M21-C001B	1.65 E1				
		AEGTS					
		1M15-C001B	7.00 E1/1.00 E0 (1, 6)				
<i>Radwaste Building</i>		<i>Service Bldg.</i>					
M31-C002A	3.30 E1 (6)	<i>Hot Mach. Shop</i>					
M31-C002B	3.30 E1 (6)	OM54-C001	1.32 E1 (8)				
<i>Auxiliary Building</i>							
M38-C003A	3.36 E1 (6)						
M38-C002B	3.36 E1 (6)						
Containment Purge/Containment And Drywell Purge							
1M14-C003A	5.50 E0/1.65 E1 (2)						
1M14-C003B	5.50 E0/1.65 E1 (2)						
AEGTS							
1M15-C001A	7.00 E1/1.00 E0 (1, 6)						
<b>TOTAL:</b>		<b>TOTAL:</b>		<b>TOTAL:</b>		<b>TOTAL:</b>	

(1) Normal flowrate / LOCA flowrate.

(2) Normal flowrate in Intermediate Mode / flowrate in Refuel Mode.

(3) Louvers open flowrate / Louvers closed flowrate.

(4) Only 2 of 3 operates at 3.0 E10 kcfm total.

(5) Used only for Smoke Clearing (Normal flow = 0 kcfm).

(6) Only 1 of 2 fans operate at any time.

(7) Actual combined Summer flowrate from 1M14-C002A &amp; B is 3.80 E2 kcfm +10% Instrument error).

(8) Via 2M38 ductwork.

Source: Technical Basis Package for Alternate Offsite Dose Calculation (NUS Corporation File No. 2065-49)

## EFFLUENT MONITOR READING CALCULATION SHEET

PNPP No. 9429 Rev. 11/9/00

EPI-B7b

**USER INSTRUCTIONS:** Complete a separate sheet for each applicable release pathway (vent) and summarize pathway results on page 2 of form

# \_\_\_\_\_: RELEASE PATHWAY/VENT: ☐ Unit 1 ☐ Unit 2 ☐ Turbine Building/Heater Bay (TB/HB) ☐ Off-gas DATE/TIME OF READING \_\_\_\_\_

### TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE):

\_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ X 1000 = \_\_\_\_\_ REM TEDE  
 (A) (B) (C) (D) (E) (F)  
 X/Q @ Site Boundary Monitor Reading Monitor Conversion Factor Release Duration Flow Rate TEDE Dose @ Site Boundary  
 (Data Table 2-1) (kcfm)

IF TEDE DOSE @ SITE BOUNDARY IS GREATER THAN 1 REM, PERFORM THE FOLLOWING RATIOS, USING THE TABLE BELOW, TO DETERMINE TEDE DOSE AT 2, 5 & 10 MILES.

### COMMITTED DOSE EQUIVALENT – CHILD THYROID (CDEct):

\_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ REM CDEct  
 (F) (G) (H)  
 TEDE @ SB Vent Partition Factor CDEct Dose @ Site Boundary

IF CDEct DOSE AT THE SITE BOUNDARY IS GREATER THAN 5 REM, PERFORM THE FOLLOWING RATIOS, USING THE TABLE BELOW, TO DETERMINE CDEct DOSE AT 2, 5 & 10 MILES.

#### TEDE DOSE RATIOS: (if applicable)

( \_\_\_\_\_ ÷ \_\_\_\_\_ ) X \_\_\_\_\_ = \_\_\_\_\_ REM @ 2 mi  
 (F) (A) X/Q @ 2 mi  
 TEDE @ SB X/Q @ SB  
 X \_\_\_\_\_ = \_\_\_\_\_ REM @ 5 mi  
 X/Q @ 5 mi  
 X \_\_\_\_\_ = \_\_\_\_\_ REM @ 10 mi  
 X/Q @ 10 mi

#### CDEct DOSE RATIOS: (if applicable)

( \_\_\_\_\_ ÷ \_\_\_\_\_ ) X \_\_\_\_\_ = \_\_\_\_\_ REM @ 2 mi  
 (H) (A) X/Q @ 2 mi  
 CDEct @ SB X/Q @ SB  
 X \_\_\_\_\_ = \_\_\_\_\_ REM @ 5 mi  
 X/Q @ 5 mi  
 X \_\_\_\_\_ = \_\_\_\_\_ REM @ 10 mi  
 X/Q @ 10 mi

PERFORMED BY:

TIME/DATE:

REVIEWED BY:

TIME/DATE:

**EFFLUENT MONITOR READING CALCULATION SHEET (Cont.)**

PNPP 9429 Rev. 11/9/00

EPI-B7b

**USER INSTRUCTIONS:** Use Page 2 of form to total doses for multiple release pathways (vents).**TEDE DOSES:**

	Vent		Vent		
	_____		_____		
Site Boundary	_____	+	_____	=	_____ REM
2 Miles:	_____	+	_____	=	_____ REM
5 Miles:	_____	+	_____	=	_____ REM
10 Miles:	_____	+	_____	=	_____ REM
____ Miles:	_____	+	_____	=	_____ REM

**CDE ct DOSES:**

	Vent		Vent		
	_____		_____		
Site Boundary	_____	+	_____	=	_____ REM
2 Miles:	_____	+	_____	=	_____ REM
5 Miles:	_____	+	_____	=	_____ REM
10 Miles:	_____	+	_____	=	_____ REM
____ Miles:	_____	+	_____	=	_____ REM

PERFORMED BY: \_\_\_\_\_ TIME/DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_ TIME/DATE: \_\_\_\_\_

DOSE CALCULATIONS BASED ON FIELD MEASUREMENTS

1.0 PURPOSE

This attachment provides a method for projecting dose rates at selected downwind locations using offsite dose rate measurements or off-site iodine samples.

2.0 PREREQUISITES

2.1 The following data must be available for this method:

- 2.1.1 MET data including X/Q (for each distance), wind speed and wind direction.
- 2.1.2 For calculation of whole body dose rates, a dose rate reading at a point determined to be approximately in the centerline of the plume.
- 2.1.3 For calculation of CDEct (Child thyroid), a reading from an air sample taken at the selected location.

3.0 ACTIONS

3.1 RMT Field Measurement Calculation (Whole Body Dose Rate Reading)

- 3.1.1 Record the measurement location, wind direction (from), distance from plant, and measurement time in the heading of the RMT Field Measurement Calculation Sheet.
- 3.1.2 Convert the measured dose rate, taken at a point approximately in the centerline of the effluent plume, from mrem/hr to rem/hr and record in block A of RMT Field Measurement Calculation Sheet.
- 3.1.3 Obtain the X/Q values for the actual sample location, and the site boundary, 2 mi., 5 mi., and 10 miles from Attachment 1 of this instruction.
  - If the measurement was not taken at the site boundary or a whole mile increment, round the distance up to the next highest mile.
- 3.1.4 Record the X/Q value for the sample location in block B, and the X/Q values for the site boundary, 2 mi., 5 mi., and 10 miles in block E of RMT Field Measurement Calculation Sheet.
- 3.1.5 Divide the measured dose rate (block A) by the X/Q for the sample location (block B) and record the result in block C.

DOSE CALCULATIONS BASED ON FIELD MEASUREMENTS (Cont.)

- 3.1.6 Choose the most appropriate gamma to TEDE conversion factor from the table below, and enter in block D. For elapsed times greater than 8 hours, an air sample analysis shall be used to more accurately account for inhalation dose.

DATA TABLE 3-1

Time Less Than 4% Power (in hours)	0	.5	1	2	4	6	8
Gamma-TEDE Factor	1.09	1.16	1.22	1.29	1.43	1.59	1.75

Source: Validation & Verification Report for the Perry Plant CADAP, dated 11/15/93. [Pacific Nuclear Systems, Inc./mbs Consulting Partners]

- 3.1.7 Record the release duration, in hours, in block E.
- 3.1.8 Calculate the TEDE dose rates for each distance by multiplying values in blocks C x D x E x F together. Enter the results for each respective distance in block G.
- 3.1.9 Enter the date, time and signature of the person who performed the calculations.

3.2 RMT Air Sample (Iodine) Calculation

- 3.2.1 Record the measurement location, wind direction, distance from plant, and measurement time on the RMT Air Sample Calculation Sheet.
- 3.2.2 Evaluate the filter paper surrounding the sample canister, by performing the following:
- Determine the number of hours at less than 4% power.
    - If the reactor is not <4% power, or if it has not been <4% for at least one hour, use one hour.
  - Use Figure 3-1 to find the Iodine Correction Factor (CF).
  - Calculate the total fission product activity on the filter by determining the difference (D) in the filter-adsorber and bare adsorber readings.
  - Calculate the corrected filter reading at the time of the measurement due to iodine by multiplying the correct CF x D.
- 3.2.3 Evaluate the canister filter-adsorber, by performing the following:
- Determine the adsorber net counting rate (N) by subtracting background (B) from the bare adsorber measurement (G), i.e., the adsorber canister with the filter paper removed.  $[N = G - B]$

DOSE CALCULATIONS BASED ON FIELD MEASUREMENTS (Cont.)

2. Add the corrected filter reading (F) to the net adsorber reading (N) to obtain the total iodine counting rate (R).  $[R = F + N]$
  3. Use Figure 3-3 to determine the 2 hour Child Thyroid Dose Commitment.
  4. If the immersion time is greater than 2 hours, use Figure 3-3 to determine the correction factor by which to multiply the 2 hour immersion dose commitment value.
- 3.2.4 Determine the Child Thyroid dose received at the site boundary, 2 mi., 5 mi., and 10 miles by performing the following using the RMT Air Sample Calculation Sheet.
1. Record the Child Thyroid Dose Commitment (Rem) in block A on Part II of the RMT Air Sample Calculation Sheet.
  2. Obtain the X/Q values for the actual sample location, and the site boundary, 2 mi., 5 mi., and 10 miles from Attachment 1 of this instruction.
    - If the measurement was not taken at the site boundary or a whole mile increment, round the distance up to the nearest mile.
  3. Record the X/Q value for the sample location in block B, and the X/Q values for the site boundary, 2 mi., 5 mi., and 10 miles in block D.
- 3.2.5 Divide the projected thyroid dose (block A) by the X/Q for the sample location (block B) and record the results in block C.
- 3.2.6 Calculate the dose for each distance by multiplying the entry (block C) by the X/Q for each indicated distance (block D). Enter the results for each respective distance in block E.
- 3.2.7 Enter the date, time and signature of the person who performed the calculation.
- 3.3 RMT Sample Analysis Calculation
- 3.3.1 When the analysis results are obtained, enter the iodine concentrations in  $\mu\text{Ci/cc}$  in block B on the RMT Sample Analyses Calculation Sheet.
  - 3.3.2 Enter the X/Q for the sampled location obtained using Attachment 1 in block C.
  - 3.3.3 Calculate the release rate by dividing each entry in block B by the value in block C; enter the results in block D.

DOSE RATE ASSESSMENT BASED ON FIELD MEASUREMENTS (Cont.)

- 3.3.4 Multiply the values in block D by the values in block E; enter the results in blocks F.
- 3.3.5 Sum block F values for each isotope listed to obtain a modified dose factor for further calculations.
- 3.3.6 Enter the X/Q for the Site Boundary, 2 miles, 5 miles and 10 miles in block G.
- 3.3.7 Calculate the dose rates for each distance by multiplying the entry in block F times the entries in block G; record the results in block H.
- 3.3.8 If required, sum block D values for each isotope listed to obtain the total release rate in Ci/sec.
- 3.3.9 Enter the date, time, and signature of the person who performed the calculations.

## RMT FIELD MEASUREMENT CALCULATION SHEET

PNPP No. 8049 Rev. 11/93

EPI-B7b

<b>DATE</b>	<b>TIME</b>
<b>MEASUREMENT LOCATION</b>	<b>DISTANCE FROM PLANT (mi)</b>
<b>WIND DIRECTION (From)</b>	<b>MEASUREMENT TIME</b>
<b>SIGNATURE</b>	<b>REVIEWED BY</b>

A	B	C	D	E	F	G	
Measured Dose Rate at Sample Location (rem/hr)	X/Q for Actual Sample Location	Fractional X/Q (A/B)	Gamma TEDE Factor	Release Duration (Hours)	X/Q for each Distance	TEDE Dose (rem) (CxDxExF)	
						Site Boundary	
						2 mi.	
						5 mi.	
						10 mi.	

**DATA TABLE 3-1**

Time Less Than 4% Power (In hours)	0	0.5	1.0	2.0	4.0	6.0	8.0
Gamma-TEDE Factor	1.09	1.16	1.22	1.29	1.43	1.59	1.75

**Note:** Measured Dose Rate is taken in mrem/hr and must be converted to rem/hr.



## RMT AIR SAMPLE CALCULATION SHEET

PNPP No. 8050 Rev. 11/93

EPI-B7b

<b>DATE</b>	<b>TIME</b>	<b>MEASUREMENT TIME</b>
<b>MEASUREMENT LOCATION</b>		
<b>DISTANCE FROM PLANT (mi)</b>		<b>WIND DIRECTION (From)</b>
<b>SIGNATURE</b>		<b>REVIEWED BY</b>

(FILL OUT FOR EACH AIR SAMPLE)

**PART I:****GLASS FILTER CLOTH EVALUATION**

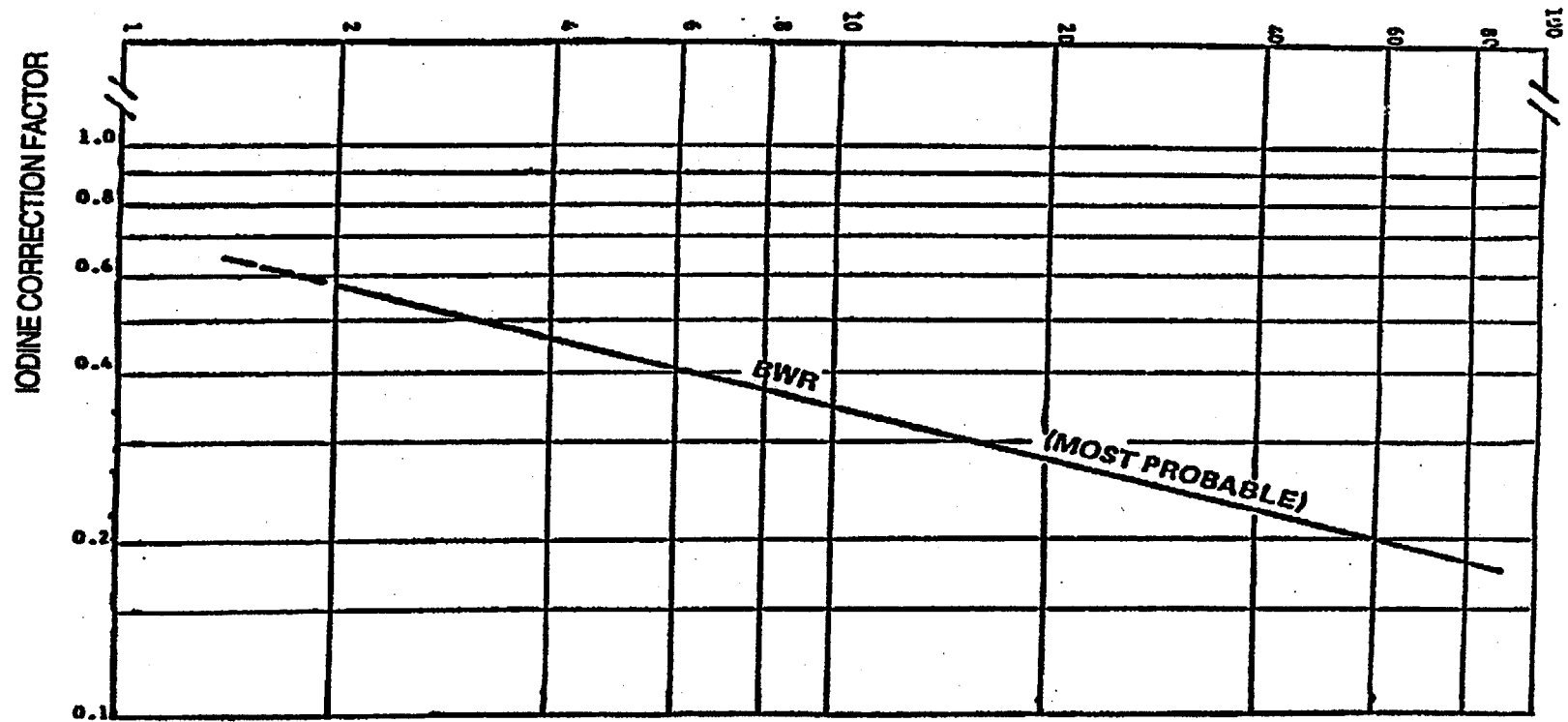
<b>Step 1:</b>	Time of measurement _____ - Reactor < 4% power _____ = _____ hrs
<b>Step 2:</b>	(from Figure 3-1) Iodine Correction Factor = _____ [CF]
<b>Step 3:</b>	Filter-adsorber reading _____ cpm - Bareadsorber reading _____ cpm = _____ cpm [DI]
<b>Step 4:</b>	Step 2 [CF] _____ x Step 3 [DI] _____ = _____ cpm Corrected Filter Reading [FI]
<b>FILTER-ABSORBER EVALUATION</b>	
<b>Step 5:</b>	Bare-absorber reading _____ cpm - Background _____ cpm = _____ cpm Absorber Net Count Rate [NI]
<b>Step 6:</b>	Step 4 [FI] _____ cpm + Step 5 [NI] _____ cpm = _____ cpm [RI] Total Iodine Count Rate
<b>Step 7:</b>	THYROID DOSE COMMITMENT (from Figure 3-2) _____ rem.
<b>Step 8:</b>	(If Immersion time greater than 2 hours): Thyroid dose correction factor (Figure 3-3) _____ x Thyroid dose commitment (Step 7) _____ = _____ rem.

**PART II:**

A	B	C	D	E
Thyroid dose at Sample Location (rem)	X/Q for Actual Sample Location	Fractional X/Q (A/B)	X/Q for each Distance	Thyroid Dose (rem) (CxD)
				Site Boundary
				2 mi.
				5 mi.
				10 mi.

IODINE CORRECTION FACTOR GRAPH

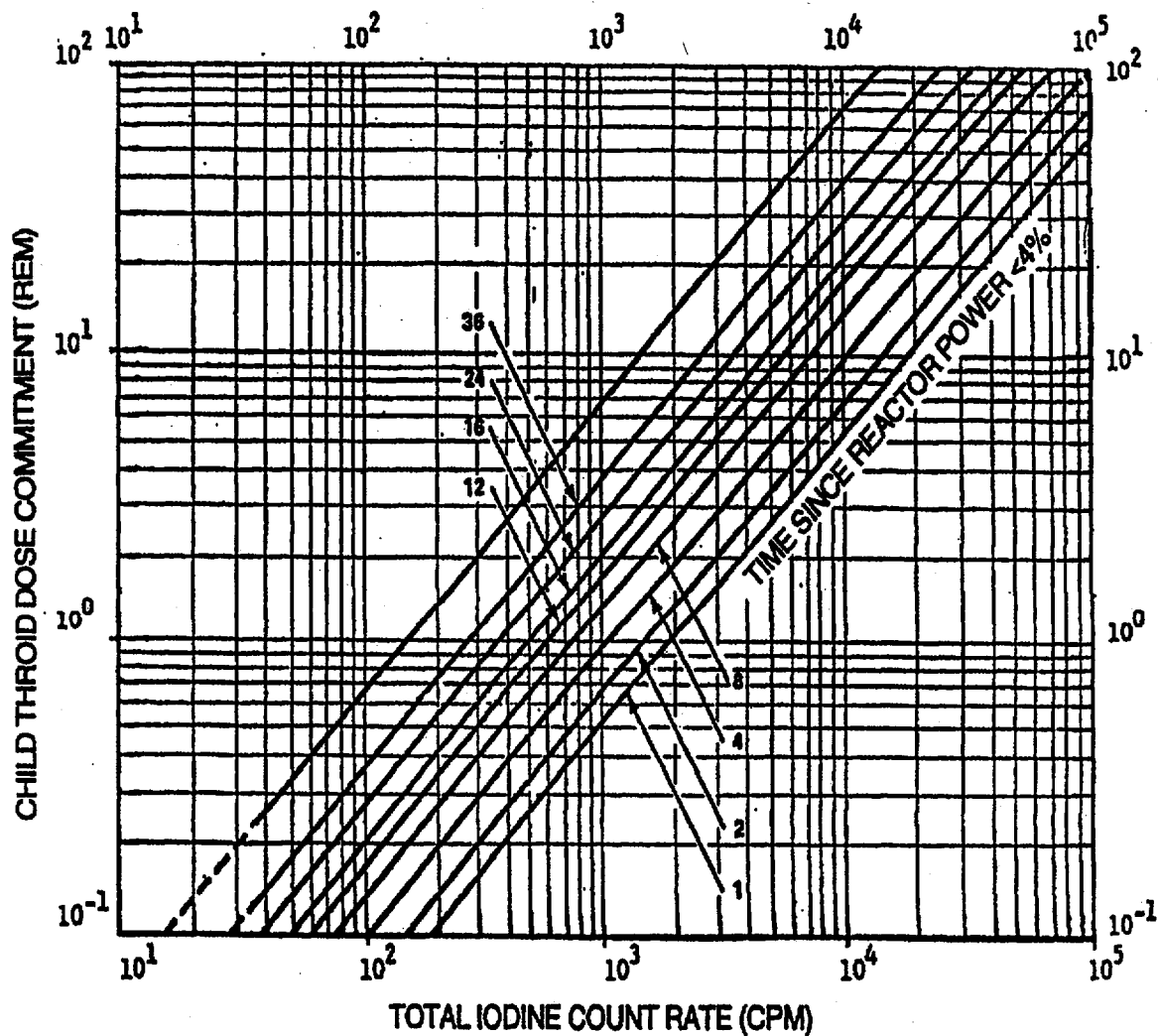
TIME SINCE REACTOR POWER &lt;4%



- 1) Obtain the elapsed time since reactor power less than 4% (in hours). Locate the value on the horizontal axis. If between lines, use the next lowest line.
- 2) Locate the point of intersection from the horizontal axis to the graph BWR line.
- 3) From the point of intersection, locate the Iodine Correction Factor on the vertical axis. If between lines, use the next highest line.

Figure 3-1

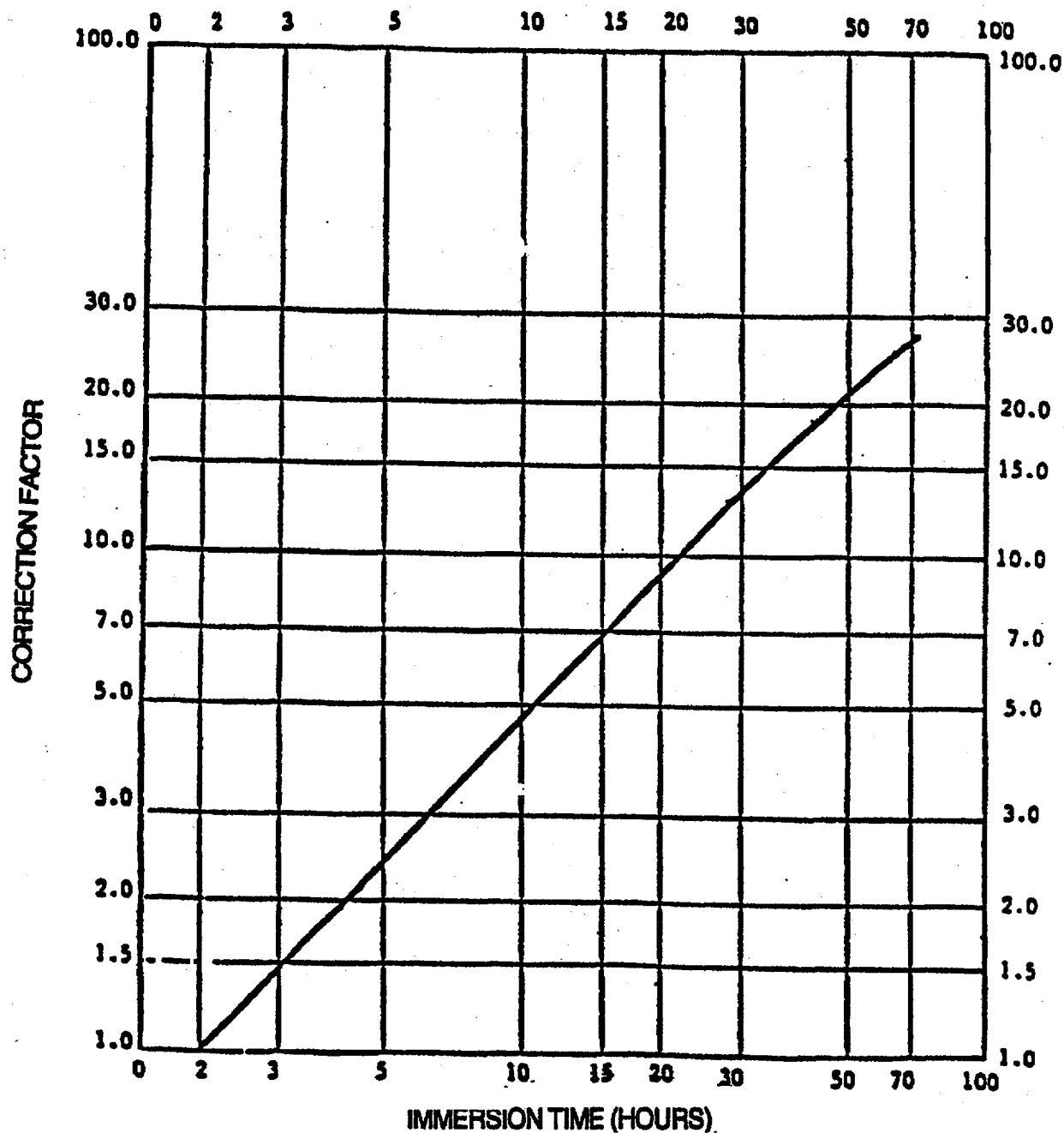
CHILD THYROID DOSE COMMITMENT GRAPH



NOTE: Thyroid dose commitment for a 5 year old child for a 2 hour inhalation duration.

- 1) Obtain the Total Iodine Count Rate (R) from Step 6. Locate the value on the horizontal axis. If between lines, use the next highest line.
- 2) Obtain the elapsed time since reactor power less than 4% (in hours). Identify the approximate graph line corresponding to this value. If between lines, use the next highest line.
- 3) From the point of intersection, locate the Thyroid Dose Commitment on the vertical axis. If between lines, use the next highest line.

Figure 3-2

INHALATION DECAY GRAPH

- 1) Obtain the Immersion Time, in hours. Locate the value on the horizontal axis. If between lines, use the next highest line.
- 2) Locate the limit of intersection from the horizontal axis to the graph line.
- 3) From the point of intersection, locate the Correction Factor on the vertical axis. If between lines, use the next highest line.

Figure 3-3

## RMT SAMPLE ANALYSIS CALCULATION SHEET

PNPP No. 8052 Rev. 11/93

EPI-B7b

<b>DATE</b>	<b>TIME</b>
<b>MEASUREMENT LOCATION</b>	<b>DISTANCE FROM PLANT (mi)</b>
<b>WIND DIRECTION (from)</b>	<b>MEASUREMENT TIME</b>
<b>SIGNATURE</b>	<b>REVIEWED BY</b>

A	B	C	D	E	F	G	H	
Isotopic Analyses	Sample Conc. $\mu\text{Ci/cc}$	X/Q for Sampled Location	Release Rate Ci/sec (B/C)	Dose Factor (1)	Modified Dose Factor (DxE)	X/Q for each distance	Dose Rate Child Thyroid rem/hr (FxG)	Distance
I-131				2.78E+6				
I-132				3.31E+4				
I-133				6.58E+5				
I-134				8.67E+3				
I-135				1.35E+5				
				Sum Block F's				Site Boundary
								2 mi.
								5 mi.
								10 mi.

NOTE: If required, sum block D's to obtain Total Release Rate.

(1) Source: Technical Basis Package for Alternate Offsite Dose Calculations  
INUS Corporation File No. 2065-491

CALCULATION OF ACCUMULATED DOSE

1.0 PURPOSE

This attachment provides instructions for calculating the accumulated doses following a significant accidental release of radioactive materials. It depends on dose rate input from calculations performed in accordance with the methods of Attachments 2 or 3, and may also be used with dose rate data from <EPI-B7a>.

2.0 PREREQUISITES

- 2.1 Dose rate results calculated in accordance with the methods of Attachments 2 or 3, or from CADAP (EPI-B7a).

3.0 PROCEDURE

- 3.1 A separate Accumulated Dose Calculation Sheet will be initiated for each sector.
- 3.2 On each Calculation Sheet, enter the accident type, release path(s) (if identified), release duration, and the sector of concern.
- 3.3 Enter the method (Attachment number) used to perform the dose rate calculation in block A.
- 3.4 Enter the time of the current monitor reading upon which the calculation was based (or the time that the sample was taken if the data is not based on a monitor reading) in block B. Copy this data from the appropriate dose rate calculation sheet.
- 3.5 Calculate the time since the last monitor reading or sample, in hours, and enter the results in block C.
- For the initial time for the first entry it is the elapsed time from the start of the accident to when the monitor is read.
- 3.6 Divide TEDE and child thyroid doses by the release duration (used to calculate them) to obtain dose rates.
- 3.7 Transfer the TEDE and child thyroid dose rates for the applicable distances from the Calculation Sheets (or CADAP Summary prints) to block D.
- 3.8 Calculate the dose that occurred during the time interval  $\Delta$  Time by multiplying block C times block D and entering the result in block E.
- 3.9 Calculate this accumulated dose by summing the TEDE and child thyroid entries in block E for each distance, and entering the total in block F.

CALCULATION OF ACCUMULATED DOSE (Cont.)

- 3.10 Transfer the direction (wind from) entry from the appropriate Calculation Sheets (or from CADAP) to block G.
- 3.11 Enter the date, time, and signature of the person who performed the calculations in the spaces provided when the calculations are completed.
- 3.12 Calculate new accumulated doses as required.

## ACCUMULATED DOSE CALCULATION SHEET

PNPP No. 8054 Rev. 11/93

DATE	TIME	SECTOR
ACCIDENT TYPE	RELEASE PATH	RELEASE DURATION (HRS)
SIGNATURE	REVIEWED BY	

A	B	C	D	E	F	G
CALC. METHOD (2, 3 OR CADAP)	TIME OF MONITOR READING OR SAMPLE	TIME SINCE LAST MONITOR READING OR SAMPLE HRS	PROJECTED DOSE RATES rem/hr  ( DOSE RELEASED DURATION )	DOSE DURING Δ TIME (C X D)	ACCUMULATED DOSE (SUM OF BLOCK E VALUES FOR TEDE/CT FOR EACH DISTANCE)	WIND DIRECTION (FROM) ON WHICH DOSE PROJECTION IS BASED
			SB TEDE			
			CT			
			2 TEDE			
			MI. CT			
			5 TEDE			
			MI. CT			
			10 TEDE			
			MI. CT			
			SB TEDE			
			CT			
			2 TEDE			
			MI. CT			
			5 TEDE			
			MI. CT			
			10 TEDE			
			MI. CT			
			SB TEDE			
			CT			
			2 TEDE			
			MI. CT			
			5 TEDE			
			MI. CT			
			10 TEDE			
			MI. CT			
			SB TEDE			
			CT			
			2 TEDE			
			MI. CT			
			5 TEDE			
			MI. CT			
			10 TEDE			
			MI. CT			
			SB TEDE			
			CT			
			2 TEDE			
			MI. CT			
			5 TEDE			
			MI. CT			
			10 TEDE			
			MI. CT			
			SB TEDE			
			CT			



**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B8), Rev. 8, C-4

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0008, R/8, C-4

Control Number 60

Remove the pages listed below and insert enclosed pages:

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
8	C-4	i - 3	

# PERRY OPERATIONS MANUAL

[REDACTED]

No. 260

Info only

EFFECTIVE DATE: 5-1-97

1-4-97  
/ Date

[illegible]

PROTECTIVE ACTIONS AND GUIDES

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SCOPE OF REVISION:

Periodic Review - Required

- Rev. 8 - 1. Revises the default protective action recommendations (PARs) to eliminate action based on Containment radiation levels and to implement evacuation logic based on Supplement 3 to NUREG-0654/FEMA-REP-1.

### Change History

PIC Number: 2                      Affected Pages: i, iii, 13

Summary of Change:

1. Consolidated Table 6-1 protective action recommendation logic based on projected or actual dose into Section 6.4.1 text.
  2. Criteria also revised to eliminate redundancy with minimum plant status PAGs based on Supplement 3 to NUREG-0654/FEMA-REP-1.
- 

PIC Number: 3                      Affected Pages: i, iii, 3, 3a, 7, 8, 9, 10

Summary of Change:

1. Identifies the U.S. DOE-sponsored REAC/TS as point of contact through the OEMA for guidance of KI issuance and health effects.
  2. Deletes RMC as the point of contact for obtaining additional KI.
  3. Description for REAC/TS facility added under "Definitions".
- 

PIC Number: 4                      Affected Pages: i, iii, 2, 3

Summary of Change:

1. Changed references from PAP-0511 to PAP-0114.
-

## PROTECTIVE ACTIONS AND GUIDES

### 1.0 PURPOSE

This instruction provides guidelines for the formulation of protective actions for the plume exposure pathway to be recommended to State of Ohio and local county Emergency Management Agencies in the event of an emergency involving the possibility of an abnormal release of radioactive material(s) at the Perry Plant.

Development of ingestion pathway protective action recommendations will be the responsibility of the State of Ohio and Federal response agencies. The Perry Plant will assist in the collection and analysis of environmental samples using <EPI-B10>.

### 2.0 REFERENCES

#### 2.1 Source References:

1. 10CFR20, Standards for Protection Against Radiation
2. EPA-400-92-R-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (October 1991)
3. U.S. Nuclear Regulatory Commission Response Technical Manual (RTM) - 92 (October 1992)
4. Emergency Plan for PNPP Docket Nos. 50-440, 50-441
5. Emergency Plan Implementing Instruction (EPI) B7a: "Automated Offsite Dose Calculations"
6. Emergency Plan Implementing Instruction (EPI) B7b: "Manual Offsite Dose Calculations"
7. Patient Package Insert for THYRO-BLOCK<sup>TM</sup>, Wallace Laboratories (10/79)

#### 2.2 Use References:

1. Emergency Plan Implementing Instruction (EPI) B10: "Emergency Radiological Environmental Monitoring Program"
2. Emergency Plan Implementing Instruction (EPI) B3: "Radiological Surveys for Emergencies"
3. Emergency Plan Implementing Instruction (EPI) B1: "Emergency Notification System"

4. Emergency Plan Implementing Instruction (EPI) A1: "Emergency Action Levels"
5. Emergency Plan Implementing Instruction (EPI) A2: "Emergency Actions Based On Event Classification"
6. Emergency Plan Implementing Instruction (EPI) A11: "Activation of the Backup Emergency Operations Facility"
7. Supplement 3 to NUREG-0654/FEMA-REP-1 (Revision 1): "Criteria for Protective Action Recommendations for Severe Accidents"
8. Plant Administrative Procedure (PAP) 0114: "Radiation Protection Program"
9. Commitments addressed in this document:

H00022	P00005	P00029	P00046
H00024	P00011	P00037	

### 3.0 DEFINITIONS

#### 3.1 Protective Actions

Those emergency measures taken before or after an uncontrolled release of radioactive material has occurred to prevent or minimize radiological exposure to persons that would likely be exposed, if the actions were not taken.

#### 3.2 Protective Action Guides (PAGs)

Projected radiological doses to individuals in the general population that warrant Protective Actions following a release of radioactive material. Protective Actions would be warranted provided the reduction in individual dose is not offset by excessive risks to individual safety in taking the Protective Action. The Protective Action Guide (PAG) does not include the dose that has unavoidably occurred prior to the assessment.

#### 3.3 Deep Dose Equivalent (DDE)

The dose equivalent measured at a tissue depth of 1 cm (1000 mg/cm<sup>2</sup>). DDE is the external component of TEDE.

#### 3.4 Committed Dose Equivalent (CDE)

The dose equivalent to organs or tissues of reference that will be received from an intake of radioactive material by an individual during the 50 year period following the uptake.

### 3.5 Committed Effective Dose Equivalent (CEDE)

The sum of the products of the weighting factors applicable to each of the body organs or tissues and the CDE to these organs or tissues. CEDE is the internal dose component of TEDE.

### 3.6 Total Effective Dose Equivalent (TEDE)

Sum dose of DDE (external dose) and CEDE (internal dose).

### 3.7 Derived Air Concentration (DAC)

The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate of 1.2 cubic meters of air per hour), results in an intake of one Annual Limit on Intake (ALI) per PAP-0114.

### 3.8 Radiation Emergency Assistance Center/Training Site (REAC/TS)

REAC/TS is operated by the Medical Sciences Division of the Oak Ridge Institute for Science and Education for the U.S. Department of Energy (DOE). REAC/TS provides 24-hour direct or consultative assistance with medical and health physics problems associated with radiation accidents in local, national, and international incidents.

## 4.0 RESPONSIBILITIES

### 4.1 Emergency Coordinator

1. Approve plume exposure pathway protective action recommendations (PARs) for the general public.
2. Notify the State of Ohio, local counties, and Nuclear Regulatory Commission (NRC) of changes in PARs for the general public developed by the Perry Plant.
3. Approve the use of Potassium Iodide (KI) by Radiation Monitoring Team (RMT) personnel.

### 4.2 TSC Operations Manager

1. Assume the responsibilities of the Emergency Coordinator prior to the Emergency Operations Facility (EOF) being operational.
2. Approve the usage of Potassium Iodide (KI) for all onsite Emergency Response Organization (ERO) personnel. <P00011>

### 4.3 Shift Supervisor

1. Assume the responsibilities of the TSC Operations Manager prior to the Technical Support Center (TSC) being operational.



**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B9), Rev. 3, C-2

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0009, R/3, C-2

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
3	C-2	i - 2	

# PERRY OPERATIONS MANUAL

~~SECRET~~

No 060

Info Only

REVISION: 3

EFFECTIVE DATE: 6-17-92

3-24-92

/ Date

[illegible]

EMERGENCY RECORDS

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SCOPE OF REVISION:

- Rev. 3 -
1. Bring procedure up to date with the current format.
  2. Instruction administratively revised in its entirety; no Rev. bars needed.

Change History

PIC Number: 1      Affected Pages: ii, 1, 2, 3, 4, 6, 6a, 9 10

Summary of Change:

1. Revised to reflect that the Records Management Support Team (RMST) Member, EPU, will be responsible for the temporary storage and disposition of Emergency Records.
  2. Inserts revised Communications Record Sheet (Attachment 3).
  3. Removes requirement to document OSC team status in OSC Coordinator's Log. Status tracked using OSC Team Briefing/Debriefing Sheet per EPI-A7.
- 

PIC Number: 2      Affected Pages: i, iii, 1

Summary of Change:

1. Corrected Reference OAI-1702 was added replacing OAP-1702.
-

## EMERGENCY RECORDS

### 1.0 PURPOSE

To define responsibilities and actions necessary to ensure that events and data recorded during an emergency per the Emergency Plan Implementing Instructions (EPIs) are accurately documented and properly reviewed, reproduced, distributed, and entered into records retention cycle. This documentation shall be sufficient to satisfy regulatory requirements and to permit reconstruction of events for critique and analysis.

<OAI-1702> will govern the maintenance of Rounds Sheets, logs, and records in the Control Room. Security-related logs and records shall be maintained by the Central Alarm Station (CAS) per <SPI-0001> and the Secondary Alarm Station (SAS) per <SPI-0029>.

### 2.0 REFERENCES

#### 2.1 Source References:

1. Emergency Plan for PNPP docket Nos. 50-440, 50-441
2. Emergency Plan Implementing Instruction (EPI) A6: "Technical Support Center Activation"
3. Emergency Plan Implementing Instruction (EPI) A7: "Operations Support Center Activation"
4. Emergency Plan Implementing Instruction (EPI) A1: "Emergency Action Levels"

#### 2.2 Use References:

1. Deleted
2. Emergency Plan Implementing Instruction (EPI) A10: "Recovery"
3. Emergency Plan Implementing Instruction (EPI) B1: "Emergency Notification System"
4. Operations Administrative Instruction (OAI) 1702: "Operations Section Rounds Sheets, Logs and Records"
5. Security Post Instruction (SPI) 0001: "Security Central Alarm Station Post Instruction"
6. Security Post Instruction (SPI) 0029: "Secondary Alarm Station Post Instruction"

7. Plant Administrative Procedure (PAP) 1701: "Records Management Program" 1701

8. Commitments addressed in this document:

P00063

### 3.0 DEFINITIONS

#### 3.1 Emergency Record

Any report, survey form, sample analysis form, dose assessment form, data form, log, or other documentation generated during an emergency which records data, conditions or actions taken, and/or the results of such.

### 4.0 RESPONSIBILITIES

#### 4.1 Shift Supervisor

1. Ensure that records generated per the EPIs by Control Room staff, the Secondary Alarm Station (SAS), and OSC staff (if the TSC was not activated) are collected, reviewed, and disposed of properly in accordance with this instruction.

#### 4.2 OSC Coordinator

1. Ensure that all records generated by OSC staff are collected, reviewed, and disposed of properly in accordance with this instruction.

#### 4.3 TSC Administrative Assistant

1. Ensure that all records generated by TSC staff, OSC staff, and Radiation Monitoring Teams (if the EOF was not activated) are collected, reviewed, and disposed of properly in accordance with this instruction.

#### 4.4 EOF Manager

1. Ensure that all records generated by EOF staff, Back-up EOF staff (if activated), and Radiation Monitoring Teams are collected, reviewed, and disposed of properly in accordance with this instruction.

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B10), Rev. 5

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081



**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0010, R/5

Control Number 60

Remove the pages listed below and insert enclosed pages:

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
5			Entire Document

The Cleveland Electric Illuminating Company

# PERRY OPERATIONS MANUAL

## Emergency Plan Implementing Instruction

**PNPP**

No. **060**  
INFORMATION  
ONLY

**TITLE:** EMERGENCY RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (EREMP)

REVISION: 5 EFFECTIVE DATE: 4-4-01

PREPARED: Louis J. Sosler 11-8-00  
/ Date

EFFECTIVE PIC'S

[illegible]

EMERGENCY RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (EREMP)

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SCOPE OF REVISION:

Periodic Review - Required

- Rev. 5 -
1. Instruction revised in its entirety; no change bars used.
  2. Format revised to comply with PAP-0507.
  3. References updated to indicate correct procedure and instruction numbers.
  4. Incorporated new EPA 400 guidelines for Relocation and FDA guidelines for Ingestion Protective Action Guidelines (PAGs).
  5. Deleted Attachment 4, "Emergency Protocol for Contacting Offsite Laboratory".

EMERGENCY RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (EREMP)

1.0 PURPOSE

Provide an appropriate, consistent emergency method for the collection of environmental samples after a radiological release at the Perry Plant in coordination with Federal and State monitoring efforts.

Although not responsible for the development of ingestion pathway protective action recommendations, the Perry Plant will supplement Federal and State collection activities and provide the plant with a means of assessing the environmental impact of a severe radiological release to the surrounding community.

2.0 SCOPE

This instruction does not specify each and every detail of the EREMP. Instead, it is meant to provide the frame work for initiating EREMP monitoring following the emergency phase with the EOF operational. Additional resources will likely have to be committed and procedures developed as part of the recovery phase.

3.0 RESPONSIBILITY

3.1 Offsite Radiation Advisor

1. Direct the overall dose assessment and environmental monitoring.
2. Assign the Environmental Liaison to deploy available Radiation Monitoring Teams (RMTs) for the collection of the environmental samples.
3. Ensure an appropriate plan is developed and executed for the collection of environmental samples in areas potentially contaminated by the radiological release from the Perry Plant when the EOF is operational.
4. Ensure the adequate packing and shipment of the collected samples to the offsite laboratory.
5. Coordinate with offsite Federal and State agencies concerning the monitoring of affected areas within the 10 mile Emergency Planning Zone (EPZ) through the Federal Radiological Monitoring and Assessment Center (FRMAC).

### 3.2 Environmental Liaison

1. Coordinate the deployment of available RMTs for the collection of environmental samples when directed by the ORA.
2. Select sample locations, and the types and numbers of samples to be collected.
3. Act as liaison with the offsite laboratory to resolve any problems concerning the delivery and analysis of samples.
4. Record laboratory sample results.

### 3.3 Radiation Monitoring Team(s) (RMTs)

1. Perform assigned environmental sampling as directed by the Environmental Liaison.
2. Deliver all collected samples to the Environmental Liaison.

### 3.4 Environmental Specialist

1. Coordinate the shipment of environmental samples with the contracted off-site laboratory or the Federal Radiological Monitoring and Assessment Center (FRMAC).

### 3.5 Radioactive Shipment Coordinator

1. Package and ship the collected radioactive environmental samples to the offsite support laboratory.

## 4.0 REFERENCES

### 4.1 Source References

1. EPA 400-R-92-001: Manual of Protective Action Guides and Protective Actions for Nuclear Incidents
2. Federal Register/Vol. 63, No. 156, 1998: Guidance on Accidental Radioactive Contamination of Human Food and Animal Feeds
3. EPI-B8: Protective Actions and Guides
4. PAP-1304: Radioactive Material Shipment Criteria

### 4.2 Use References

1. Radiological Environmental Monitoring Program Manual
2. CHI-0007: Radiological Effluent Data Reduction

3. HPI-H0004: Identification of Radioactive Material and Release of Material from the RRA
  4. EPI-B9: Emergency Records
  5. Commitments addressed in this document
- None

## 5.0 DEFINITIONS

### 5.1 Environmental Sample

A sample which is collected to assess the relative hazard to the public from ingestion or from direct exposure due to deposited nuclides.

### 5.2 Protective Action Guide (PAG)

Projected dose to reference man, or other defined individual, from an unplanned release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended.

### 5.3 Ingestion PAG

The projected dose commitment value at which actions should be taken to isolate food containing radioactivity to prevent its introduction into commerce and at which possible dispositions as appropriate should be considered.

### 5.4 Derived Intervention Level (DIL)

Concentration in food that would equal the Ingestion Protective Action Guide (PAG) if ingested over the relevant period of time.

### 5.5 Relocation PAG

The projected dose commitment value at which actions should be taken to relocate members of the public to avoid chronic radiation exposure.

### 5.6 Derived Response Level (DRL)

Concentration in the soil or vegetation that would equal the Relocation Protective Action Guide (PAG) if exposed over the relevant period of time.

### 5.7 Dose Commitment

The radiation dose which, when applied to the evaluation of external exposure and internal inhalation of re-suspended radioactive materials, includes the prospective dose component arising from retention in the body beyond the period of environmental exposure.

## 6.0 DETAILS

This method is designed to provide an estimate of deposited radionuclides in the environment during an accident involving a severe radiological release to the environment. The Emergency Radiological Environmental Monitoring Program (EREMP) is not intended to be used for detailed environmental analysis during the Recovery Phase of an accident nor to replace the routine Radiological Environmental Monitoring Program (REMP).

### 6.1 Environmental Liaison

1. Identify the plume pathways and areas where deposition is likely to have occurred, and enter the information on the map located below the Radiological Status Board in the Display Room.

- a. Monitor those areas where the plume has already passed once the release has stopped.

NOTE: Do not monitor under the plume.

2. Obtain permission from the Offsite Radiation Advisor to use the Radiation Monitoring Team(s) to perform environmental monitoring.
3. Identify RMTs on the Status Board in the Emergency Operations Facility (EOF) Display Room for environmental monitoring.
4. Inform each team selected by the Offsite Radiation Advisor that they are assigned to environmental monitoring.
5. Direct the RMTs to perform the following to identify areas of significant radiological deposition:

NOTE: All RMTs should have equivalent instruments.

- a. Identify an area, preferably several miles, away from the pathway to determine background readings.
  - b. Instruct the team(s) to go to the area selected and take three (3) background readings, one meter from the ground and at least 10 feet away from the vehicle and report readings back to EOF.
  - c. Enter the survey start date and time on the map.

NOTE: Environmental concentrations in the field will change over time due to weather conditions and land use. The purpose of the start time/date and end time/date is to provide a reference point for future surveys. Each survey should have separate maps.

Efforts should be made to keep each survey to within a 6-12 hour time period or less.

- d. Compute the average of the three background readings for each team.
  - If any readings are significantly different (i.e., 100 cpm vs 5000 cpm) from the other teams, request a second set of readings.
  - If all information is satisfactory, commence environmental monitoring in the areas of the plume pathway, as well as those areas not affected by the plume.
- e. Utilizing the information on the map, instruct each Radiation Monitoring Team to go to a designated landmark (i.e., intersection of Green and River Rd. Shadylane Cemetery, Elm St. School, Acme Manufacturing Facility etc.), take a reading approximately several yards from the vehicle, and report the results to the EOF.

NOTE: It is recommended that readings are obtained at approximately 1-2 mile increments to broadly define the affected area.

- If an RMT is not required to take surveys at any time, it should be directed to move outside the affected area and to standby.
- f. Record each reading in cpm from a Radiation Monitoring Team on the map with a circle identifying the team.
- g. Continue taking readings from the Radiation Monitoring Teams until a pattern of high count rates appear to focus in one area or along the axis of the plume's path.
  - If no pattern can be observed, terminate the survey. A second survey can be started at a later time if necessary.
- h. Enter the end date and time on the map and review and sign as complete.

NOTE: The maps generated should be retained for further reference and litigation as a legal record per <EPI-B9>.

- i. Review the map(s) and determine selected points within the affected area for environmental sampling, and collect samples using the following guidelines:

NOTE: The selected points should be determined as a function of affected area size and potential magnitude of contamination. Equally important is the collection of environmental samples in unaffected areas to determine those area(s) that are not affected by the plume path or re-suspension or cross contamination.



-- If environmental samples cannot be collected from unaffected areas due to time constraints or lack of resources, then use historical REMP data for comparative analysis.

- 1) Collect soil and/or grass samples in the affected area(s) to determine the deposition pattern.

-- If snow is covering the area where soil or grass samples are not available, collect snow samples.

NOTE: When time and resources permit, collect soil and/or grass samples that may be up to several miles from the affected and adjacent areas.

- 2) Collect water samples from the following areas:

- a) From a drinking water facility, when plume path travels over Lake Erie or a major waterway.
- b) From watering trough or pond on farm premises, when plume path travels over a farm where animals may be raised for human consumption.
- c) From those bodies of water used for irrigation, when plume path travels over a farm where food is grown for human consumption.

- 3) Collect food products and/or milk, if available, in the affected area(s).

- 4) Collect food products and/or milk, if available, in the unaffected area(s).

6. Direct the RMTs to deliver collected samples to the EOF Decontamination Room for processing.

NOTE: To minimize the spread of contamination, the Fire Exit door located at the main EOF/TEC staircase and the side door to the EOF Decontamination Room should be utilized by the RMTs when transporting samples.

7. Upon receipt of the environmental samples from the RMT(s), perform the following:

- a. Verify that the Environmental Sample Label (PNPP No. 6486, Attachment 1) for each sample is completely filled out and properly attached to the sample container.
- b. Assign an ID number to each sample container, ensuring that this ID number is recorded on the Environmental Sample Label.

- c. Direct available Health Physics personnel to monitor collected samples with a scintillation detector to segregate between radioactive and non-radioactive samples.

NOTE: Levels identifying radioactive materials are provided in <HPI-H0004>.

NOTE: In the judgment of the Environmental Liaison and the Offsite Radiation Advisor, based on the emergency conditions, all sorting activities on environmental samples may be done at the Backup Emergency Operations Facility in the Ashtabula Service Center.

8. Prepare material for shipment by completing a Sample Collection Field Log (PNPP No. 6544, Attachment 2) for each box/package, clearly indicating the following information for each sample:

- a. Date/time collected
- b. Sample type
- c. Sample location
- d. ID number
- e. Type of analysis. Perform gamma isotopic analysis on all samples until source term dictates otherwise (i.e., source term indicates a high release rate of Sr-90).

Gamma Isotopic Analysis	GS
Strontium	Sr
Iodine	IO
Gross Beta	GB
Gross Alpha	GA
Tritium	H3

9. Upon return of the sample results, perform the following:

- a. For any food samples, results obtained from the offsite support laboratory should be entered on the Worksheet for FDA Protective Action Guides for Ingestion (Attachment 3) to anticipate protective actions which may be implemented by off-site authorities.

NOTE: Attachment 5 provides instructions for the completion of Attachment 3.

- b. For soil and grass samples, enter data on the worksheet for Protective Action Guides for Relocation (Attachment 4) to anticipate protective actions which may be implemented by off-site authorities.

NOTE: Attachment 5 provides instructions for the completion of Attachment 4.

NOTE: The Perry Plant is not responsible for developing ingestion pathway protective action recommendations.

10. Incorporate continuing environmental monitoring into Recovery Phase efforts.

NOTE: Federal and State environmental monitoring efforts will be coordinated through the Federal Radiological Monitoring and Assessment Center (FRMAC).

#### 6.2 Environmental Specialist

1. Notify the current contracted off-site laboratory and make arrangements for receipt of the environmental samples.

NOTE: If the Federal Radiological Monitoring and Assessment Center (FRMAC) has been deployed, they may be contacted through the EOF to provide assistance with collection and analysis.

2. Package and ship the non-radioactive samples to the receiving laboratory.

NOTE: Extra environmental packing equipment is located at the backup EOF for the shipment of non-radioactive samples; radioactive samples must be returned to site for shipping.

#### 6.3 Radioactive Shipment Coordinator

1. Package and ship radioactive samples to the offsite laboratory for analysis in accordance with existing procedures, ensuring a copy of the Sample Collection Field Log itemizing the contents is included.

#### 6.4 Radiation Monitoring Team (RMT) Personnel

1. Obtain an Environmental Sample Kit and perform the following:
  - a. Inventory the contents of the sample kits.
  - b. Place a plastic bag over the detector, turn the instrument on and check high voltage and battery.
2. When instructed to obtain background readings, perform the following:
  - a. Don protective clothing.

- b. Drive to the designated area, get out of the vehicle, go to an open area, at least 10 feet away from the vehicle.
  - c. Point the detector down at approximately 1 meter from the ground and obtain three background readings.
  - d. Report each reading back to the EOF.
3. When instructed to obtain a deposition reading, perform the following:
  - a. Drive to the designated area, get out of the vehicle, go to an open area, at least 10 feet away from the vehicle.
  - b. Point the detector down at approximately 1 meter from the ground and obtain three deposition readings.
  - c. Report each reading back to the EOF.
4. Collect environmental samples as instructed using the following instructions:
  - a. FOOD PRODUCTS

Only the exposed edible portions (i.e., outer leaves) of items that may be eaten directly without further processing, such as lettuce, cabbage, spinach, should be collected. Uncut field samples are preferable to fruit/vegetable stand items.

    - 1) Obtain a large plastic bag and a spring scale from the equipment kit.
    - 2) Don one pair of disposable gloves.
    - 3) Collect one kilogram (at least 1000 grams) of each type of vegetable separately for the sample location.
    - 4) Place the sample and the disposable gloves into separate plastic bags.
    - 5) Record the following information on the Environmental Sample Label:
      - a) Date and time that sample was taken
      - b) Type of sample food product (i.e., lettuce)
      - c) Sample location (be as exact as possible) using landmarks for a reference point
      - d) Name of the sample collector and the date
    - 6) Place the completed Environmental Sample Label on each sample bag.

b. GRASSY AREAS

Samples of grass from open field areas may be used to determine the amount of deposition or to determine if a potential hazard exists from the milk of grazing dairy animals. Samples should be obtained from open field areas which are not shielded by trees, buildings or other obstructions.

- 1) Obtain a large plastic bag, tape measure, shears, and spring scale from the equipment kit.
- 2) Don one pair of disposable gloves.
- 3) Collect one kilogram (at least 1000 grams) of grass and deposit into the plastic bag.
- 4) Measure the area where the grass has been collected; record this data (in square feet - ft<sup>2</sup>) in the "Remarks" section of the Environmental Sample Label.
- 5) Wipe the shears clean and place the used wiping material and disposable gloves into a separate plastic bag.
- 6) Record the following information on the Environmental Sample Label:
  - a) Date and time that sample was taken
  - b) Type of sample (pasture grass)
  - c) Sample location (be as exact as possible) using landmarks for reference points
  - d) Name of sample collector and date
- 7) Place the completed Environmental Sample Label on each sample bag.

c. SOIL (Non-Grassy Areas)

- 1) Obtain a one (1) liter, wide mouth sample container, tape measure, and shovel from the equipment kit.
- 2) Don one pair of disposable gloves.
- 3) Fill the container with soil.

NOTE: Do not dig further than one (1) inch deep while removing large stones and/or vegetation from the sample.

- 4) Measure the area where the soil was collected; record this data (in square feet - ft<sup>2</sup>) in the "Remarks" section of the Environmental Sample Label.

- 5) Wipe the shovel clean, and place the used wiping material and gloves into a plastic bag.
- 6) Record the following information on the Environmental Sample Label:
  - a) Date and time that the sample was taken
  - b) Type of sample (soil)
  - c) Sample location (use the REMP sample location number or the distance from an appropriate landmark)
  - d) Name of sample collector and date
- 7) Place the completed Environmental Sample Label on each sample container.

d. SURFACE WATER

Surface water is important if the water body being sampled is used as a drinking water source for local residents, cows, goats, or livestock consumable by humans. For a liquid release, samples should be obtained at public water intakes (raw water supply) based on calculated arrival times. The nearest public water intake is Painesville Water located 3.4 miles WSW of the Perry Plant with an arrival time of approximately 17-1/3 hours.

NOTE: The potential dose for the nearest "downstream" public water intake can be projected using the Abnormal Liquid Release Analysis section of <CHI-0007>.

- 1) Obtain a one (1) gallon plastic container from the equipment kit.
- 2) Don one pair of disposable gloves.
- 3) Gently dip the container beneath the surface of the water taking care not to agitate the water or disturb the bottom sediment and biasing the sample.

NOTE: When obtaining grab samples at a composite routine REMP sampling location, the composite container should be left undisturbed for REMP pickup later.

NOTE: Caution should be used when obtaining samples from water intake structures. Methods such as lowering the sample container by a rope into the recesses to be sampled should be employed by RMT personnel. Raw (untreated/unpurified) water from source should be sampled, if possible.

- 4) When the container is full, remove from the water and cap the container.

- 5) Wipe the sample container dry; place the used absorbent and gloves into a plastic bag.
- 6) Record the following information on the Environmental Sample Label:
  - a) Date and time that the sample was taken
  - b) Type of sample (water)
  - c) Sample location (use the REMP sample location number or the distance from an appropriate landmark)
  - d) Name of sample collector and date
- 7) Place the completed Environmental Sample Label on each sample container.

e. MILK

The collection of milk samples are part of the food pathway for human consumption. Milk can be collected from goats and/or dairy cows. In some cases, milk may have to be obtained directly from the animal.

NOTE: Due to the problem of cross contamination and access to the farmer, collection of these samples may be delayed.

- 1) Go to the milk location as identified by the Environmental Liaison.
- 2) Request the owners to collect approximately 1 gallon of milk utilizing a clean container supplied by the Perry Plant and, if possible, under the observation of an RMT to prevent cross contamination.

NOTE: The minimum limit is one-half gallon.

- 3) Record the following information on the Environmental Sample Label:
  - a) Date and time that the sample was taken
  - b) Type of sample (milk)
  - c) Sample location (for sample location, use site address and/or farm location)
  - d) Name of sample collector and date
- 4) Sample should be transferred to a 1 gallon plastic container.

- 5) Place the completed Environmental Sample Label on each sample container.

f. SNOW

Snow samples can be used to characterize the nature and extent of area contamination; however, these samples should not be used for ingestion pathway considerations.

Snow samples are dependent upon several weather related variables: 1) rate of snowfall at and since the time of the release; 2) air temperatures since release occurred; 3) wind condition; sunshine, rain or other weather conditions occurring after snowfall of interest. These possibilities must be considered and existing weather conditions used to determine areas to be sampled.

- 1) Obtain a three (3) liter, wide-mouth bottle, tape measure, spring scale, and shovel from the equipment kit.
- 2) Select the location to be sampled from an area that has not been subjected to disturbances (i.e., plowing, snowmobiles, pedestrians, etc.).
- 3) Collect one kilogram (at least 1000 grams) of snow, and deposit into the container.
  - a) Do not dig further than three (3) inches deep.  
  
-- If snow accumulation was present at the time of the release, collect only the surface snow and any snow which has fallen during the release period.
- 4) Measure the area where the snow has been collected; record this data (in square feet - ft<sup>2</sup>) in the "Remarks" section of the Environmental Sample Label.
- 5) Securely close the sample bottle. Wipe the sample container and shovel dry. Place the used absorbent material into a separate plastic bag.
- 6) Record the following information on the Environmental Sample Label:
  - a) Date and time that the sample was taken
  - b) Type of sample (snow)
  - c) Sample location (be as exact as possible - use the distance from an appropriate landmark)
  - d) Name of sample collector and date



- 7) Place the completed Environmental Sample Label on each sample container.
5. Turnover collected samples to Environmental Liaison when recalled to the EOF.

NOTE: To minimize the spread of contamination, the Fire Exit door located at the main EOF/TEC staircase and the side door to the EOF Decontamination Room should be utilized by the RMTs when transporting samples.

6. Ensure the RMT vehicles are monitored using <EPI-B3>.

#### 6.5 Records Capture

The following records are generated by this document:

##### Quality Assurance Records

Environmental Sample Label (PNPP No. 6486)

Sample Collection Field Log (PNPP No. 6544)

Attachment 3 (Worksheet for FDA Protective Action Guides for Ingestion)

Attachment 4 (Worksheet for Protective Action Guides for Relocation)

ENVIRONMENTAL SAMPLE LABEL (PNPP No. 6846)

ENVIRONMENTAL SAMPLE LABEL	
PNPP No. 6486 Rev. 5/01	EPI-B10
Date/Time Collected:	_____ / _____
Type of Sample:	_____
Sample Location:	_____
Remark:	_____ <b>SAMPLE</b> _____
Collector's Name/Date:	_____ / _____
<b>EOF USE ONLY</b>	
Sample ID No.	_____

## Perry Nuclear Power Plant

# SAMPLE COLLECTION FIELD LOG

**PNPP No. 6544 Rev. 1/11/01**

Sheet \_\_\_\_\_ of \_\_\_\_\_

**EPI-B10**

[illegible]

ENVIRONMENTAL LIAISON/  
RADWASTE SHIPMENT COORDINATOR \_\_\_\_\_

DATE \_\_\_\_\_

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CANARY - OFFSITE LABORATORY

**PINK – INFORMATION COPY**

## Worksheet for FDA Protective Action Guides for Ingestion

Sample ID Number: \_\_\_\_\_

Sample Date and Time: \_\_\_\_\_

One Meter Exposure Rate (mR/hr): \_\_\_\_\_

Nuclide	Sample Analysis (Bq/kg) (Note a)	DIL (Bq/kg) (Note b)	Ratio to DIL (C)	Critical Nuclide (Largest Ratio)	mR/hr per PAG
	A	B	$C = A \div B$	>1.0 Exceeds PAG	mR/hr $\div C$
Sr-90		160			
I-131		170			
Cs-134 + Cs-137		1200	(Note c)		
Pu-238 + Pu-239 + Am-241		2	(Note d)		
Ru-103 Ru-106		$\frac{C_{103} + C_{106}}{6800 \ 450} < 1$	(Note e)		
Sr-89		1400			
Y-91		1200			
Zr-95		4000			
Nb-95		12000			
Te-132		4400			
I-129		56			
I-133		7000			
Ba-140		6900			
Ce-141		7200			
Ce-144		500			
Np-237		4			
Np-239		28000			
Pu-241		120			
Cm-242		19			
Cm-244		2			

NOTE a: 1 bequerel = 27 pCi

NOTE b: DIL (Derived Intervention Level) is the concentration in food, in the absence of intervention, which could lead to an individual receiving a radiation dose equal to the PAG (0.5 Rem CEDE or 5 Rem CDE).

NOTE c: Add Cs-134 and Cs-137 before dividing by the DIL.

NOTE d: Add Pu-238, Pu-239, and Am-241 before dividing by the DIL.

NOTE e: Divide the concentration of Ru-103 by 6800, then divide the concentration of Ru-106 by 450. If the sum is less than 1, the food is edible; if the sum is equal to or greater than 1, then the food is inedible.

**Worksheet for Protective Action Guides for Relocation**  
**(weathering and decay, without re-suspension)**

Sample ID Number: \_\_\_\_\_ Sample Date and Time: \_\_\_\_\_ 1 Meter Exposure Rate (mR/hr): \_\_\_\_\_

Nuclide	Sample Results (pCi/m <sup>2</sup> )	DCF Initial Exposure Rate (mR/hr per pCi/m <sup>2</sup> )	Calculated Exposure Rate (mR/hr)	DCF 1 <sup>st</sup> year (mrem per pCi/m <sup>2</sup> )	Calculated 1 <sup>st</sup> year Dose (mrem)	DCF 2 <sup>nd</sup> year (mrem per pCi/m <sup>2</sup> )	Calculated 2 <sup>nd</sup> year Dose (mrem)	DCF 0-50 year (mrem per pCi/m <sup>2</sup> )	Calculated 50 year Dose (mrem)
Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J
Sr-89		2.2E-12		2.39E-9				2.39E-9	
Sr-90		Beta Only							
Sr-91		1.1E-8		1.06E-7				1.06E-7	
Zr-95		1.2E-8		3.3E-5		4.0E-7		3.4E-5	
Nb-95		1.3E-8							
No-99		2.6E-9		1.73E-7				1.73E-7	
Ru-103		8.2E-9		7.1E-6				7.1E-6	
Ru-106		3.4E-9		1.2E-5		3.7E-6		1.8E-5	
Te-132		4.0E-9		3.2E-6				3.2E-6	
I-131		6.6E-9		1.3E-6				1.3E-6	
I-132		3.7E-8		9.0E-8				9.0E-8	
I-133		1.0E-8		2.1E-7				2.1E-7	
I-135		2.4E-8		1.6E-7				1.63E-7	
Cs-134		2.6E-8		1.0E-4		4.7E-5		2.4E-4	
Cs-137		1.0E-8		4.5E-5		2.9E-5		6.1E-4	
Ba-140		3.2E-9		1.1E-5				1.1E-5	
La-140		3.5E-8							
Ce-141		1.4E-9		1.08E-6				1.08E-6	
Ce-144		3.5E-10		1.15E-6		2.96E-7		1.61E-6	

Total: \_\_\_\_\_ Total: \_\_\_\_\_ Total: \_\_\_\_\_ Total: \_\_\_\_\_  
 Accident-Specific DCF (mrem per mR/hr): \_\_\_\_\_  
 Accident-Specific DRL (mR/hr): \_\_\_\_\_

**NOTE:** Accident-Specific DCF is 1<sup>st</sup> 2<sup>nd</sup>, or 50 year total dose (mrem) divided by either measured or calculated exposure rate (mR/hr).

**NOTE:** Accident-Specific DRL is 1<sup>st</sup> year PAG (2000 mrem), 2<sup>nd</sup> year goal (500 mrem), or 50 year goal (5000 mrem divided by the appropriate accident-specific DCF.

### Instructions for Completion of Attachments 3 and 4

#### Attachment 3 (Worksheet for 1998 FDA Protective Action Guides for Ingestion)

NOTE: Attachment 3 is used for food and potential drinking water samples.

1. Fill in Column A with sample results for indicated nuclide.
2. Divide Column A by Column B for that specific nuclide.
3. The largest value of Column C is the critical nuclide. Any value greater than 1.0 for any nuclide, indicates that a food product exceeds the Protective Action Guideline.
4. Divide the sample reading in mR/hr by the value obtained in Column C to determine what reading will equal a given Protective Action Guideline. This will provide a rough estimate prior to sending results to the laboratory for analysis.

#### Attachment 4 (Worksheet for Protective Action Guides for Relocation)

NOTE: Attachment 4 is used for soil, grass, and snow samples.

NOTE: Numbers in the Table are taken from EPA 400-R-92-001, Table 7-1.

1. Fill in Column B with sample results for indicated nuclide.
2. Divide Column B by Column C and input the results in Column D.
3. Divide Column B by Column E and input the results in Column F.
4. Divide Column B by Column G and input the results in Column H.
5. Divide Column B by Column I and input the results in Column J.
6. Divide Column B by Column E and input the results in Column F.
7. Sum the results of Columns D, F, H, and J.
8. Divide the sum of Columns F, H, and J by the sum of Column D. This identifies the Accident Specific Dose Conversion Factor (DCF) for each of the 1<sup>st</sup>, 2<sup>nd</sup>, and 50 year doses.
9. Divide the 1<sup>st</sup> year PAG (2000 mrem), 2<sup>nd</sup> year goal (50 mrem), and the 50 year goal (5000 mrem) DCF to determine the Accident-Specific Derived Response Level (DRL). This value will provide the mR/hr instrument reading that will indicate when the associated limit will be reached. At this level, relocation should be considered.

**FirstEnergy Nuclear Operating Company**

**PERRY NUCLEAR POWER PLANT**

**UNIT 1 & 2**

**ACKNOWLEDGMENT OF RECEIPT**

Title      Emergency Plan Implementing Instruction (EPI-B13), Rev. 2, C-3

**Control No. 60**

Letter No./Date PY-CEI/NRR-2564L / April 27, 2001

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

Return to:

Perry Nuclear Power Plant  
Attn: Beverly Richardson, A240  
P. O. Box 97  
Perry, Ohio 44081

**FirstEnergy Nuclear Operating Company  
Perry Nuclear Power Plant**

**Controlled Document Instruction Sheet**

**Manual:** Emergency Plan Implementing Instruction (EPI) for Perry Nuclear  
Power, EPI -B-0013, R/2, C-3

**Control Number** 60

**Remove the pages listed below and insert enclosed pages:**

<u>Revision Number</u>	<u>Temporary Change No.</u>	<u>Insert</u>	<u>Remove</u>
2	C-3	Entire Document	



The Cleveland Electric Illuminating Company

# PERRY OPERATIONS MANUAL

## Emergency Plan Implementing Instruction

**PNPP**

**CONTROLLED COPY**

No. DVO

TITLE: DETERMINATION OF CORE DAMAGE UNDER ACCIDENT CONDITIONS

REVISION: 2 EFFECTIVE DATE: 11-29-95

PREPARED: J. C. Mack 8-1-95  
/ Date

EFFECTIVE PIC'S

[illegible]

DETERMINATION OF CORE DAMAGE UNDER ACCIDENT CONDITIONS

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SCOPE OF REVISION:

- Rev. 2 -
1. TC's from previous revision that were evaluated for incorporation - None.
  2. Revised in its entirety.
  3. Reformatted forms to make more user friendly.
  4. Corrected hydrogen reaction equation.
  5. Corrected containment and drywell air volume.

Change History

PIC Number: 1                      Affected Pages: i, iii, 14

Summary of Change:

1. Corrected missing word from title on Dose Rate Chart.
- 

PIC Number: 2                      Affected Pages: i, iii, 4, 6

Summary of Change:

1. Clarify sample media for use with Attachments 1 and 6.
- 

PIC Number: 3                      Affected Pages: i, iii, 1, 2, 3, 4, 5, 6, 13

Summary of Change:

1. Moved a portion of the information previously included in the purpose to a note at the bottom of Attachment 1.
  2. Replaced the responsibility of the Chemistry Unit Supervisor with the Core Thermal Hydraulics Engineer.
  3. Reworded Step 5.2.2 to describe how to determine the normalized activities.
  4. Modified the format of the descriptions of the terms for the Correction Factor equation, and added a note indicating that a spreadsheet may be used to perform calculations.
  5. Re-worded Step 5.2.7 to provide consistent direction with other changes made.
  6. Re-worded several questions on Attachment 8.
-

DETERMINATION OF CORE DAMAGE UNDER ACCIDENT CONDITIONS

1.0 PURPOSE

This instruction provides a manual method to estimate the extent of core damage. This method is based upon Iodine-131 and Cesium 137 concentration in the reactor coolant and Xenon-133, Krypton-85 and Hydrogen in the containment atmosphere. Release mechanisms are determined/verified via calculated activity ratios of several isotopes and the presence or absence of hydrogen.

Analyses in this procedure are based upon fission product inventories in the core of a Reference Plant. A BWR 6 with Mark III containment was used as the reference plant, operating at 102% of rated thermal power for 1095 days (3 years). Specifications of the Reference Plant vs. Perry Nuclear Power Plant (PNPP) are considered to be equivalent for the purposes of this procedure and any slight deviations in comparison to the uncertainties of fission products release fraction and other assumptions is insignificant. It should be noted however, that results obtained from this method are qualitative in nature and are to be used as an estimate of fuel clad failure, fuel overheating, or fuel melt.

2.0 REFERENCES

2.1 Source References

1. NEDO-22215 Procedures for the Determination of the Extent of Core Damage Under Accident Conditions
2. PY-NUS/CEI-705 letter dated 5/10/83
3. Radioactive Decay Data Tables, David C. Kocher, 1981
4. USAR Table 6.2-5

2.2 Use References

1. RPI-1313, Operation of the Gamma Spectroscopy System
2. Commitments addressed in this document:

L00053

### 3.0 DEFINITIONS

#### 3.1 Reference Plant Specifications

BWR 6/Mark III	
Rated Thermal Power	3579MWt
Number of Fuel Bundles	748 Bundles
Reactor Coolant Volume	$2.46 \times 10^8$ ml
Suppression Pool Volume	$3.67 \times 10^9$ ml
Total Primary Coolant Volume	$3.92 \times 10^9$ ml
Drywell Atmosphere Volume	$7.77 \times 10^9$ cc
Containment Atmosphere Volume	$3.25 \times 10^{10}$ cc
Total Atmospheric Volume	$4.0 \times 10^{10}$ cc

### 4.0 RESPONSIBILITIES

#### 4.1 Core Thermal Hydraulics Engineer

1. Perform the calculations and provide the results to the Radiation Protection Coordinator or Emergency Coordinator as soon as available.

#### 4.2 Chemistry Analysts acting as Post Accident Sampling Teams

1. Collect and analyze Reactor Coolant and/or Containment Atmosphere samples in accordance with SOI-P87, Post Accident Sampling System and <RPI-1313>.

### 5.0 ACTIONS

#### 5.1 Assessment of Core Damage based on Containment Dose Rate

NOTE: This is a quick and rough estimate of core damage.

Dose Rate at Containment Monitor (Attachment 9) provides theoretical curves of gross gamma dose rate versus time for a range of potential source terms. To determine the meaning of the measured dose rates:

1. Obtain the time after reactor shutdown and Containment Dose Rate reading.
2. Locate the intersection point of the dose rate and time after shutdown on the graph.

3. Determine the percent fuel inventory released to the containment air corresponding to the measured dose rate. Interpolate between curves for a closer estimate. Relate the percent fuel inventory released to the approximate source and damage estimate as indicated below.

<u>Curve No.</u>	<u>% Fuel Inventory Released</u>	<u>Approximate Source and Damage Estimate</u>
1	100	100% Fuel Damage, potential core melt
2	10	Total clad failures, core partially uncovered
3	1	Approximately 10% clad failure
4	-	100% coolant release

NOTE 1: The curves represent direct readings from the Containment Post Accident Radiation Monitors (1D19-N200A&B), at elevation 689 feet, inside containment. The curves account for the finite containment volume seen by the detector but do not account for any physical or shielding characteristics of the monitor or calibration uncertainties.

NOTE 2: The curves assume that only airborne noble gases and iodines are significant. Sprays (if used) would make the iodine and any particulate contribution insignificant. However, particulate plateout on surfaces and direct shine doses from components may make the readings unreliable. The calculation of monitor response does not include any particulates since the noble gases and iodine are the most significant contributors to dose rate in the containment.

NOTE 3: 100% Fuel Inventory = 100% Noble Gas, 25% Iodine

## 5.2 Calculation of Core Damage Assessment based on Sample Results

1. Collect and analyze the required post accident samples utilizing SOI-P87, Post Accident Sampling System and RPI-1313, Operation of the Gamma Spectroscopy System. Use the time of reactor shutdown for sample time to achieve the correct decay time.
2. Using the Power Correction Factor Calculation equation (Attachment 1), perform the following Power Correction Factor Calculation for each isotope to be utilized in core damage assessment on the data obtained in Step 1 (I-131, Xe-133, Cs-137, Kr-85). Multiply these correction factors by the decay corrected uCi/unit volume to normalize the activities to the Reference Plant Data Base.

Correction Factor for Isotope:

$$i = \frac{3651 \left( 1 - e^{-1095 \lambda_i} \right)}{\sum_j \left\{ P_j \left( 1 - e^{-\lambda_i T_j} \right) - \lambda_i T_j^0 \right\}}$$

- Where:
- $j$  = A given operating period where the steady state of power level variation is less than  $\pm 20\%$ . A minimum of 60 days of power correction must be performed.
  - $\lambda_i$  = Decay Constant for isotope  $i$  (day  $-1$ )  
(listed on Attachment 1)
  - $P_j$  = Steady Reactor Power of operating period  $j$  (MWt)
  - $T_j$  = Duration of operating period  $j$  (day)
  - $T_j^0$  = Time between the end of operating period  $j$  and the time of last reactor shutdown (day) This equals zero for operating period immediately prior to accident.
  - 3651 = Average operating power (MWt) for Reference Plant
  - 1095 = Continuous operation time (day) for Reference Plant

NOTE: A spreadsheet may be used to perform the above calculation.

3. Utilize Activity vs. Core Degradation (Attachments 2 through 5) and the normalized activities calculated in Step 2 to obtain the Upper Release, Best Estimate and Lower Release values pertaining to core damage. Record these results on the Estimate of Core Damage Data Sheet (Attachment 8).
4. Perform "Activity Ratio for Noble Gases" calculations and "Activity Ratio for Iodines" calculations (Attachment 6), using non-normalized reactor water activities for each isotope listed in Attachment 6.
5. Determine the Best Estimate of core damage type by comparing the ratios calculated in Step 4 to the Core Inventory and Fuel Gap Ratios. A ratio equal to or greater than the listed Fuel Gap ratio indicates cladding failure and a ratio equal to or greater than the Core Inventory indicates fuel melt. Record results on Attachment 6.
6. Complete the Zirconium-Water Reaction Calculation (Attachment 7).

NOTE: Hydrogen concentrations are obtained from Containment Hydrogen Monitoring System or performed by grab sample analysis.

7. Utilizing all of the above information and/or calculations and the following discussion, complete the Estimate of Core Damage Data Sheet (Attachment 8), formulating the "Best Estimation of Core Damage".

Plant parameters/indications that should be considered along with the analysis data include:

- The Loose Parts Monitor can provide indication of mechanical clad damage.
- The loss of reactor coolant volume below the TAF region (Top of Active Fuel) can result in core overheating and subsequent clad and fuel damage.
- The presence of hydrogen, the result of a Zirconium - Water reaction, without significant amounts of less volatile elements, is indicative of a clad overheating condition without fuel melt.
- The presence of unusually high concentrations of Strontium-92 and Lanthanum-140 or other low volatile elements, such as Barium, Ruthenium and Tellurium, implies some degree of core melt.

### 5.3 Records

The following records are generated by this document:

#### Quality Assurance Records

Power Correction Factor Calculation (EPI-B13-1)

Zirconium - Water Reaction Calculation (EPI-B13-2)

Estimate of Core Damage Data Sheet (EPI-B13-3)

#### Non-Quality Records

None



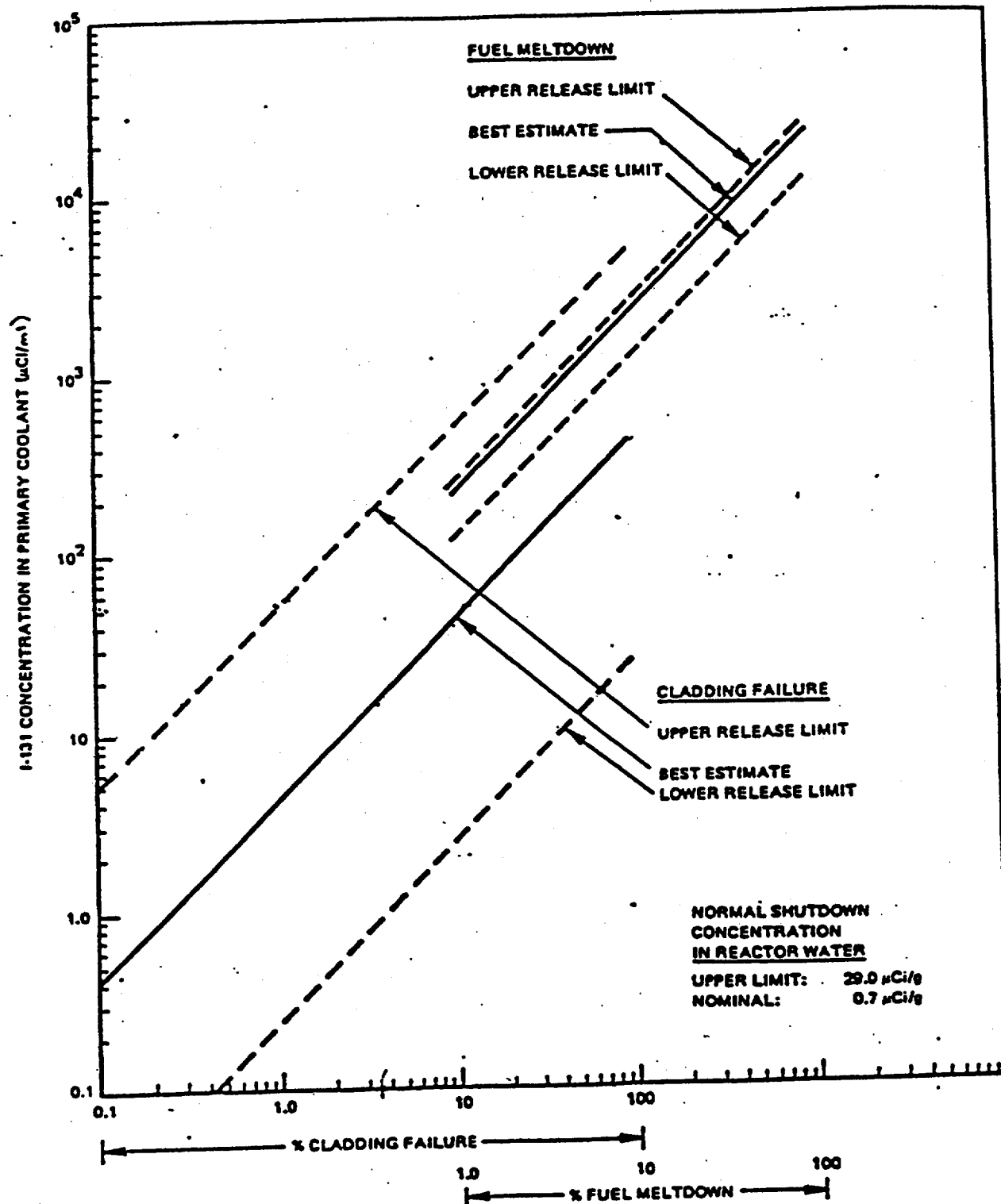
POWER CORRECTION FACTOR CALCULATION

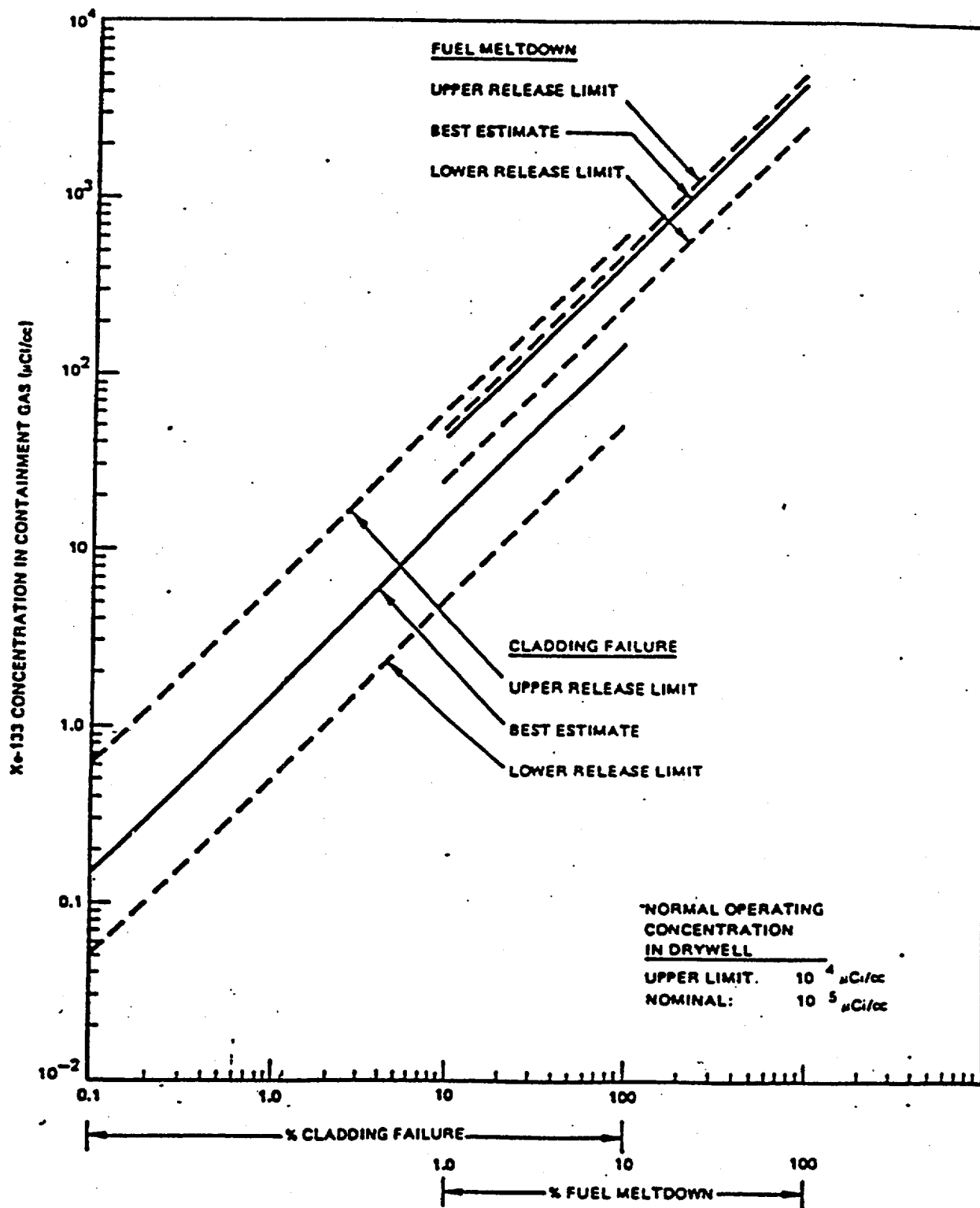
Correction Factor for Isotope

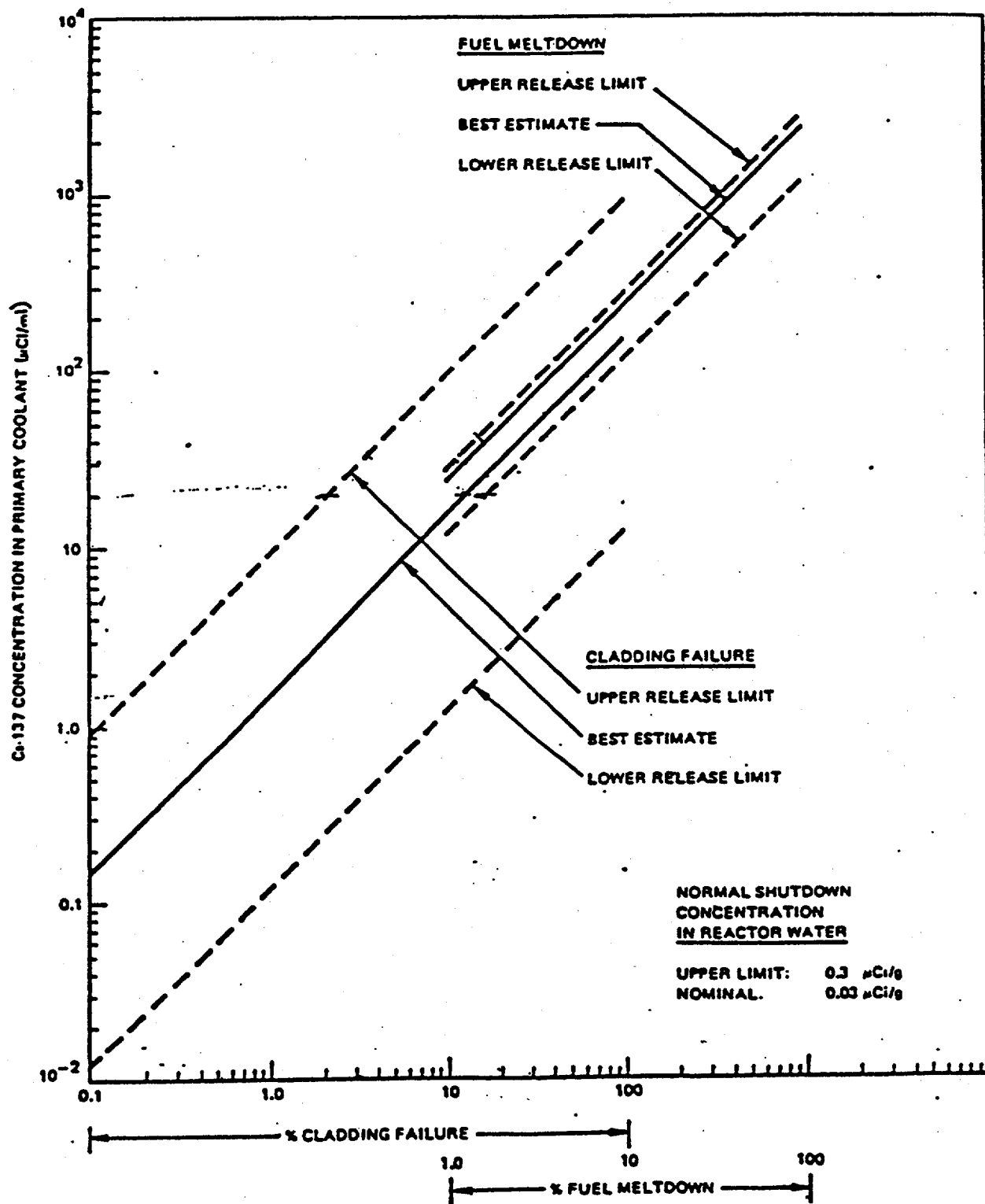
$$i = \frac{3651 \left( 1 - e^{-1095 \lambda_i} \right)}{\sum_j \left\{ P_j \left( 1 - e^{-\lambda_i T_j} \right) - \lambda_i T_j^0 \right\}}$$

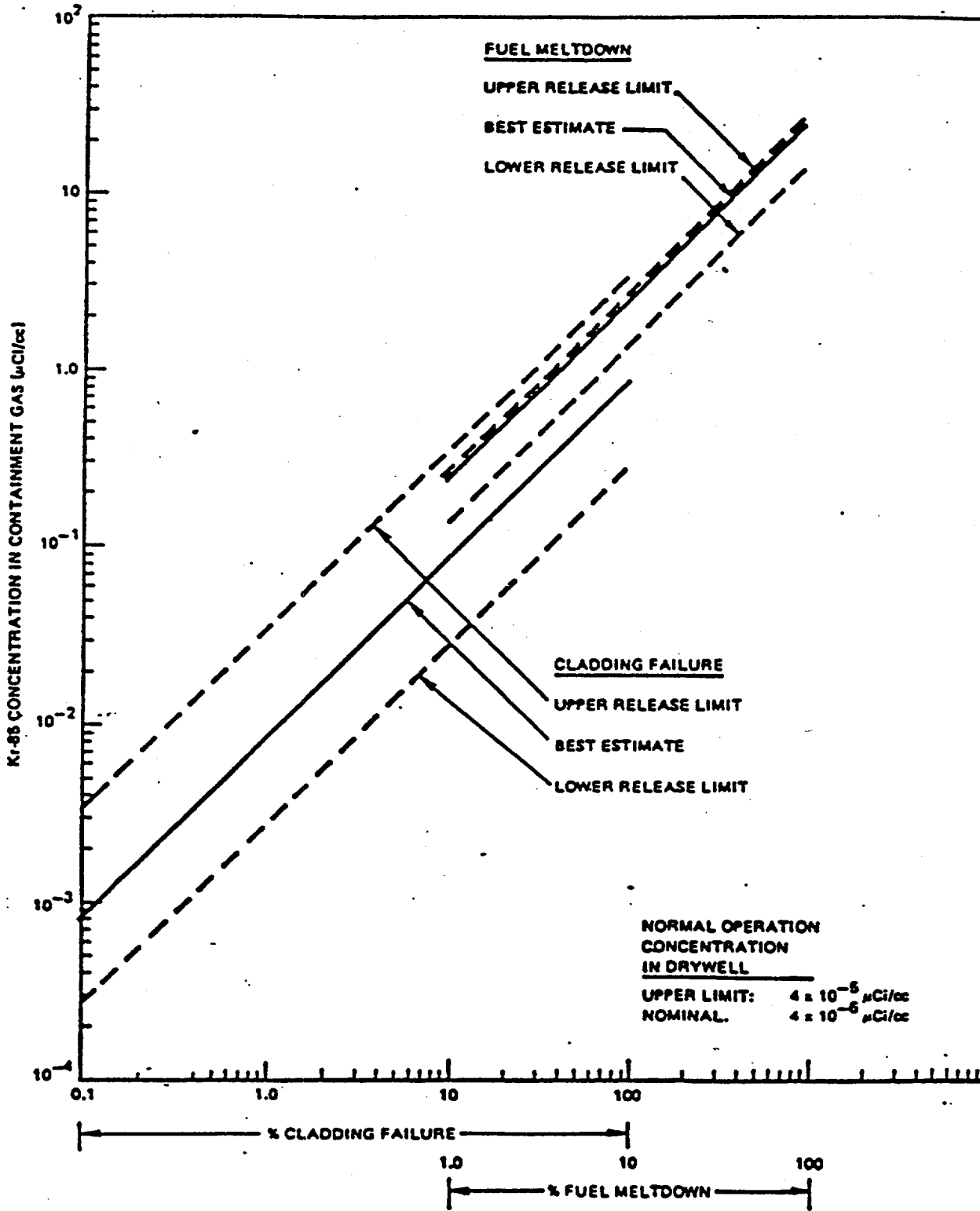
ISOTOPE	DECAY CONSTANT ( $\lambda_i$ )	DECAY CORRECTED ACTIVITY	CORRECTION FACTOR (i)	NORMALIZED ACTIVITY
I-131 Primary Coolant	8.62E-2			
Xe-133 Containment Gas	1.32E-1			
Cs-137 Primary Coolant	6.29E-5			
Kr-85 Containment Gas	1.77E-4			

NOTE: Some isotopes will be difficult to analyze immediately following an accident, specifically Cs-137 and Kr-85, which would be best utilized for core damage estimates several weeks after shutdown, allowing for sufficient decay of the shorter lived interfering isotopes.

IODINE-131 ACTIVITY vs. CORE DEGRADATION

XENON-133 ACTIVITY vs. CORE DEGRADATION

CESIUM-137 ACTIVITY vs. CORE DEGRADATION

KRYPTON-85 ACTIVITY vs. CORE DEGRADATION

RATIOS OF ISOTOPES IN CORE INVENTORY AND FUEL GAP

<u>Isotope</u>	<u>Half life</u>	<u>-----Activity Ratio-----</u>		
		<u>Fuel Gap</u>	<u>Core Inventory</u>	<u>Calculated</u>
<u>Noble Gas:</u>				
Kr-87	76.3 min.	0.0234	0.233	_____
Kr-88	2.84 hr.	0.0495	0.33	_____
Kr-85m	4.48 hr.	0.023	0.122	_____
Xe-133	5.25 day	1.0	1.0	_____
<u>Iodine:</u>				
I-134	52.6 min.	0.155	2.3	_____
I-132	2.3 hr.	0.127	1.46	_____
I-135	6.61 hr.	0.364	1.97	_____
I-133	20.8 hr.	0.685	2.09	_____
I-131	8.04 day	1.0	1.0	_____

Activity Ratio =  $\frac{\text{Noble gas isotope concentration}}{\text{Xe-133 concentration}}$   
for Noble gases

Activity Ratio =  $\frac{\text{Iodine isotope concentration}}{\text{I-131 concentration}}$   
for Iodines

Type of core damage best estimate:

Fuel Gap (Cladding Failure)	Yes / No
Core Inventory (Fuel Meltdown)	Yes / No

ZIRCONIUM - WATER REACTION CALCULATION

Hydrogen concentration: \_\_\_\_\_ %      Date/Time: \_\_\_\_/\_\_\_\_/\_\_\_\_

Calculation:

$$\%H_2 = \frac{(F_{Zr}) \times (M_{Zr}) \times (C)}{[(F_{Zr}) \times (M_{Zr}) \times (C)] + V} \times 100$$

where:  $F_{Zr}$  = Fraction of Zirconium Reacted

$M_{Zr}$  = Total Mass of Zirconium = 1.60E5 lbm

$C$  = SCF  $H_2$  per lbm of Zirconium = 8 SCF  $H_2$ /lbm

$V$  = Dilution Volume = 1.42E6 ft<sup>3</sup>

$$F_{Zr} = \frac{(1.42E6) \times (\%H_2)}{(1.28E8) - (1.28E6 \times \%H_2)}$$

$$F_{Zr} = \frac{(1.42E6) ( \quad )}{(1.28E8) - (1.28E6 \times \quad )}$$

$$F_{Zr} = \underline{\hspace{2cm}}$$

$$\% \text{ Cladding Reacted} = F_{Zr} \times 100 = \underline{\hspace{2cm}} \%$$

ESTIMATE OF CORE DAMAGE DATA SHEETAttachments 2, 3, 4, 5:

		<u>Upper Release %</u>	<u>Best Estimate %</u>	<u>Lower Release %</u>
Iodine-131 -	Cladding			
(Liquid)	Failure	%	%	%
-	Fuel			
	Meltdown	%	%	%
Xenon-133 -	Cladding			
(Atmosphere)	Failure	%	%	%
-	Fuel			
	Meltdown	%	%	%
<u>Optional</u>				
Cesium-137 -	Cladding			
(Liquid)	Failure	%	%	%
-	Fuel			
	Meltdown	%	%	%
Krypton-85 -	Cladding			
(Atmosphere)	Failure	%	%	%
-	Fuel			
	Meltdown	%	%	%

Attachment 6:

Cladding Failure: ☐Yes / ☐No  
Fuel Meltdown: ☐Yes / ☐No

Attachment 7:

Cladding reacted: \_\_\_\_\_ %

Additional Plant Parameters/Indications:

Did Reactor Coolant drop below the Top of Active Fuel? ☐Yes / ☐No

Lowest known level: \_\_\_\_\_

Is the Loose Parts Monitor in alarm? ☐Yes / ☐No

Presence of low volatile elements? ☐Yes / ☐No

Isotopes: \_\_\_\_\_

Best Estimation of Core Damage:

Fuel Overheat Indications ☐Yes / ☐No

\_\_\_\_\_ % Cladding Failure \_\_\_\_\_ % Fuel Meltdown

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

\_\_\_\_\_/\_\_\_\_\_  
Date Time



DOSE RATE AT CONTAINMENT MONITOR