DETROIT EDISON - FERMI 2
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Ref: ca6076

A045

EMERGENCY NOTIFICATIONS

Revision Summary

1) This is a total rewrite to describe the use of new notification forms. No revision bars used.

Implementation Plan

1) This procedure goes into effect upon issuance.

Attachments

1	042602	Nuclear Plant Event Notification Form
2	042602	Nuclear Plant Event Technical Data Form
3	042602	Offsite Emergency Support Organization Activation (3 parts): Fire Paramedics and Ambulance Hospital
4	042602	Report to Secondary Alarm Station (Security)
5	042602	Nuclear Plant Event Notification or Technical Data Form Facsimile Log

Enclosures

A	042602	Nuclear Plant Event Notification Form Information Sources and Requirements
B	042602	Nuclear Plant Event Technical Data Form Information Sources and Requirements
C	042602	ECOS Activation

CONTROLLED

Information and Procedures				
DSN EP-290	**Revision** 39	**DCR #** 02-0684	**DTC** TPEPT	**File #** 1703.10
IP Code I	**Date Approved** 5-31-02	**Released By** D. Adams/s/	**Date Issued** 6-7-02	**Recipient** 935

1.0 PURPOSE

To provide instructions for making emergency notifications at Fermi 2

2.0 USE REFERENCES

2.1 EP-101, Classification of Emergencies

2.2 EP-102, Unusual Event

2.3 EP-103, Alert

2.4 EP-104, Site Area Emergency

2.5 EP-105, General Emergency

2.6 EP-402, Responsibilities of the Recovery Organization

3.0 ENTRY CONDITIONS

3.1 An emergency has been classified in accordance with EP-101

or

3.2 Offsite emergency support has been requested

4.0 GENERAL INFORMATION

4.1 **Offsite Authorities** must receive **within 15 minutes**: Initial Notifications of an emergency declaration, any change in Protective Action Recommendations (PARs), and any escalation or de-escalation in emergency classification. Offsite Authorities are:

4.1.1 Monroe County

4.1.2 Wayne County

4.1.3 State of Michigan

4.2 Offsite Authorities, Canada, and the NRC shall be notified of emergency conditions at Fermi 2 through the Nuclear Plant Event Notification Form (ENF) (Attachment 1). It is permissible to limit the verbal notification to the declared emergency class and any protective action recommendations provided a facsimile of the ENF is immediately transmitted.

4.3 **Initial Notifications** for all **classifications** and **changes to PARs** shall include completing the ENF.

4.3.1 Any initial notifications communicating a classification or change in PAR as a result of a dose calculation requires completing a Nuclear Plant Event Notification Form (ENF) Attachment 1, **and** Nuclear Plant Event Technical Data Form (TDF), Attachment 2, as one message.

NOTE: To ensure the timeliness of follow-up notifications, Fermi 2 should provide updates to the State of Michigan (and to Monroe and Wayne Counties prior to state EOC activation) every 30 minutes (or longer if approved by the State) using the TDF.

4.4 **Follow-up Notifications** are updates made to Offsite Authorities, NRC Operations Center, and Nuclear Information when more information becomes available or as the situation changes. All subsequent notifications require completing the TDF, Attachment 2.

4.5 Dose Assessment results must be copied onto a TDF.

4.6 The **Nuclear Regulatory Commission** (NRC) shall be notified immediately following the offsite authorities and not later than 1 hour after the emergency declaration.

4.6.1 The Shift Manager/Emergency Director ensures required NRC notifications are completed by a knowledgeable member of the plant staff.

4.6.2 Notifications to the NRC shall be made from the **Control Room** throughout the emergency, until transfer to the Technical Support Center (TSC) is ordered by the Emergency Director (ED). The ENF or TDF will be used to facilitate notifications to the NRC throughout the emergency.

4.7 Province of Ontario (Canada)

4.7.1 Notify Canada immediately after the NRC Operations Center.

4.7.2 Canada shall receive each initial notification for each emergency declaration or PAR charge.

4.7.3 The State of Michigan will provide follow-up notifications to Canada.

4.8 The Control Room (CR) initially performs the Communicator actions required by this procedure. As additional emergency facilities become functional, responsibility for Communicator actions is transferred from the CR:

NOTE: Communicators shall complete all notifications in progress before transferring this responsibility to another facility.

4.8.1 To the **Technical Support Center** (TSC) when the Emergency Director (ED) declares the TSC functional

4.8.2 To the **Emergency Operations Facility** (EOF), when the Emergency Officer declares the EOF functional

4.9 Requests for **hospital, ambulance, or offsite fire/paramedic support** shall be made by the **Control Room** staff unless otherwise ordered by the ED (see Section 6.2).

4.10 Enclosures A and B should be used to assure accuracy of the information for each line item on an ENF or TDF.

4.11 Attachment 5 should be used to document facsimile transmittal.

4.12 The 10 Meter Meteorological Tower instruments are the preferred meteorological tower information source for an ENF or TDF.

4.13 Avoid the use of jargon and abbreviations whenever possible to help ensure clarification of communications.

4.14 Complete all required forms in blue or black ink or electronically.

NOTE: A "hard copy" ENF/TDF should be faxed in conjunction with any electronically transmitted form.

4.15 Electronically generated ENFs/TDFs shall use the standard electronic signature, name then "/s/".

5.0 IMMEDIATE ACTIONS

5.1 Emergency Declaration

5.1.1 Ensure an ENF is completed, numbered sequentially, and signed by the Emergency Director/Emergency Officer **prior** to communication.

6.0 PROCEDURE

6.1 Unusual Event, Alert, Site Area Emergency, or General Emergency Event Declaration and PAR Changes

6.1.1 Shift Manager (or delegate) Action

NOTE: Activation of the ECOS is at the discretion of the Emergency Director at the Unusual Event level.

1. Activate ECOS in accordance with Enclosure C.

6.1.2 Communicator Actions (in order)

1. Communicate the completed ENF or TDF to:

   a. The Monroe and Wayne County Sheriff (MCS/WCS) using the MCS/WCS designated direct-ring line (rings in both Monroe County and Wayne County Sheriff's Department Communication Centers) or the numbers in the RERP Emergency Telephone Directory and use the ENF to inform them of the event declaration (Unusual Event, Alert, Site Area Emergency, General Emergency, or PAR change).

      1) When communications have been established with the SEOC, terminate all verbal communications with Monroe and Wayne counties. Continue to **fax** communications to Monroe and Wayne counties.

   NOTE: The Michigan State Police Operations Division will advise the Communicator when to transfer notifications to the State Emergency Operations Center (SEOC).

   b. The Michigan State Police (MSP) using the MSP designated direct dial line or the number in the RERP Emergency Telephone Directory (rings in MSP Operations Division in Lansing) and use the ENF to inform them of the event declaration or PAR change.

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NOTE: All NRC notifications are normally made using the FTS-2001 Emergency Notification System (ENS) circuit by a knowledgeable person.

c. The NRC Operations Center using the main, backup, or second backup phone number listed on the NRC phone number sticker or from the RERP Emergency Telephone Directory.

NOTE: Province of Ontario receives initial notifications only.

d. The Province of Ontario using the Ontario designated direct dial line or number in the RERP Emergency Telephone Directory, and use the ENF to inform them of the event declaration or PAR change.

NOTE: Nuclear Information notifications are discontinued after the Joint Public Information Center becomes functional.

e. Nuclear Information, using the number(s) listed in the RERP Emergency Telephone Directory or Home Address Report, and using the ENF to inform them of the event declaration or PAR change.

6.1.3 Nuclear Information Actions

1. Obtain emergency information from the communicator.

2. Perform notifications and generate information releases as required by Corporate Communications.

6.2 Offsite Emergency Support Required

6.2.1 If fire/paramedic, ambulance, or hospital support is required, use the applicable section of the Offsite Emergency Support Organization Activation (Attachment 3) to make the request. The correct phone numbers are listed on Attachment 3 and in the RERP Emergency Telephone Directory.

6.2.2 Follow any request for offsite emergency support with a call to Security at the Secondary Alarm Station. Complete a report to Secondary Alarm Station (Security) (Attachment 4).

7.0 FOLLOW UP ACTIONS

7.1 Follow-up Notifications

NOTE: Notifications to Nuclear Information are discontinued after the JPIC is functional.

7.1.1 When more information becomes available or as plant conditions change, complete all portions of the TDF and notify the offsite authorities and Nuclear Information.

7.2 NRC Notifications

7.2.1 After an emergency declaration notification has been made to the NRC, immediately notify the NRC using a ENF and/or TDF as appropriate of:

1. Any further degradation in plant safety or other worsening plant conditions.
2. Any change from one emergency class to another.
3. Termination of the emergency class.
4. Results of ensuing evaluations or assessment of plant conditions.
5. Effectiveness of response or protective measures taken.
6. Information related to plant behavior that is not understood.

7.2.2 Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC.

7.3 Industry Notifications

NOTE: These notifications are followup actions and are performed by the TSC/EOF Communicators.

7.3.1 Following any Alert, Site Area Emergency, General Emergency declaration, or upgrade in emergency classification, contact the following using the phone numbers listed in the RERP Emergency Telephone Directory:

1. INPO
2. Nuclear Insurers (ANI/MAELU)

7.3.2 Make an entry in the TSC or EOF Communicator Log documenting content and time of completed notification.

7.4 Notification of Event De-escalation or Termination

7.4.1 A notification of de-escalation, termination, or recovery must be communicated as an **initial** notification.

7.4.2 Emergency Officer/Emergency Director shall ensure notification is made within 15 minutes of event de-escalation or termination.

7.4.3 The individual making the notification shall:

NOTE: When an ENF and TDF are used together as one message the approval and notification documentation should be completed on the ENF (Page 1).

1. Complete both an ENF **and** TDF using the same message number on each form.

2. Write a summary of the plant status that permits the de-escalation, termination, or recovery of the event using EP-102, "Unusual Event;" EP-103, "Alert;" EP-104, "Site Area Emergency;" EP-105, "General Emergency;" or EP-402, "Responsibilities of the Recovery Organization," as a guide.

3. Communicate the information on the ENF and TDF to the offsite authorities, NRC Operations Center, Province of Ontario, Nuclear Information (or JPIC if functional), and NRC Resident Inspector.

7.4.4 Nuclear Information shall:

1. Obtain emergency information from the Communicator.

2. Perform notifications and generate information releases as required by Corporate Communications.

7.4.5 At event termination, the Emergency Director/Emergency Officer shall forward completed ENFs and TDFs to the Supervisor, RERP for disposition.

8.0 RECORDS

8.1 The following are required records and shall be retained or dispositioned in accordance with established requirements:

8.1.1 All completed ENFs (Attachment 1)

8.1.2 All completed TDFs (Attachment 2)

8.1.3 All completed Offsite Emergency Support Organization Activation forms (Attachment 3)

8.1.4 All completed Report to Secondary Alarm Station (Security) forms (Attachment 4)

8.1.5 All completed Nuclear Plant Event Notification or Technical Data Form Facsimile Log(s) (Attachment 5)

END OF TEXT

NUCLEAR PLANT EVENT NOTIFICATION FORM

☐ Actual Event (Initial Notifications) ☐ Drill

Plant Contact Information

Nuclear Power Plant: Fermi 2

Plant Communicator: _____

Calling From: ☐ Control Room ☐ TSC ☐ EOF ☐ Other _____

Call Back Telephone Number: 3 1 3 2 5 6 - 4

Plant Message Number

Current Classification

☐ Unusual Event ☐ Alert ☐ Site Area Emergency ☐ General Emergency ☐ Termination

This classification was declared as of: Date: _____ Time: _____

Reason for Classification

☐ Abnormal Rad Level/Radiological Effluents ☐ Fission Product Barrier Degradation

☐ Hazards and Other Conditions Affecting Plant Safety ☐ System Malfunction

Fermi IC Number: _____

Plant Status

☐ Stable ☐ Degrading ☐ Improving ☐ Recovery

Radiological Release in Progress Due to Event

☐ Yes - > AU1 Limits ☐ No

Protective Action Recommendations

☐ None

Evacuation of Area(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

In-Place Shelter of Area(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

PAR based on: ☐ Dose Calculations (technical data required) ☐ Plant Status ☐ Security Event ☐ Other

Meteorological Data

NOTE: 10 m Met Tower Data is preferred.

Wind Direction (degrees): From _____ To _____ Wind Speed (MPH): _____

Stability Class: _____ Precipitation: ☐ Yes ☐ No

Approved: _____ / _____ Time: _____

Signature Print Name

Notifications	Time Contacted	Name	Telephone No. or Select Auto-Dial
Monroe County Sheriff			☐ Auto-Dial
Wayne County Sheriff			☐ Auto-Dial
Michigan State Police			☐ Auto-Dial
NRC Operations Center			
Province of Ontario (Canada)			☐ Auto-Dial
Nuclear Information			

NUCLEAR PLANT EVENT TECHNICAL DATA FORM

☐ Actual Event ☐ Drill

Plant Contact Information

Nuclear Power Plant: Fermi 2

Plant Communicator: _____

Calling From: ☐ Control Room ☐ TSC ☐ EOF ☐ Other _____

Call Back Telephone Number: 3 1 3 2 5 6 - 4

Plant Message Number

Meteorological Data

NOTE: 10 m Met Tower Data is preferred.

Wind Direction (degrees): From _____ To _____ Wind Speed (MPH): _____

Stability Class: _____ Precipitation: ☐ Yes ☐ No

Reactor Information

Is the reactor shut down? ☐ Yes ☐ No

Additional Comments (if needed):

Release/Offsite Dose Data: ☐ N/A ☐ See Page 2

Approved: _____ / _____ Time: _____

Signature Print Name

Notifications	Time	Name	Telephone No. or Select Auto-Dial
Monroe County Sheriff			☐ Auto-Dial
Wayne County Sheriff			☐ Auto-Dial
Michigan State Police			☐ Auto-Dial
NRC Operations Center			
Nuclear Information			

NUCLEAR PLANT EVENT TECHNICAL DATA FORM

Release/Offsite Dose Data

Plant Message Number

Release Pathway: ☐ Airborne ☐ Waterborne

Projected Release Duration (hrs): _____

☐ Actual ☐ Potential Time of Calculation: _____

Release Rates	
Noble Gas (Ci/sec)	
Equivalent I - 131 (Ci/sec)	
Particulate (Ci/sec)	

Based On: ☐ Monitor (in plant) ☐ Sample (in plant) ☐ Back Calculation of Field Data ☐ Other Plant Conditions

Projected Dose Rate		
Distance	TEDE (mrem/hr)	Thyroid CDE (mrem/hr)
Site Boundary		
2 Miles		
5 Miles		
10 Miles		

Projected Dose		
Distance	TEDE (mrem)	Thyroid CDE (mrem)
Site Boundary		
2 Miles		
5 Miles		
10 Miles		

Measured Offsite Radiation Levels

Distance	Time	Highest Reading (mR/hr)	Iodine Cartridge (Net CPM)	Sector
Site Boundary				
Miles				
Miles				
Miles				

OFFSITE EMERGENCY SUPPORT ORGANIZATION ACTIVATION

PART 1: FIRE DEPARTMENT REPORT

Monroe County Central Dispatch - Frenchtown Fire Department: 734-241-2727

1. This is:

   Name: _____

   Title _____

   Telephone Number _____

   calling from Fermi 2. There is a fire onsite. Frenchtown Fire Department assistance is requested immediately.

2. Use the Pointe Aux Peaux Road access gate.

3. Basic information on the fire:

   3.1 Type of Fire _____

   3.2 Take the following precautions

4. Determine the following information from Central Dispatch and relay this information to the SAS Operator using Attachment 4.

   4.1 Number of vehicles expected to arrive _____

   4.2 Number of personnel expected to arrive _____

OFFSITE EMERGENCY SUPPORT ORGANIZATION ACTIVATION

PART 2: PARAMEDIC and AMBULANCE SUPPORT

1. Select required medical response:

   NOTE: Make one call only.

   ☐ For Ambulance Only - 734-241-1111

   ☐ For both Frenchtown Fire Department Paramedics and Ambulance - 734-241-2727

2. This is:

   Name: _____

   Title _____

   Telephone Number _____

   calling from Fermi 2. There are injured personnel onsite and your assistance is required immediately.

3. Number of injured personnel: _____

4. Injuries to personnel:

5. Number of potentially contaminated personnel: _____

6. Use the Fermi Drive access gate.

NOTE: Mercy Memorial Hospital is the primary hospital. Use Oakwood Southshore Medical Center only if conditions prevent the use of Mercy Memorial Hospital.

7. Transport the victim(s) to: ☐ Mercy Memorial Hospital ☐ Oakwood Southshore Medical Center

8. Take the following precautions:

9. Determine the following information from Central Dispatch and relay this information to the SAS operator using Attachment 4.

   9.1 Number of vehicles expected to arrive _____

   9.2 Number of personnel expected to arrive _____

OFFSITE EMERGENCY SUPPORT ORGANIZATION ACTIVATION

PART 3: HOSPITAL SUPPORT

NOTE: Mercy Memorial Hospital is the primary hospital. Use Oakwood Southshore Medical Center only if conditions prevent the use of Mercy Memorial Hospital.

Mercy Memorial Hospital: 734-242-6500
Oakwood Southshore Medical Center: 734-671-3883 or 734-671-3800

1. This is:

   Name: _____

   Title _____

   Telephone Number _____

   calling from Fermi 2. There are injured personnel onsite and the ambulance service has been contacted to transport the victims to you.

2. Number of injured personnel: _____

3. Injuries to personnel:

4. Number of potentially contaminated personnel: _____

5. Number of personnel suffering from excessive radiation exposure: _____

6. **If there are potentially contaminated personnel state the following:**

   "You are requested to implement your radiological emergency response plan."

REPORT TO SECONDARY ALARM STATION (SECURITY)

Secondary Alarm Station: Control Room - Security Direct Line or 6-5215

1. Support organization contacted (check all that apply):
   - ☐ Fire/Paramedics
   - ☐ Ambulance
   - ☐ Hospital (which one?) _____
2. Number of personnel reporting onsite, if known: _____
3. Number of vehicles reporting onsite, if known: _____
4. Owner-controlled area access gate to be used:
   - ☐ Pointe Aux Peaux
   - ☐ Fermi Drive
5. Location of emergency (If rescue/ambulance, where the vehicles should attend to the victim):

Date: _____

Facility: _____

Page _____ of _____

NUCLEAR PLANT EVENT NOTIFICATION OR TECHNICAL DATA FORM FACSIMILE LOG

Message No.	Type (Initial or Follow-up)	Time	Originator (CR, TSC, or EOF)	Locations Sent or Program Button Used

NUCLEAR PLANT EVENT NOTIFICATION FORM INFORMATION SOURCES AND REQUIREMENTS

Information Sources

Section	Control Room	TSC	EOF
Current Classification	ED	ED	EO
Reason for Classification	ED	ED	EO
Plant Status	ED	ED	EO
Radiological Release in Progress Due to Event	STA/SE	RPA	RPC
Protective Action Recommendations	ED	ED	EO
Meteorological Data	STA/SE	RPA	RPC

Information Requirements

Top of Form	Check "Actual Event" or "Drill," as applicable.
Plant Contact Information	Must include facility calling from, message number and the "call-back" number.
Current Classification	Identify the current classification, date, and time (in military format).
Reason for Classification	Must include IC number.
Plant Status	Item selected should be based on an evaluation of reactor water level and cooling capability, fission product barrier status, ECCS operation and availability, and projected success path.
Radiological Release in Progress Due to Event	Check "Yes" if greater than or equal to the Unusual Event abnormal radiological release (AU1) limits.
Protective Action Recommendations	"Other" would be used for AdHoc PARs or weather forecasts. Check "none" for Unusual Event, Alert, or Site Area Emergency.. Check appropriate "Area(s)" block for any General Emergency.
Meteorological Data	10m meteorological instruments are the preferred information source.

NUCLEAR PLANT EVENT TECHNICAL DATA FORM INFORMATION SOURCES AND REQUIREMENTS

Information Sources

Section	Control Room	TSC	EOF
Meteorological Data	STA/SE	RPA	RPC
Reactor Information	ED	ED	EO
Release/Offsite Dose Data	STA/SE	RPA	RPC
Measured Offsite Radiation Levels	RET Leader	RPA	RPC

Information Requirements

Top of Page 1	Check "Actual Event" or "Drill," as applicable.
Plant Contact Information	Must include facility calling from, message number and the "call-back" number.
Meteorological Data	10m meteorological instruments are the preferred information source.
Reactor Information	Should include relevant additional information to the classification. Reactor shutdown? Are all rods in or is hot shutdown boron weight injected? Consider communicating other potential classifiable plant conditions, status of fission product barriers and ECCS or offsite assistance.
Release/Offsite Dose Data	Identify type of release as airborne or waterborne and the expected duration. Transfer data from dose report(s) onto form. Identify if using "Actual" or "Potential" data results.
Measured Offsite Radiation Levels	Measured offsite Radiological Emergency Team (RET) data only.

ECOS ACTIVATION

CM

Shift Manager (or delegate) Actions

1. Read steps 2 and 3 completely before proceeding.

2. Activate the Emergency Call Out System (ECOS).

   a. Dial 6-1900 or 9-1-734-586-1900.

   b. When the ECOS answers, immediately enter the current password.

   c. Respond to ECOS prompts.

3. Verify proper ECOS Operation.

   a. The ECOS is programmed to immediately call 586-5235 at the Shift Manager's desk.

   b. Answer the call and when prompted for a Detroit Edison ID number, enter 11111.

   c. When asked if you are able to report to your emergency response facility, press 9 for yes and respond to the remaining prompts.

   d. If a call to 586-5235 is not received within 2 minutes:

      1) Call the ECOS at 6-1900 or 9-1-734-586-1900.

      2) Enter the password.

      3) Respond to prompts to suspend the scenario if activated, or activate if it is currently suspended or completed.

      4) If you suspended the scenario in the above step, call 6-1900 or 9-1-734-586-1900, enter the password, and reactivate the scenario. Repeat step 3.

   e. If all attempts to activate the ECOS fail, enter EP-292, "Emergency Call Out – Backup Method."

END

PROTECTIVE ACTION RECOMMENDATIONS

Revision Summary

1) This is a total rewrite. No revision bars have been used to mark these changes.

Implementation Plan

1) This procedure goes into effect upon issuance.

Attachments - None

CM

Enclosures

A	050602	PAR Flowchart
B	050602	Downwind Affected Sector to Area Conversion Table
C	012798	Protective Action Areas
D	012798	EF 2 10-Mile EPZ Evacuation Time Estimates Summary
E	012798	EF 2 10-Mile EPZ Population Analysis
F	050602	Representative Shielding Factors From a Gamma Cloud Source
G	050602	Inhalation Shielding Factors for a Wood House, Snug Doors, Closed Windows (Thyroid)

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Information and Procedures

DSN	Revision	DCR #	DTC	File #
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IP Code	**Date Approved**	**Released By**	**Date Issued**	**Recipient**
I	5-31-02	D. Adams/s/	6-7-02	935

1.0 PURPOSE

To provide guidelines for formulating and recommending appropriate protective actions for the general public in the event of a General Emergency.

2.0 USE REFERENCES

2.1 EP-290, Emergency Notifications

3.0 ENTRY CONDITIONS

3.1 A Site Area Emergency or General Emergency is declared.

4.0 GENERAL INFORMATION

4.1 Protective actions (evacuation and/or sheltering) are required for the affected areas of the general public at the General Emergency declaration and are recommended to local and/or state authorities as appropriate.

4.2 Protective Action Recommendation (PAR) formulation involves an assessment of risk to the general public. Appropriate recommendations are determined using Enclosure A, PAR Flowchart, which considers risk assessment based on two primary indicators.

4.2.1 Dose Projections

1. Dose projections are classified as "Actual" or "Potential".

   a. **Actual** doses are based on radioactivity actually being released from the plant. They are calculated using either effluent radiation monitor readings (normal), grab sample results, or actual field measurements.

   b. **Potential** doses are based on radioactivity in primary containment available for release. They are calculated using Containment High Range Radiation Monitors (CHRRMs) or containment atmosphere grab sample results.

2. PAR decision making may be based on an estimate of radiation exposure an individual might receive over a projected period in comparison to a Protective Action Guideline (PAG).

   a. A PAG is a level of exposure that an individual might receive that warrants a specific protective action to be implemented.

   b. PAG values are expressed in units of dose and represent the risk of health effects to the exposed population.

   c. PAG values are as follows:

TEDE	1 rem
Adult Thyroid	5 rem

   d. A projected dose greater than a PAG value is used to initiate PAR decision-making and **normally** requires an evacuation.

3. The risk associated with a projected dose that exceeds a PAG value is generally higher than the risk associated from an evacuation.

   a. The risks associated with an evacuation during inclement weather or other competing disasters may be greater than that associated with a PAG value. This will require state decision-makers to assess those risks and take appropriate protective actions.

4. When projected doses exceed a PAG value at a distance greater than 10 miles, manual dose calculations may be used to determine the affected areas and distances.

4.2.2 Plant Status

1. PAR decision-making also includes an assessment of plant conditions, specifically core damage estimates.

2. A General Emergency declaration represents a significant risk to the general public and indicates a severe core damage accident is in progress **or** projected (>20% gap release).

3. Severe core damage accidents reflect an amount of radioactivity that may be available and present an unacceptable risk to the general health of the public. These accidents would require evacuation of those close to the plant and sheltering of further out areas should later evacuations be needed.

4. The risks due to the potential radiation exposure from a severe core damage accident are reduced by the implementation of protective actions.

5. PAR decision-making based on plant status represents the desired proactive approach to the protection of the public. It focuses the decision-maker on the likelihood of radiation exposure thereby offering the greatest reduction of risk.

6. Careful evaluation of plant conditions is needed to properly determine if a fuel melt accident is in progress or projected. This evaluation may include, but is not limited to:

   a. Status of injection capabilities

   b. How long fuel has been uncovered (reactor water level)

   c. CHRRMs

   d. Core damage estimates such as EP-547, "Rapid Estimate of Core/Fuel Damage Based on Containment High Range Radiation Monitor," or dose assessment program

7. Fuel melt sequences represent the greatest risk to the health of the general public. Activity produced from these sequences, if released, can produce severe early health effects and necessitates immediate protection of the public.

8. Analysis of potential primary containment failure during a severe accident may prove to be extremely difficult or impossible to predict due to plant conditions are outside of plant design. Therefore, status of primary containment is not considered for the initial PAR development.

4.2.3 PARs must be **continually** evaluated to assure the public's health and safety as conditions change or more information becomes available.

1. If dose calculations become available after an initial PAR has been made the impact on PAR effectiveness must be determined.

2. Meteorological data and the Offsite Radiological Emergency Team (RET) survey(s) provide useful information for PAR development. Each provides information on plume position.

3. Current offsite hazards may also exist that might impact protective actions. The presence of physical or environmental hazards (e.g., tornadoes, ice storms, road hazards, etc.) should be communicated to offsite authorities for their consideration.

4. The current status of emergency response efforts can provide insight to future PARs. Successful (or failed) efforts can provide decision makers with data to help determine likelihood of further core damage.

4.3 Other considerations may be involved when evaluating the effectiveness of a PAR and are normally evaluated by **state** decision-makers.

4.3.1 Certain members of the general public may be at a greater risk from an evacuation or evacuation efforts may take much longer. These members may include, but are not limited to, schools, hospitals, nursing homes, parks, golf courses, etc.

4.3.2 Evacuations are most effective if completed before plume arrival.

1. Enclosures D and E identify evacuation time estimates and total population which may be useful to evaluate evacuation effectiveness.

4.3.3 Dose received before PAR implementation is not used for PAR effectiveness evaluations.

4.3.4 In cases where evacuations are **not** prudent, sheltering may be appropriate.

1. Enclosure F, Representative Shielding Factors From a Gamma Cloud Source, and Enclosure G, Inhalation Shielding Factors for a Wood House, Snug Doors, Closed Windows (Thyroid), may be used to evaluate sheltering effectiveness by multiplying projected Total Effective Dose Equivalent (TEDE) and adult thyroid dose respectively by the Enclosure's shielding factors.

4.4 Protective actions for the early phase of a General Emergency are prescribed for the 10-Mile Emergency Planning Zone (EPZ) surrounding the site.

4.4.1 For planning purposes, the EPZ is divided into concentric rings of 2, 5, and 10 miles.

4.4.2 The EPZ is also divided into sixteen 22.5° sectors.

4.4.3 The EPZ is further divided into five Protective Action Areas (PAAs) as shown in Enclosure C, Protective Action Areas.

4.4.4 When making PARs, the minimum area considered is the PAAs located in the 2-mile radius, and the projected plume's centerline sector, and two adjacent sectors out to five miles.

1. When developing PARs for "Security Event Resulting in Loss of Physical Control of the Plant" (HG1), the minimum area considered is the PAA located in the 2-mile radius (Area 1).

2. If the projected dose exceeds a PAG value >10 miles away, adhoc protective actions would be developed in conjunction with offsite authorities.

4.4.5 Once a PAR has been determined **and** communicated, less stringent recommendations are normally **not** considered or used.

4.4.6 Other information such as better understood accident sequence, presence of significant particulate fission products or radioiodine, or the presence of an unmonitored or unfiltered release path may lead to more stringent Adhoc protective actions.

4.5 Responsibility for PARs

4.5.1 Detroit Edison decision-makers only **recommend** protective actions. State decision-makers make the final decision on what protective action(s) to implement.

4.5.2 If the Technical Support Center (TSC) and Emergency Operations Facility (EOF) are **not** functional:

1. The Shift Technical Advisor evaluates available information and advises the Emergency Director in matters related to protective action recommendations.

2. The Emergency Director is responsible for making the final recommendation(s) to local and/or state authorities as appropriate.

4.5.3 If the TSC is functional and the EOF is **not** functional:

1. The Radiation Protection Advisor and/or Technical Engineer, as appropriate, evaluate available information and advise the Emergency Director in matters related to protective action recommendations.

2. The Emergency Director is responsible for making a final recommendation to local and/or state authorities as appropriate.

4.5.4 If the EOF is functional:

1. The Radiation Protection Coordinator evaluates available information and advises the Emergency Officer in matters related to protective action recommendations. The Nuclear Operations Advisor should assist as appropriate.

2. The Emergency Officer is responsible for making a final recommendation to local and/or state authorities as appropriate.

4.5.5 PARs are made to the State Emergency Operations Center (SEOC) if the SEOC is functional.

1. Recommendations will be discussed with the State Emergency Director before issuance, when time permits.

2. The State Emergency Director will consider recommendations and issue a Protective Action Order, when appropriate, acting with the delegated authority of the Governor.

4.5.6 PARs are made directly to Wayne and Monroe Counties when the SEOC is **not** functional.

1. Recommendations will be discussed with county officials before issuance, when time permits.

2. When deemed appropriate, recommendations will be passed on to the public by county officials.

5.0 IMMEDIATE ACTIONS

5.1 When a Site Area Emergency is declared:

NOTE: Do **not** make any PAR until a General Emergency has been declared.

5.1.1 Initiate formulation of PARs using Enclosures A and B when possible before declaration of a General Emergency.

5.2 When a General Emergency is declared:

NOTE: A PAR shall be made to appropriate offsite authorities concurrent with the initial notification of General Emergency declaration and documented using a Nuclear Plant Event Notification Form.

5.2.1 Formulate PARs using Section 6.0.

6.0 PROCEDURE

6.1 Initial PAR

6.1.1 Determine centerline sector using available resources.

6.1.2 Determine appropriate PAR using Enclosures A and B.

NOTE: Notifications of initial PARs must be completed within 15 minutes of the General Emergency declaration.

6.1.3 Immediately communicate the PAR to offsite authorities in accordance with EP-290, "Emergency Notifications."

6.1.4 GO TO step 6.2.

6.2 PAR Effectiveness

6.2.1 Evaluate the effectiveness of the existing PAR using the questions listed in Enclosure A, "Evaluation Considerations for PAR Effectiveness" block as a guide.

6.2.2 Modify the existing PAR using Enclosures A and B as necessary.

NOTE: Notifications of any change to PARs must be completed within 15 minutes upon indication(s) of conditions requiring a PAR change.

6.2.3 **Immediately** communicate the new PAR to offsite authorities in accordance with EP-290, "Emergency Notifications."

7.0 FOLLOW-UP ACTIONS

7.1 Continue to evaluate PAR effectiveness (step 6.2.1) as conditions require.

7.2 Keep offsite authorities informed of current dose projection results, plant status, response efforts, and other information which may potentially affect PARs in accordance with EP-290, "Emergency Notifications."

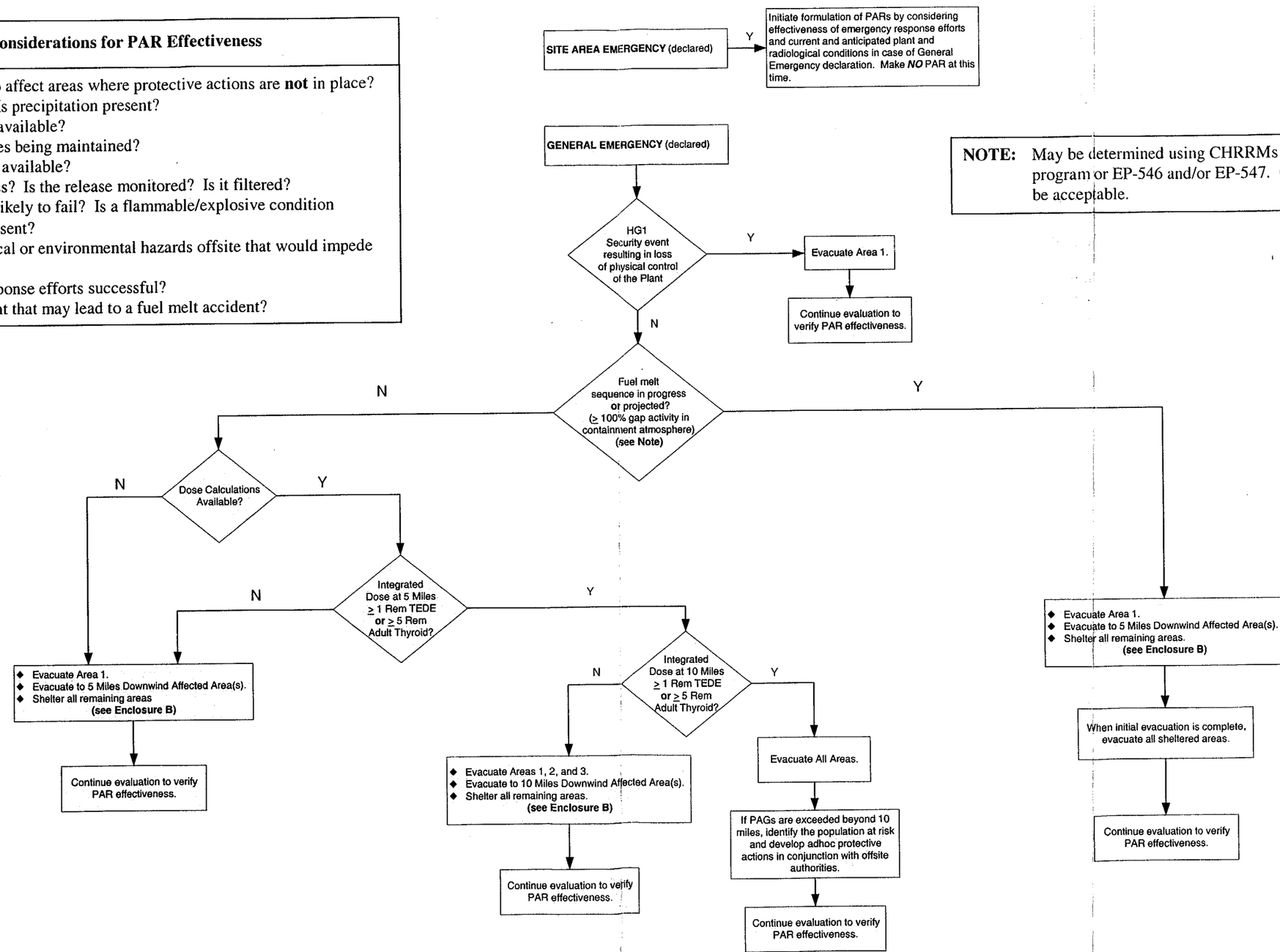
8.0 RECORDS

8.1 There are no required records generated through this procedure.

END OF TEXT

PAR FLOWCHART

Evaluation Considerations for PAR Effectiveness
1. Are wind shifts expected to affect areas where protective actions are **not** in place?
2. Is a lake breeze in effect? Is precipitation present?
3. Is offsite RET survey data available?
4. Are core cooling capabilities being maintained?
5. Are core damage estimates available?
6. Is there a release in progress? Is the release monitored? Is it filtered?
7. Has containment failed or likely to fail? Is a flammable/explosive condition ($H_2 \geq 6\%$ and $O_2 \geq 5\%$) present?
8. Are there significant physical or environmental hazards offsite that would impede an evacuation?
9. Are current emergency response efforts successful?
10. Are plant conditions present that may lead to a fuel melt accident?



NOTE: May be determined using CHRRMs and Dose Assessment program or EP-546 and/or EP-547. Other methods may also be acceptable.

DOWNWIND AFFECTED SECTOR TO AREA CONVERSION TABLE

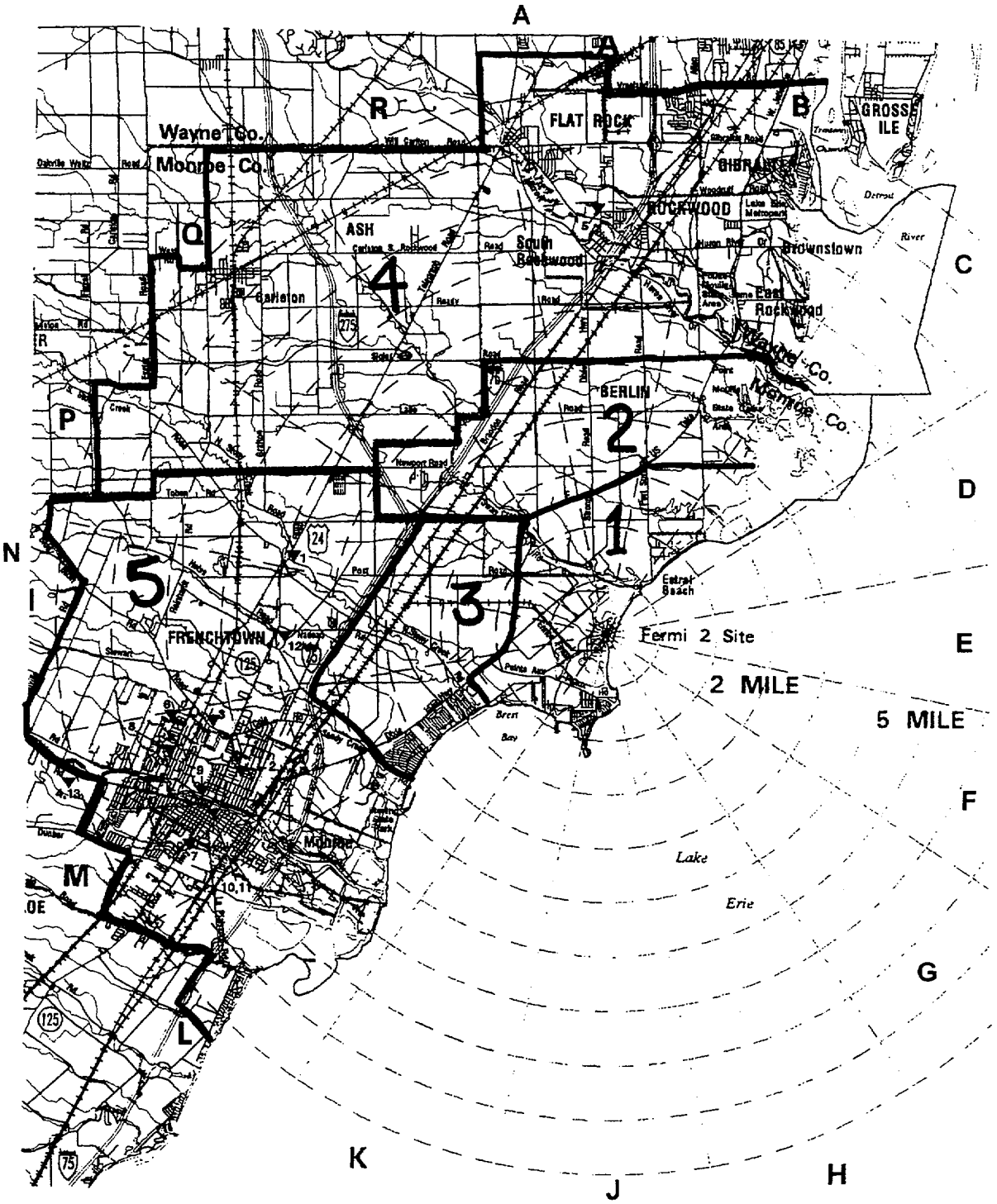
NOTE: The Centerline Sector can be identified on:

- the ERIS "Straight Line" plume plot display
- dose reports indicating "Affected Sector"
- field team data

When evacuating to 5 miles "Downwind Affected Area(s)"	**The "Downwind Affected Area(s)" are:**
If Downwind Centerline Sector is E, F, G, H, or J	Area 1
If Downwind Centerline Sector is A, B, C, or D	Areas 1 **and** 2
If Downwind Centerline Sector is K, L, or M	Areas 1 **and** 3
If Downwind Centerline Sector is N, P, Q, or R	Areas 1, 2, **and** 3

When evacuating to 10 miles "Downwind Affected Area(s)"	**The "Downwind Affected Area(s)" are:**
If Downwind Centerline Sector is R, A, B, C, or D	Areas 1, 2, 3, **and** 4
If Downwind Centerline Sector is E, F, G, H, or J	Areas 1, 2, **and** 3
If Downwind Centerline Sector is K, L, or M	Areas 1, 2, 3, **and** 5
If Downwind Centerline Sector is N, P, or Q	Areas 1, 2, 3, 4, **and** 5

PROTECTIVE ACTION AREAS



EF2 10-MILE EPZ EVACUATION TIME ESTIMATES SUMMARY*

Area	Description	Summer Day Normal	Summer Day Adverse[b]	Summer Night Normal	Summer Night Adverse[b]	Winter Day Normal	Winter Day Adverse[b]	Winter Night Normal	Winter Night Adverse[b]
1	All Sectors to 2 miles	2:55	3:25	1:55	2:05	2:55	3:30	1:55	2:15
1 & 2	All Sectors to 2 miles Northwest sectors to 5 miles	2:55	3:25	1:55	2:05	2:55	3:30	1:55	2:15
1 & 3	All Sectors to 2 miles Southwest sectors to 5 miles	2:55	3:25	1:55	2:05	2:55	3:30	1:55	2:15
1, 2, & 3	All sectors to 5 miles	2:55	3:25	1:55	2:05	2:55	3:30	1:55	2:15
1, 2, 3, & 4	All Sectors to 5 miles Northwest sectors to 10 miles	3:10	3:35	2:20	2:35	3:10	3:45	2:20	2:50
1, 2, 3, & 5 [a.]	All Sectors to 5 miles Southwest sectors to 10 miles	3:10	3:35	2:20	2:35	3:10	3:45	2:20	2:50
1, 2, 3, 4, & 5 [a.]	All sectors to 10 miles	3:15	3:45	2:25	2:40	3:15	3:55	2:25	2:55

* These are comparative times based on data drawn from the Evacuation Time Estimates Analyses for the Enrico Fermi Atomic Power Plant Unit No. 2 Plume Exposure Pathway Emergency Planning Zone, Rev. 2, May, 1994, prepared by JB/A, Inc. **Times are given in hours : minutes.**

a. When evaluating an evacuation PAR for distances greater than 5 miles, and including Area 5, consideration should be given to the special needs of Mercy Memorial Hospital and Mercy Memorial Nursing Center. These facilities are located approximately 7 miles from the site and require approximately 6 hours - 20 minutes to complete an evaluation.

b. "Adverse" weather conditions are those which may impair visibility and/or traction, such as light snow, ice, rain, or fog.

EF2 10-MILE EPZ POPULATION ANALYSIS*

Area	Description	Summer Day	Summer Night	Winter Day	Winter Night
1	All Sectors to 2 miles	4419	3598	4398	3598
1 & 2	All Sectors to 2 miles Northwest sectors to 5 miles	7053	5571	7656	5571
1 & 3	All Sectors to 2 miles Southwest sectors to 5 miles	15466	10413	13097	9633
1, 2, & 3	All sectors to 5 miles	18102	12388	16354	11608
1, 2, 3, & 4	All sectors to 5 miles Northwest sectors to 10 miles	53888	45029	57547	44174
1, 2, 3, & 5	All sectors to 5 miles Southwest sectors to 10 miles	65861	55516	71296	53334
1, 2, 3, 4, & 5	All sectors to 10 miles	109937	96038	121367	93581

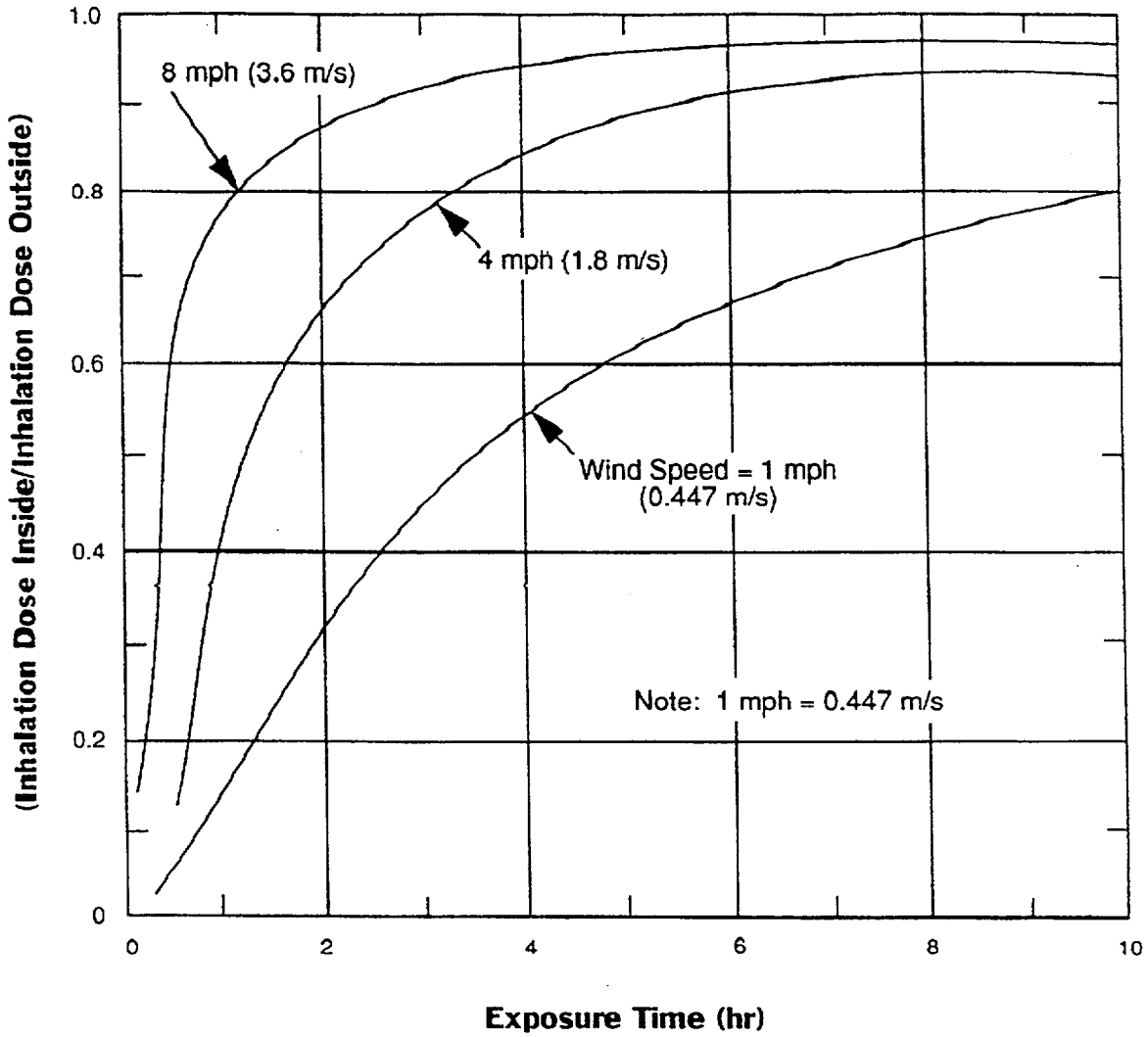
* EPZ population data extracted from the Evacuation Time Estimates Analyses for the Enrico Fermi Atomic Power Plant Unit No. 2 Plume Exposure Pathway Emergency Planning Zone, Rev. 2, May, 1994, prepared by JB/A, Inc. Additional population data provided by local planning agencies using U.S. Census data.

REPRESENTATIVE SHIELDING FACTORS FROM GAMMA CLOUD SOURCE[a]

Structure or Location	Representative Shielding Factor [b]	Representative Range
Outside	1.0	--
Vehicles	1.0	--
Wood frame house[c] (no basement)	0.9	0.9
Basement of wood house	0.6	0.1 to 0.7[d]
Masonry house (no basement)	0.6	0.4 to 0.7[d]
Basement of masonry house	0.4	0.1 to 0.5[d]
Large office or industrial building	0.2	0.1 to 0.3[d,e]

(a) Taken from SAND 77-1725 (Unlimited Release).
(b) The ratio of the dose received inside the structure to the dose that would be received outside the structure.
(c) A wood-frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.
(d) This range is mainly due to different wall materials and different geometries.
(e) The shielding factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

INHALATION SHIELDING FACTORS FOR A WOOD HOUSE, SNUG DOORS, CLOSED WINDOWS (THYROID)



The above curve assumes the house remains closed up for the duration. Actually, the dose inside the house can be further reduced by opening the doors and windows after the cloud has passed and purging the house with fresh air.

"Reactor Safety Study," Appendix VI, Wash-1400, October 1975

END