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TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

TRANSMITTAL: LISTED BELOW ARE NEW/REVISED PROCEDURES WHICH MUST BE IMMEDIATELY INSERTED INTO OR DISCARDED FROM YOUR PROCEDURE MANUAL.

Action Required	Section or Description
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AD45

Procedure No EI-6.13
Revision 10
Issued Date 8/1/01

PALISADES NUCLEAR PLANT
EMERGENCY IMPLEMENTING PROCEDURE

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

JPBrunet / 8/1/01
Procedure Sponsor Date

TRLoudenslager / 1/15/01
Technical Reviewer Date

/
User Reviewer Date

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

Table of Contents

1.0 RESPONSIBILITIES AND AUTHORITIES 1

2.0 PURPOSE 2

3.0 REFERENCES 2

3.1 SOURCE DOCUMENTS 2
3.2 REFERENCE DOCUMENTS 2

4.0 INITIAL CONDITIONS AND/OR REQUIREMENTS 3

5.0 PRECAUTIONS AND LIMITATIONS 4

6.0 PROCEDURE 5

6.1 DECLARATION OF UNUSUAL EVENT OR ALERT 5
6.2 DECLARATION OF A SITE AREA EMERGENCY 5
6.3 DECLARATION OF GENERAL EMERGENCY 6

6.3.1 Initial Recommendation 6
6.3.2 Follow-Up Recommendation 6

7.0 ATTACHMENTS AND RECORDS 7

7.6 RECORDS 7

ATTACHMENTS

Attachment 1, "Protective Action Recommendations for Offsite Population"
Attachment 2, "Area/Sector Map"
Attachment 3, "Determination of Affected Downwind Sectors"
Attachment 4, "Palisades 10-Mile EPZ Evacuation Time Estimates Summary"
Attachment 5, "Projected Dose Evaluation From Field Data"

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

1.0 RESPONSIBILITIES AND AUTHORITIES

This procedure provides protective action recommendations. The authority and responsibility for the selection and implementation of offsite response options rests fully with the appropriate state and local authorities. Consumers Energy has no authority with respect to imposing protective response options beyond the boundaries of its site.

1.1 If the Technical Support Center (TSC) is not operational, the Shift Supervisor/Site Emergency Director is responsible for recommending protective actions to local or state authorities.

1.2 If the TSC is operational, but the Emergency Operations Facility (EOF) is not operational, Health Physics staff will be responsible for providing dose calculations and advising the Site Emergency Director on protective action recommendations. The Operations Support Group is responsible for providing core damage determinations. The Site Emergency Director is responsible for recommending protective actions to the local or state authorities.

1.3 If the EOF is operational, the Health Physics staff in that facility is responsible for providing dose calculations and advising the EOF Director on a protective action recommendation. A Reactor Engineer is available to provide core damage determinations. The EOF Director is responsible for making protective action recommendations and should discuss the protective action with the SED before recommending protective actions to the local or state authority.

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

2.0 PURPOSE

This procedure provides guidelines for determining protective actions for the general public to be recommended to the appropriate local or state authorities in the event of a radiological emergency.

3.0 REFERENCES

3.1 SOURCE DOCUMENTS

3.1.1 Emergency Implementing Procedure EI-1, "Activation of the Site Emergency Plan/Emergency Classification"

3.1.2 Emergency Implementing Procedure EI-2.1, "Emergency Actions/Notifications/Responsibilities"

3.1.3 Emergency Implementing Procedure EI-11, "Determination of Extent of Core Damage"

3.1.4 Site Emergency Plan, Section 6, "Emergency Measures"

3.1.5 NUREG 0654, Rev 1

3.1.6 EA-JLF-93-01

3.2 REFERENCE DOCUMENTS

3.2.1 Emergency Implementing Procedure EI-6.7, "Plant Site Meteorological System"

3.2.2 Emergency Implementing Procedure EI-6.8, "Backup and Supplemental Meteorology"

3.2.3 Emergency Implementing Procedure EI-6.9, "Automated Dose Assessment Program"

3.2.4 Emergency Implementing Procedure EI-6.10, "Offsite Dose Calculation - Straight Line Gaussian (Manual Method)"

3.2.5 Emergency Implementing Procedure EI-13, "Evacuation/Reassembly"

3.2.6 HMM Assoc, Inc, "Evacuation Time Estimates for the Palisades Power Plant Plume Exposure Pathway Emergency Planning Zone 1990"

3.2.7 Emergency Implementing Procedure EI-3, "Communications and Notifications"

3.2.8 Palisades Administrative Procedure 10.46, "Plant Records"

4.0 **INITIAL CONDITIONS AND/OR REQUIREMENTS**

4.1 Attachment 1 provides a flowchart of PARs and the recommended protective actions for the plume exposure pathway. The flowchart is divided into four sections:

- EMERGENCY CLASSIFICATIONS - Protective actions that are required at the declaration of each emergency classification.
- MINIMUM INITIAL RECOMMENDATIONS - Minimum protective action recommendations when a General Emergency is being declared.
- CORE/CONTAINMENT STATUS - Protective actions that are required whenever major core/containment failure has occurred, or is projected.
- OFFSITE DOSE STATUS - Protective actions that are required when offsite doses exceed the EPA protective actions dose limits.

4.2 Attachment 1 also includes tables for identifying affected areas.

4.3 Attachment 2 is a map showing sectors and areas.

4.4 Attachment 3 converts the direction the wind is coming <u>from</u> to the 3 affected downwind sectors.

4.5 Attachment 4 provides evacuation time estimates for the 10 mile Emergency Planning Zone (EPZ).

5.0 PRECAUTIONS AND LIMITATIONS

This procedure is a guide for determining recommended protective actions. Since it is impossible to cover all potential situations, the judgement of the person responsible for recommending protective actions shall take precedence over the requirements of this procedure. However, since the protection of the general public is the ultimate concern, protective actions less stringent than those in this procedure should be recommended only if constraints make the actions a greater hazard to public health.

NOTE: Severe core damage is indicated by:

1. Loss of critical functions required for core protection (eg, loss of injection combined with a LOCA;
2. High core temperatures;
3. Very high radiation levels in area or process monitors.

Following the declaration of a General Emergency, the initial minimum protective action recommendation must focus on the status of the core. **IF** severe core damage cannot be ruled out, **THEN** the initial recommendation shall be to evacuate. It may be concluded that "severe core damage **cannot** be ruled out" if any of the following conditions exist:

a. If there are symptoms of severe core damage, whether explainable or not.

b. If there is not enough information to positively state that there is **no** severe core damage.

c. If current plant conditions persist, severe core damage is projected, unless some improvement is seen in plant conditions.

Field surveys should be conducted to confirm dose projections. If these recommendations are available at the time a recommendation is made, they should be considered together with the dose projection. However, a protective action recommendation should not be delayed until field survey results are reported.

If Protective Action Guidelines are exceeded beyond 10 miles, consult with the state on ad hoc protective actions.

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

6.0 PROCEDURE

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

6.1 DECLARATION OF UNUSUAL EVENT OR ALERT

6.1.1 Unusual Event - No protective actions required. Emergency Implementing Procedure EI-3, "Communications and Notifications," Attachment 1, "Emergency Notifications Form," should be used.

6.1.2 Alert - No protective actions required beyond accountability.

6.2 DECLARATION OF A SITE AREA EMERGENCY

6.2.1 Evacuate nonessential personnel from the site per Emergency Implementing Procedure EI-13, "Evacuation/Reassembly."

6.3 DECLARATION OF GENERAL EMERGENCY

6.3.1 Initial Recommendation

The declaration of a General Emergency requires that a **MINIMUM INITIAL PROTECTIVE ACTION RECOMMENDATION** be formulated (see Attachment 1, Page 1 of 2) and communicated to offsite authorities.

a. **IF** the State Emergency Operations Center is **not** activated, **THEN** the SED shall personally communicate the General Emergency and the minimum initial protective action recommendation to Van Buren County.

b. **WHEN** the State Emergency Operations Center (EOC) is activated, **THEN** the General Emergency and the minimum initial protective action recommendation shall be communicated directly (via telephone) from the SED/EOF Director to the State EOC Director.

6.3.2 Follow-Up Recommendation

a. Using available Plant status information, dose projections, and/or field surveys, and Attachment 1, "Protective Action Recommendation Flowchart," evaluate and recommend a follow-up protective action. Notification to the appropriate state and local authorities shall be made as soon as the recommendation has been prepared (not later than 30 minutes after initial recommendations).

b. Attachment 5 provides a work sheet that may be used to assist in determining Projected TEDE, adult thyroid CDE, and/or skin DE from field survey data.

6.3.3 The Health Physics Group Leader should provide the protective action recommendation for SED/EOF Director approval.

6.3.4 Record the recommended protective action and affected area(s) on the Emergency Notification Form.

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

7.0 ATTACHMENTS AND RECORDS

7.1 Attachment 1, "Protective Action Recommendations for Offsite Population"

7.2 Attachment 2, "Area/Sector Map"

7.3 Attachment 3, "Determination of Affected Downwind Sectors"

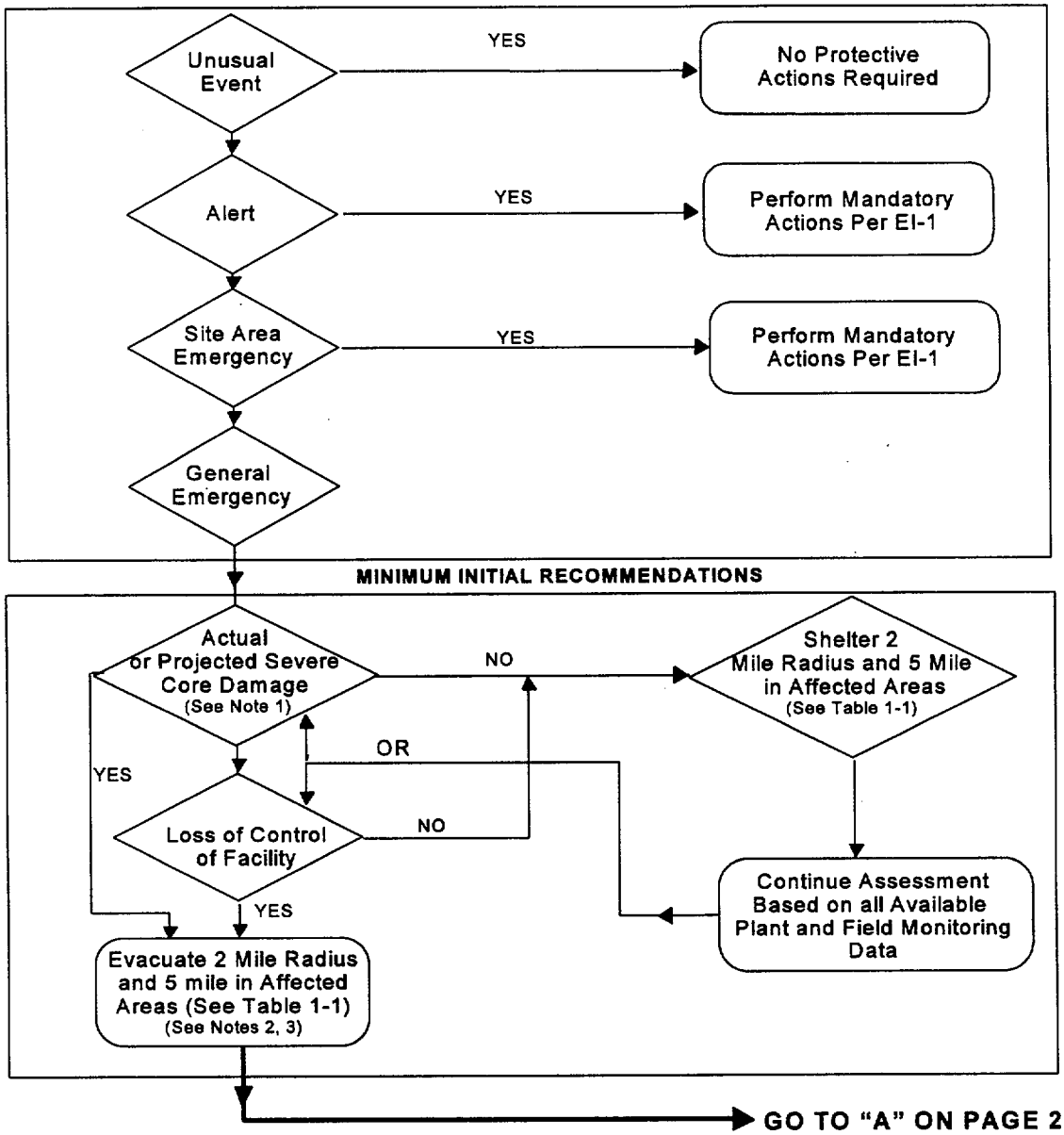
7.4 Attachment 4, "Palisades 10-Mile EPZ Evacuation Time Estimates Summary"

7.5 Attachment 5, "Projected Dose Evaluation From Field Data"

7.6 **RECORDS**

Records generated by this procedure shall be filed in accordance with Palisades Administrative Procedure 10.46, "Plant Records." Refer to the records matrix attached to Palisades Administrative Procedure 10.46 for information needed to complete Record Indexing Form (Form 104).

PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATION

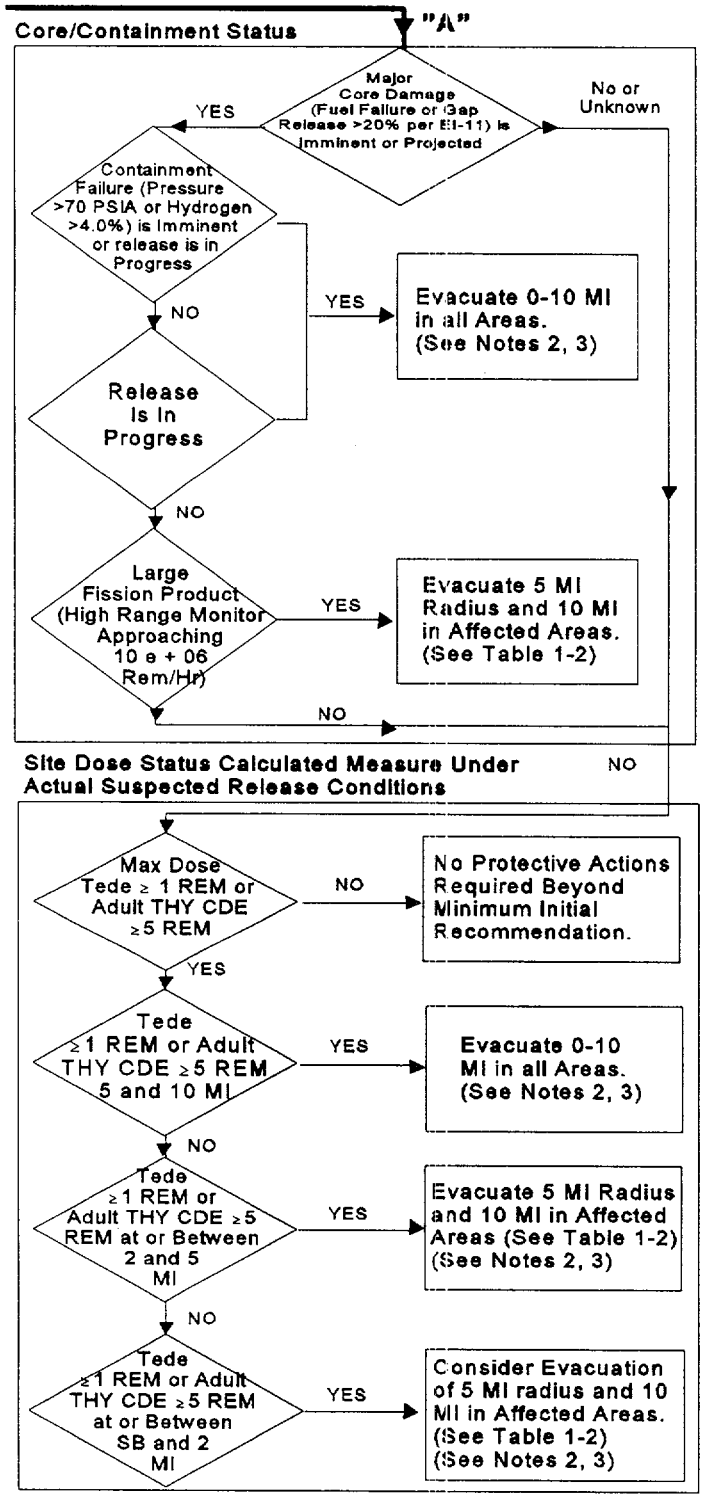


Conversion Table 1-1
(For PAR's Out To 5 Miles)
Convert Wind Direction Degrees
from to Downwind Areas

Wind direction Degrees (FROM):	Areas Affected:
> 169° and < 236°	1 and 2
≥ 236° and < 303°	1, 2, and 3
≤ 303° and < 56°	1 and 3

NOTE 1: Severe core damage is indicated by (1) loss of critical functions required for core protection (eg, loss of injection combined with a LOCA); (2) high core temperatures; (3) very high radiation levels in area or process monitors.

PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATION



CONVERSION TABLE 1-2
(FOR PAR's OUT TO 10 MILES)

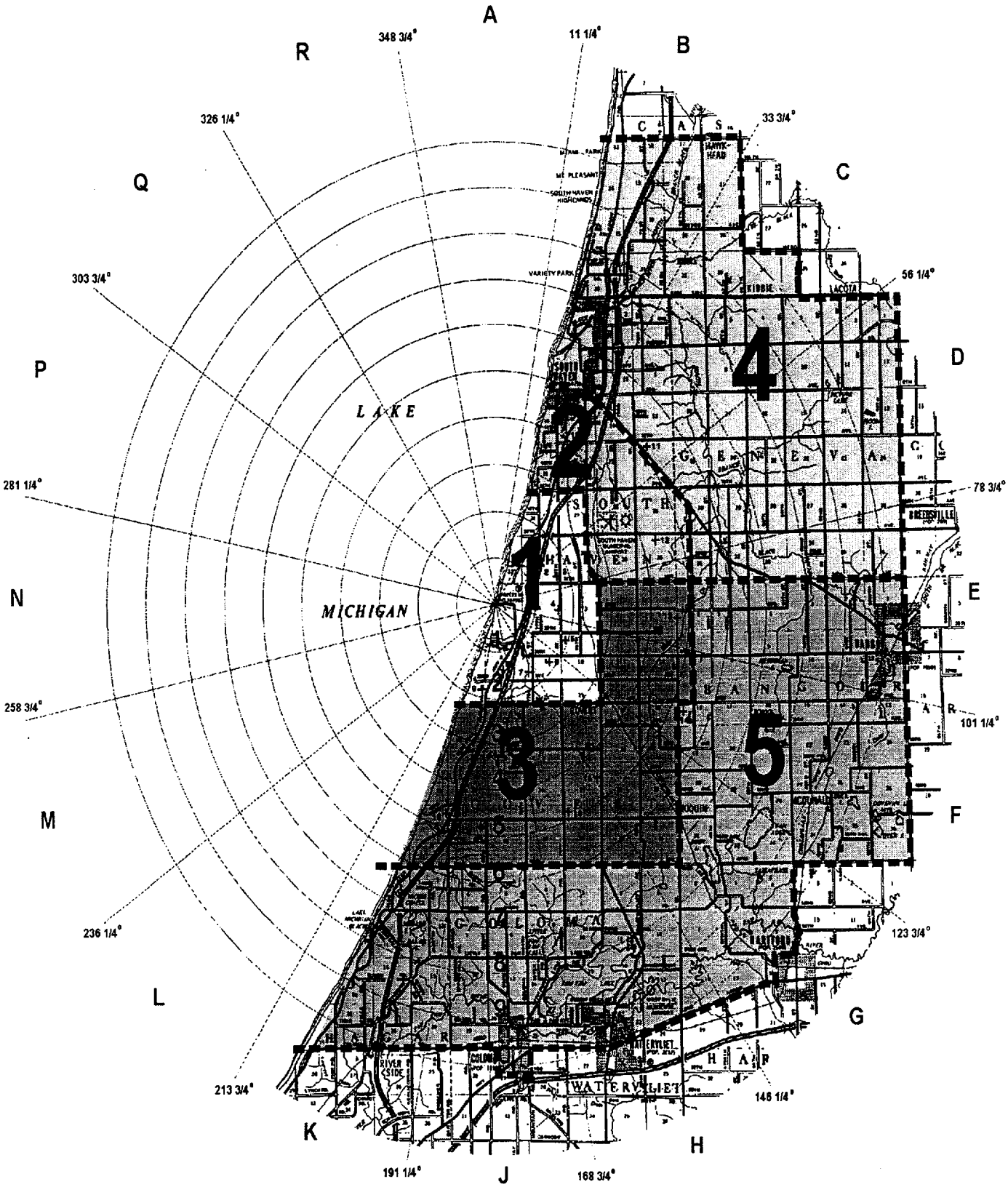
Convert
Wind Direction Degrees from
to Downwind Areas

Wind Direction Degrees (FROM):	Areas Affected:
>169° and < 236°	1, 2, 3, and 4
≥236° and < 303°	1, 2, 3, 4, and 5
≤303° and < 56°	1, 2, 3, and 5

NOTE 2: If there are very dangerous travel conditions, initially, shelter rather than evacuate until conditions improve.

NOTE 3: Shelter may be the appropriate action for controlled releases from containment if there is assurance that the release is short term (puff release) and the area near the Plant cannot be evacuated before plume arrives.

AREA/SECTOR MAP



DETERMINATION OF AFFECTED DOWNWIND SECTORS

WIND DIRECTION (DEGREES FROM)	SECTOR	AFFECTED DOWNWIND SECTORS		
		CENTERLINE	ADJACENT	
169-191	J	A	R	B
192-213	K	B	A	C
214-236	L	C	B	D
237-258	M	D	C	E
259-281	N	E	D	F
282-303	P	F	E	G
304-326	Q	G	F	H
327-348	R	H	G	J
349-11	A	J	H	K
12-33	B	K	J	L
34-56	C	L	K	M
57-78	D	M	L	N
79-101	E	N	M	P
102-123	F	P	N	Q
124-146	G	Q	P	R
147-168	H	R	Q	A

PALISADES 10-MILE EPZ EVACUATION TIME ESTIMATES SUMMARY*

AREA	AREA DESCRIPTION	WEEKDAY FAIR WEATHER	WEEKNIGHT FAIR WEATHER	WEEKNIGHT ADVERSE WEATHER
Area 1	All sectors to 2 miles	170	170	180
Areas 1 & 2	All sectors to 2 miles - northeast sectors to 5 miles	180	180	220
Areas 1 & 3	All sectors to 2 miles - southeast sectors to 5 miles	180	180	220
Areas 1, 2 & 3	All sectors to 5 miles	190	190	230
Areas 1, 2, 3, & 4	All sectors to 5 miles - northeast sectors to 10 miles	260	260	305
Areas 1, 2, 3 & 5	All sectors to 5 miles - southeast sectors to 10 miles	260	260	305
Areas 1, 2, 3, 4, & 5	All sectors to 10 miles	270	270	315

* These are comparative times based on data drawn from the Evacuation Time Estimates for the Palisades Nuclear Power Plant Plume Exposure Pathway Emergency Planning Zone, Final Report, August 1993, prepared by HHM Associates, Inc. **Times are given in minutes.**

PROJECTED DOSE EVALUATION FROM FIELD DATA

1. Determination of Projected TEDE:

NOTE: Perform A OR B and then perform C AND D.

A. DDE (Plume Shine or Immersion):

3-Foot Closed Window Reading	_____	mrem/h
Expected Duration (Default 2h)	X_____	h
Projected DDE	=_____	mrem (A)

B. DDE (Ground Disposition):

3-Inch Closed Window Reading	_____	mrem/h
Expected Duration (Default 96h)	X_____	h
Projected DDE	=_____	mrem (B)

C. CEDE:

Particulate:

_____ μCi/cc x 3.90 E+7 mrem cc/μCi-h* x _____ h = _____ mrem (C)

Iodine:

_____ μCi/cc x 3.90 E+7 mrem cc/μCi-h* x _____ h = _____ mrem (D)

D. Projected TEDE:

_____ mrem (A or B) + _____ mrem (C) + _____ mrem (D) = _____ mrem (TEDE)

2. Determination of Projected Adult Thyroid CDE:

Iodine CDE: _____ μCi/cc x 1.30 E+9 mrem cc/μCi-h* x _____ h = _____ mrem

3. Determination of Projected Skin DE:

3ft or 3in: (OW - CW) X BCF	=_____	mrem**
Expected Duration (default 2h)	X_____	h
Projected Beta Skin DE	=_____	mrem
Projected DDE (A or B)	+_____	mrem
Total Projected Skin Dose	=_____	mrem

* Dose conversion factor from EPA-400 Table 5-2.
** Assumes 1 rad = 1 rem