Transmittal Date: 2/15/94

TO: 145
USNRC/WASHINGTON/

PROCEDURE NUMBER: EI-6.13
TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

TRANSMITTAL NUMBER:	579919

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

Action Required	
Remove and Destroy	EI-6.13, R/6 (ENTIRE PROCEDURE)
Replace with	EI-6.13, R/6 (ENTIRE PROCEDURE - EDITORIAL CHANGES)

SIGN, DATE AND RETURN THE ACKNOWLEDGEMENT FORM WITHIN 10 DAYS TO THE PALISADES PLANT DOCUMENT CONTROL.

SIGNATURE OR INITIALS	DATE
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PALISADES NUCLEAR PLANT
EMERGENCY IMPLEMENTING PROCEDURE

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

[signature]	12/23/93	
Procedure Sponsor	Date	
NBrott	12/10/93	
Technical Reviewer	Date	
	/	
User Reviewer	Date	Rev #

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

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ATTACHMENTS

TITLE: PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATIONS

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 Power Company has no authority with respect to imposing protective response options beyond the boundaries of it 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 state and local authorities.

1.2 If the TSC is operational, but the Emergency Operations Facility (EOF) is not operational, Health Physics staff will be responsible for all calculations and will advise the Site Emergency Director on protective action recommendations. The Site Emergency Director is responsible for recommending protective actions to the state and local 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. 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 State.

2.0 PURPOSE

This procedure provides guidelines for determining protective actions for the general public to be recommended to the appropriate state and local 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 Emergency Implementing Procedure EI-11.2, "Core Damage Assessment from Post Accident Sampling"

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

3.1.6 NUREG 0654 Section J, "Protective Response"

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3.1.7 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 Implementation Procedure EI-13, "Evacuation/Reassembly"

4.0 INITIAL CONDITIONS AND/OR REQUIREMENTS

4.1 Attachment 1 provides a flowchart of PAGs 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.
- CORE/CONTAINMENT STATUS - Protective actions that are required whenever significant core/containment failure has occurred.
- OFFSITE DOSE STATUS - Protective actions that are required when offsite doses exceed the EPA protective actions dose limits.
- SECURITY STATUS - Protective action required when control of facility is lost to intruders.

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4.2 The following information should be factored into the protective action recommendations. The starred (*) information should be known prior to using the procedure. The other information should be utilized as it becomes available or as time permits:

*o Plant status and prognosis

*o Dose projections [Reference Emergency Implementing Procedure EI-6.9, "Automated Dose Assessment Program," or Emergency Implementing Procedure EI-6.10, "Offsite Dose Calculation - Straight Line Gaussian (Manual Method")]

- Dose rates at site boundary, 2, 5, and 10 miles
- Estimated or actual release
- Projected time of release (if available)
- Duration of release or projected duration of release (if available)

o Local meteorological conditions (Reference Emergency Implementing Procedures EI-6.7, "Plant Site Meteorological System," or EI-6.8, "Backup and Supplemental Meteorology").

*o Downwind sectors affected (plume centerline sector plus the adjacent sectors)

o Estimated time of arrival of plume (Distance of interest/wind speed)

o Weather forecast at six hour intervals for next 12 to 24 hours (Reference Emergency Implementation Procedure EI-6.8, "Backup and Supplemental Meteorology")

o Field surveys (if available)

o Evacuation Time Estimates (Attachment 2)

o Permanent and Seasonal Resident Population Analysis (Attachment 3)

Constraints where sheltering may be more appropriate are: severe weather, competing disasters, institutionalized personnel not readily mobil, local physical factors impending evacuation, and duration of release.

The above information and PAGs should be updated at a minimum every 15 to 30 minutes or whenever significant changes in monitor readings or meteorology occur.

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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.

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.

6.0 PROCEDURE

6.1 DECLARATION OF UNUSUAL EVENT OR ALERT

6.1.1 Unusual Event - No protective actions required.

6.1.2 Alert - No protective actions required beyond site 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."

6.2.2 Initiate consideration of PAG recommendations to mitigate consequences of a low level release.

6.3 DECLARATION OF GENERAL EMERGENCY

6.3.1 Initial Recommendation

When a GENERAL EMERGENCY is declared, the immediate minimum recommended protective action shall be sheltering within the two mile radius around the Plant and five miles downwind, unless Attachment 1 (core/containment status information) indicates that more stringent protective actions are warranted. Notification of these recommendations to the appropriate state and local authorities shall be made within 15 minutes of the declaration.

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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 of this recommendation 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 4 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 review the protective action recommendation.

6.3.4 Record the recommended protective action and affected area on the State of Michigan Notification Form.

7.0 ATTACHMENTS

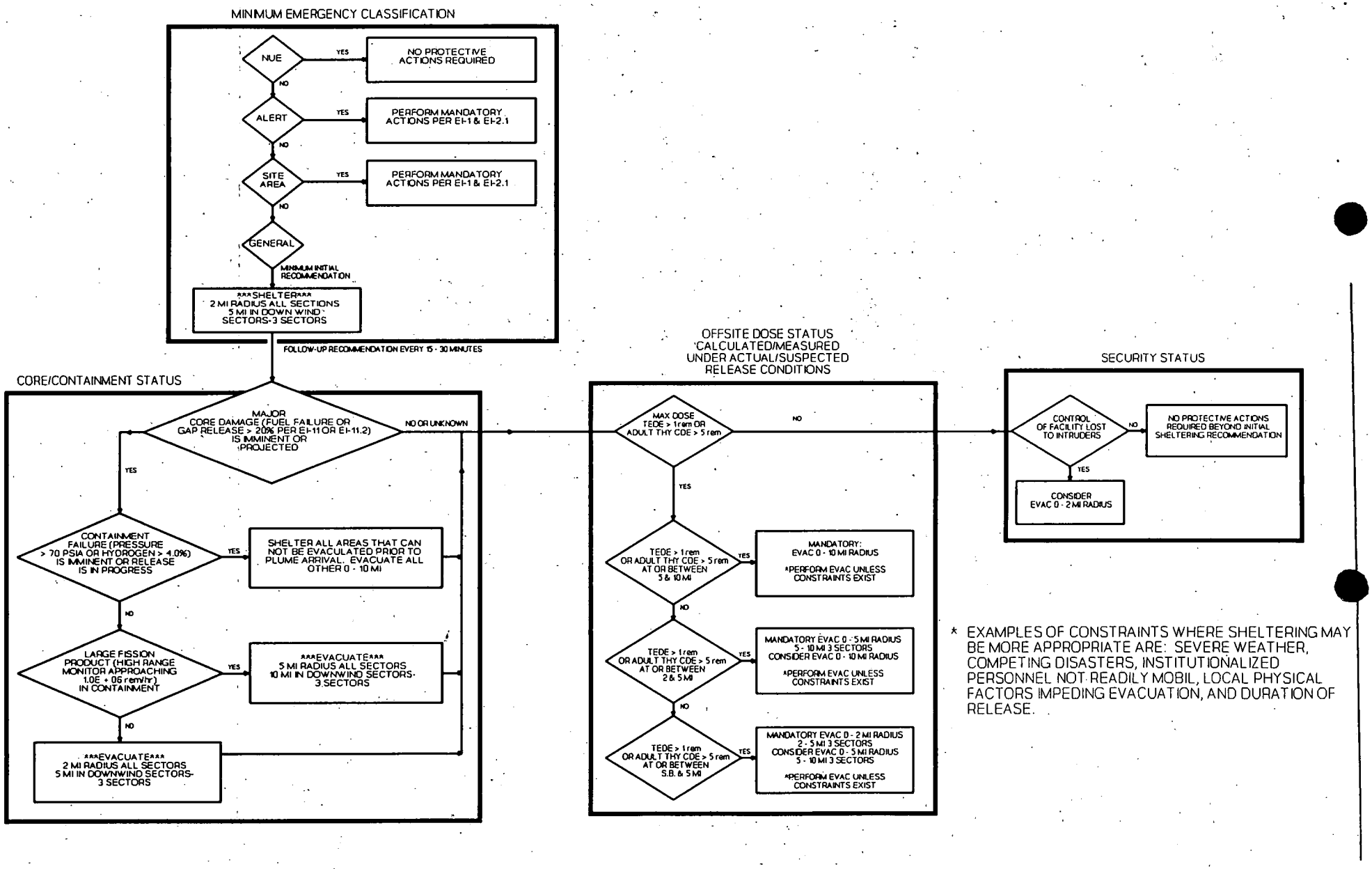
7.1 Attachment 1, "Protective Action Recommendations for Offsite Population"

7.2 Attachment 2, "Palisades Evacuation Time Estimates"

7.3 Attachment 3, "Permanent and Seasonal Resident Population"

7.4 Attachment 4, "Projected Dose Evaluation from Field Data"

PROTECTIVE ACTION RECOMMENDATIONS FOR OFFSITE POPULATION



* EXAMPLES OF CONSTRAINTS WHERE SHELTERING MAY BE MORE APPROPRIATE ARE: SEVERE WEATHER, COMPETING DISASTERS, INSTITUTIONALIZED PERSONNEL NOT READILY MOBIL, LOCAL PHYSICAL FACTORS IMPEDING EVACUATION, AND DURATION OF RELEASE.

PROTECTIVE ACTION RECOMMENDATIONS
FOR OFFSITE POPULATION

STATE OF MICHIGAN RECOMMENDED PROTECTIVE ACTIONS TO REDUCE WHOLEBODY AND THYROID DOSE TO OFFSITE POPULATION FROM EXPOSURE TO A GASEOUS PLUME

Protected Dose To The Population	Recommended Actions	Comments
TEDE < 1 rem (a) Adult Thyroid CDE < 5 rem (a)	- No required protective actions - State may issue an advisory to seek shelter and await further instruction - Monitor environmental radiation levels	Previously recommended protective actions may be reconsidered or terminated
TEDE ≥ 1 rem (b) Adult Thyroid CDE ≥ 5 rem (b)	- Conduct mandatory evacuation - Monitor environmental radiation levels and adjust area for mandatory evacuation based on control access	Seeking shelter would be an alternative if evacuations is not immediately possible

AFFECTED SECTORS

WIND DIRECTION DEGREE	SECTOR	CENTERLINE	ADJACENT	
169-191	S	N	NWW	NNE
192-213	SSW	NNE	N	NE
214-236	SW	NE	NWE	ENE
237-258	WSW	ENE	NE	E
259-281	W	E	ENE	ESE
282-303	WNW	ESE	E	SE
304-326	NW	SE	ESE	SSE
327-348	NNW	SSE	SE	S
349-11	N	S	SSE	SSW
12-33	NNE	SSW	S	SW
34-56	NE	SW	SSW	WSW
57-78	ENE	WSW	SW	W
79-101	E	W	WSW	WNW
102-123	ESE	WNW	W	NW
124-146	SE	NW	WNW	NWN
147-168	SSE	NNW	NW	N

PALISADES EVACUATION TIME ESTIMATES*

Evacuation Areas				
Distance	Sectors (Center-Adjacent)	Summer Clear Time	Winter Clear Time	Winter Adverse Weather Clear Time
2 mi radius	All	2 hr 50 min	2 hr 25 min	2 hr 30 min
2 mi radius and 5 mi downwind	N - NNW NNE	3 hr 25 min	4 hr 25 min	5 hr 20 min
	NNE - N NE	3 hr 25 min	4 hr 25 min	5 hr 20 min
	NE - NNE ENE	3 hr 25 min	4 hr 25 min	5 hr 20 min
	ENE - NE E	3 hr 25 min	4 hr 25 min	5 hr 20 min
	E - ENE ESE	3 hr 25 min	4 hr 25 min	5 hr 20 min
	ESE - E SE	3 hr 25 min	4 hr 25 min	5 hr 20 min
	SE - ESE SSE	2 hr 45 min	2 hr 45 min	2 hr 55 min
	SSE - SE S	2 hr 45 min	2 hr 45 min	2 hr 55 min
	S - SSE SSW	2 hr 45 min	2 hr 45 min	2 hr 55 min
	SSW - S SW	2 hr 45 min	2 hr 45 min	2 hr 55 min
	SW - SSW WSW	2 hr 45 min	2 hr 45 min	2 hr 55 min
2 mi radius and 10 mi downwind	N - NNW NNE	5 hr	5 hr 40 min	7 hr 10 min
	NNE - N NE	5 hr	5 hr 40 min	7 hr 10 min
	NE - NNE ENE	5 hr	5 hr 40 min	7 hr 10 min
	ENE - NE E	5 hr	5 hr 40 min	7 hr 10 min
	E - ENE ESE	5 hr	5 hr 40 min	7 hr 10 min
	ESE - E SE	5 hr	5 hr 40 min	7 hr 10 min
	SE - ESE SSE	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SSE - SE S	4 hr 45 min	4 hr 5 min	4 hr 55 min
	S - SSE SSW	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SSW - S SW	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SW - SSW WSW	4 hr 45 min	4 hr 5 min	4 hr 55 min
5 mi radius and 10 mi downwind	N - NNW NNE	5 hr	5 hr 50 min	7 hr 10 min
	NNE - N NE	5 hr	5 hr 40 min	7 hr 10 min
	NE - NNE ENE	5 hr	5 hr 40 min	7 hr 10 min
	ENE - NE E	5 hr	5 hr 40 min	7 hr 10 min
5 mi radius and 10 mi downwind	E - ENE ESE	5 hr	5 hr 40 min	7 hr 10 min
	ESE - E SE	5 hr	5 hr 40 min	7 hr 10 min

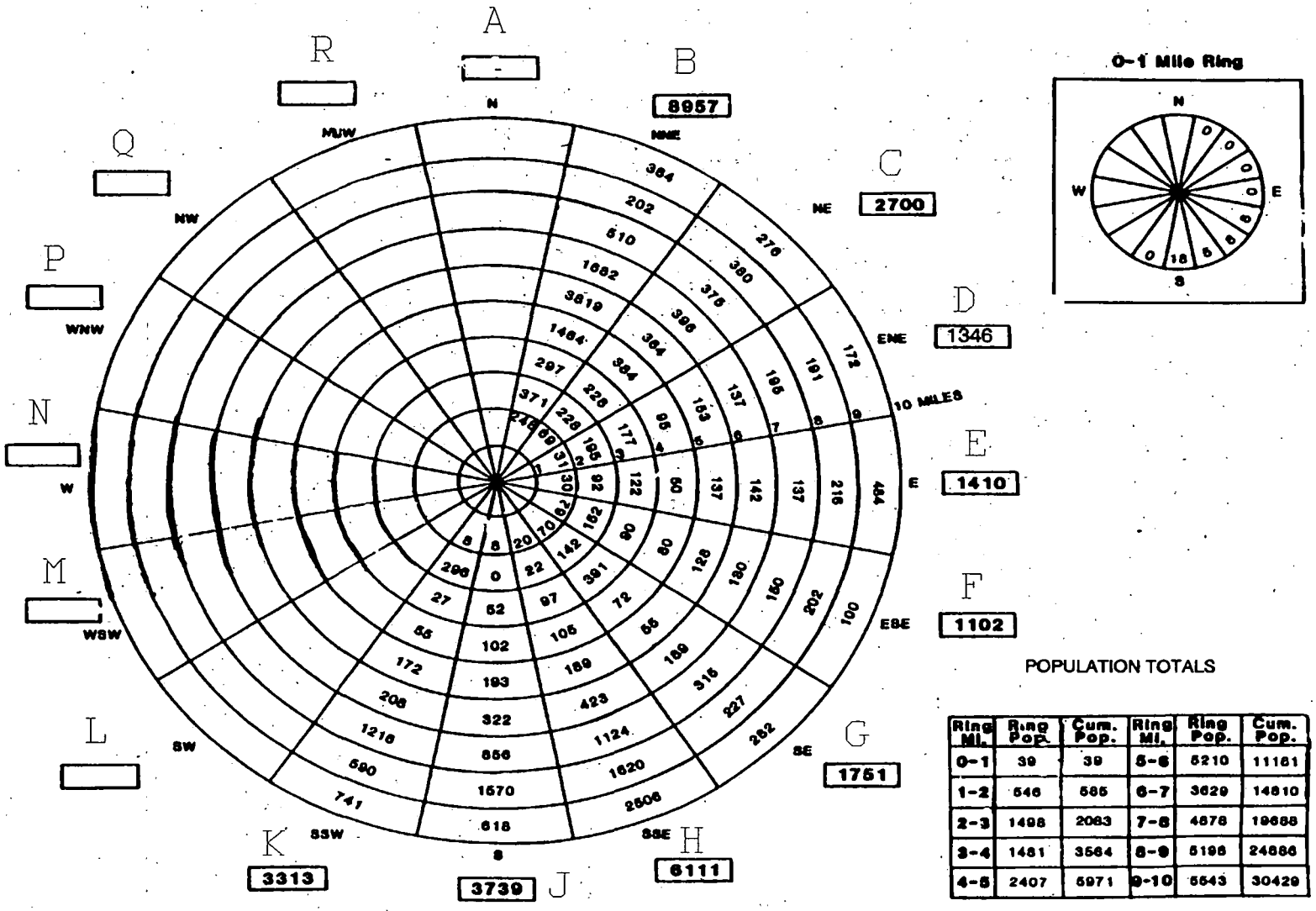
*From HMM Document No 84-688 FINAL 7/84 (found in Palisades DCC Library)

PALISADES EVACUATION TIME ESTIMATES*

(cont'd)	SE - ESE SSE	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SSE - SE S	4 hr 45 min	4 hr 5 min	4 hr 55 min
	S - SSE SSW	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SSW - S SW	4 hr 45 min	4 hr 5 min	4 hr 55 min
	SW - SSW WSW	4 hr 45 min	4 hr 5 min	4 hr 55 min
10 mi radius	All	5 hr	5 hr 40 min	7 hr 10 min

*From HMM Document No 84-688 FINAL 7/84 (found in Palisades DCC Library)

PERMANENT AND SEASONAL RESIDENT POPULATION



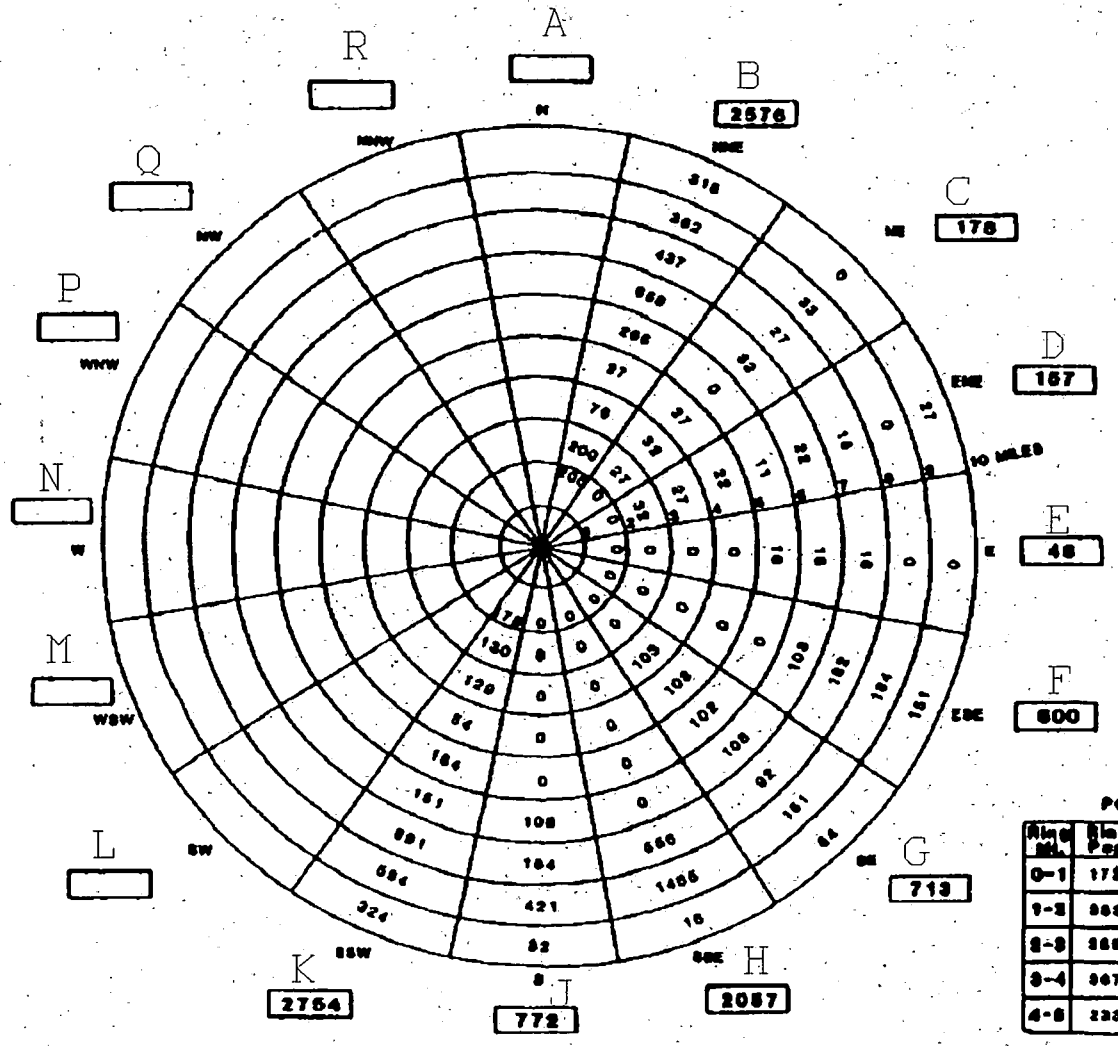
POPULATION TOTALS

Ring Mi.	Ring Pop.	Cum. Pop.	Ring Mi.	Ring Pop.	Cum. Pop.
0-1	39	39	5-6	5210	11161
1-2	546	585	6-7	3629	14810
2-3	1498	2083	7-8	4678	19668
3-4	1481	3564	8-9	5198	24866
4-5	2407	5971	9-10	5643	30429

PERMANENT RESIDENT POPULATION

From HMM Document No 84-668-Final, Dated July 1984 (Palisades Document Control Library).

PERMANENT AND SEASONAL RESIDENT POPULATION



POPULATION TOTALS

Ring Mi.	Ring Pop.	Cum. Pop.	Ring Mi.	Ring Pop.	Cum. Pop.
0-1	173	173	5-6	678	2123
1-2	883	856	6-7	1186	3322
2-3	868	946	7-8	2361	5703
3-4	867	1312	8-9	3230	8933
4-5	233	1545	9-10	922	9855

SEASONAL RESIDENT POPULATION*

* Population which resides in the area on a temporary basis, particularly during the summer. From HMM Document No 84-668-Final, Dated July 1984 (Palisades Document Control Library).

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 (A)

CEDE:

Particulate:

_____ μCi/cc x 39 mrem cc/μci. h* x _____ h= _____ mrem

Iodine:

_____ μCi/cc x 39 mrem cc/μci. h* x _____ h= _____ mrem

D. Projected TEDE:

2. Determination of Projected Adult Thyroid CDE:

Iodine CDE: _____ μCi/cc x 1300 mrem. cc/μci hx* _____ 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 5-5.
** Assumes 1 rad = 1 rem