April 24, 1996

Mr. James Knubel
Vice President and Director, TMI
GPU Nuclear Corporation
Three Mile Island Nuclear Station
P. O. Box 480
Middletown, PA 17057-0191

SUBJECT: EMERGENCY PREPAREDNESS MEETING

Dear Mr. Knubel:

This letter and enclosures summarize the March 15, 1996, management meeting held at our request among Mr. M. Slobodien and members of your staff, and members of the NRC Region I staff, in King of Prussia, Pennsylvania. The purpose of the meeting was to discuss the bases for the protective action recommendation (PAR) methodology currently in place for the Three Mile Island and Oyster Creek nuclear power facilities. Enclosed are a copy of the meeting notice, a list of attendees, and a copy of the handout provided by your staff.

We believe the meeting was beneficial and resolved our concerns about the inconsistencies between your current PAR methodology and recently revised federal guidance.

As a result of the meeting, we understand that you will revise your current PAR methodology, and logic diagrams, to be consistent with recently revised federal guidance. We also understand that you will discuss, in detail, the new PAR methodology and, in particular, Emergency Action Levels, with the affected states in the near future.

We appreciate the time and effort expended by your staff in preparing for and participating in this meeting. No response to this letter is required unless our understandings of your proposed actions, as stated above, are incorrect. If that is the case, please inform us, in writing, within 30 days of receipt of this letter.

Sincerely,

(original signed by)

Richard R. Keimig, Chief
Emergency Preparedness and
Safeguards Branch
Division of Reactor Safety

060053

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1/1

Docket No. 50-289

Enclosure: As stated

cc w/encl:
E. L. Blake, Shaw, Pittman, Potts and Trowbridge (Legal Counsel for GPUN)
Commonwealth of Pennsylvania
J. C. Fornicola, Director, Licensing and Regulatory Affairs
M. J. Ross, Director, Operations and Maintenance
TMI-Alert (TMIA)
J. S. Wetmore, Manager, TMI Licensing Department

Distribution w/encl:
Region I Docket Room (with concurrences)
T. Kenny, DRS
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PUBLIC
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R. Hernan, PD I-4, NRR
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Inspection Program Branch, NRR (IPAS)
DRS Files (1)

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DATE	04/23/96		04/24/96		04/ /96		04/ /96		04/ /96	

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ENCLOSURE 1

January 26, 1996

No. 96-09

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

NOTICE OF SIGNIFICANT LICENSEE MEETING

Licensee:	GPU Nuclear Corporation (GPUN)
Facilities:	Oyster Creek Nuclear Generating Station Three Mile Island Nuclear Station Unit 1
Docket No.:	50-219; 50-289
Time and Date:	9:00 a.m., Friday, March 15, 1996
Location:	U. S. Nuclear Regulatory Commission 475 Allendale Road King of Prussia, Pennsylvania DRS Conference Room
Purpose:	Management Meeting to discuss the bases for the protective action recommendation logic diagram and methodology for implemetation at Three Mile Island and Oyster Creek.
NRC Attendees:	R. Bores, Technical Assistant, Division of Reactor Safety (DRS) P. Eselgroth, Chief, Projects Branch 7, Division of Reactor Projects T. Essig, Chief, Emergency Preparedness and Environmental Health Physics Section, Office of Nuclear Reactor Regulation R. Keimig, Chief, Emergency Preparedness and Safeguards Branch, DRS J. Laughlin, Emergency Preparedness Specialist, DRS
Licensee Attendees:	T. Blount, Emergency Preparedness Manager, Oyster Creek J. Grisewood, Emergency Preparedness Manager, Three Mile Island A. Miller, Licensing Engineer, Three Mile Island M. Slobodien, Director, Radiological Health and Safety

Note: This meeting is open to the public for observation. Attendance by additional NRC personnel or handicapped persons requiring assistance to attend or participate in the meeting should make their requests known by March 14, 1996 to Peter Eselgroth, Region I, at 610-337-5234.

Approved By: Peter W. Eselgroth

Peter W. Eselgroth, Chief
Projects Branch 1
Division of Reactor Projects

ENCLOSURE 2

ATTENDEE LIST

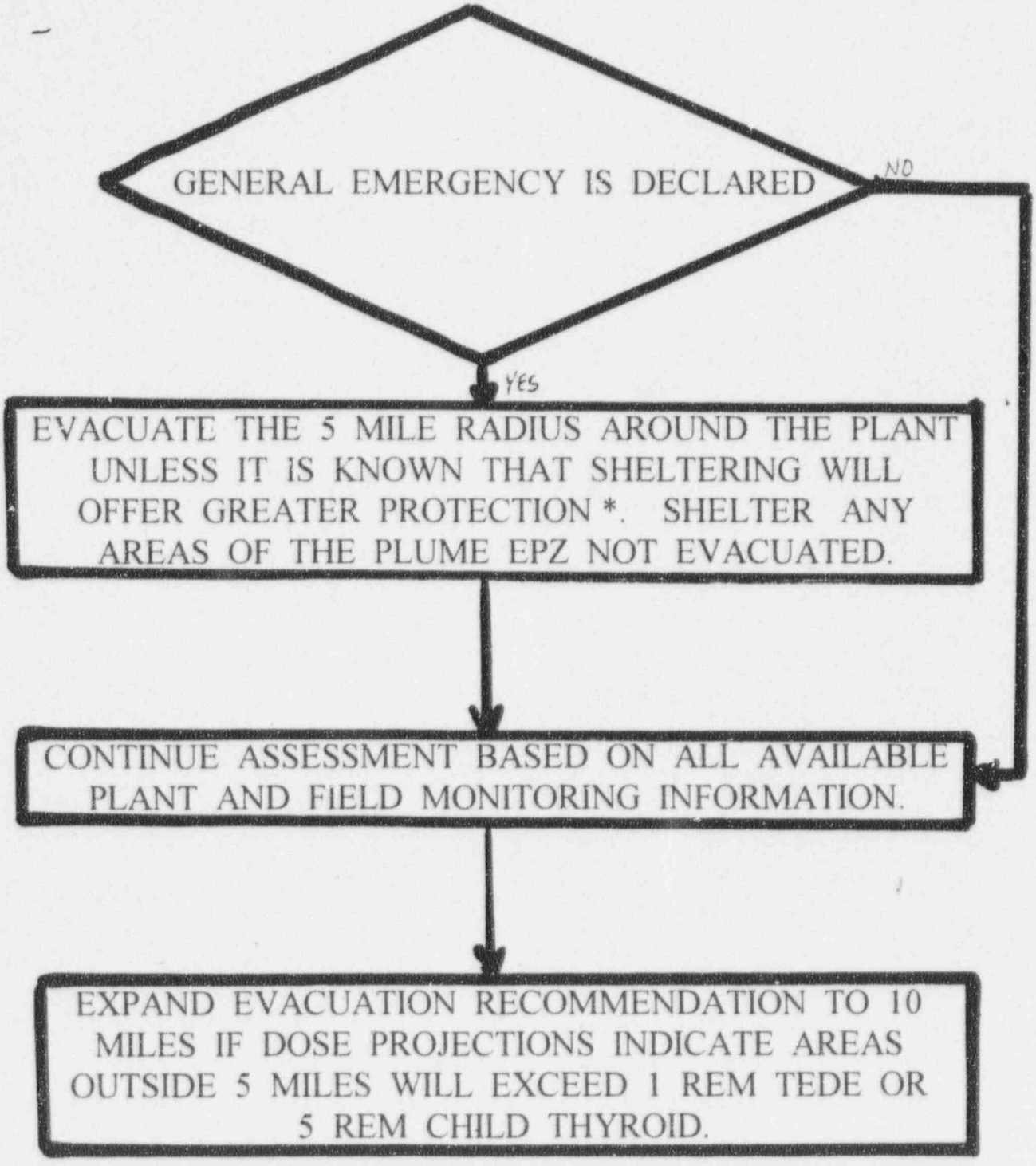
T. Blount, Oyster Creek Emergency Preparedness Manager, GPUN
B. DeMerchant, Sr. Licensing Engineer, GPUN
N. DePierro, NJ Department of Environmental Protection (DEP) Bureau of Nuclear Engineering (BNE)
S. Finicle, Corporate Emergency Planner, GPUN
J. Grisewood, TMI Emergency Preparedness Manager
S. Maingi, Nuclear Engineer, Pennsylvania Bureau of Radiation Protection
A. Miller, TMI Licensing
P. Mulligan, NJ DEP, BNE
M. Slobodien, Director, Radiation Health and Safety, GPUN
K. Tosch, NJ DEP, BNE

U.S. Nuclear Regulatory Commission

R. Bores, Senior Project Manager
D. Chawaga, Regional State Liaison Officer
P. Eselgroth, Chief, Projects Branch No. 7
T. Essig, Section Chief, Emergency Preparedness (EP) and Environmental Health Physics (HP), NRR
J. Laughlin, EP Specialist
J. Lusher, EP Specialist

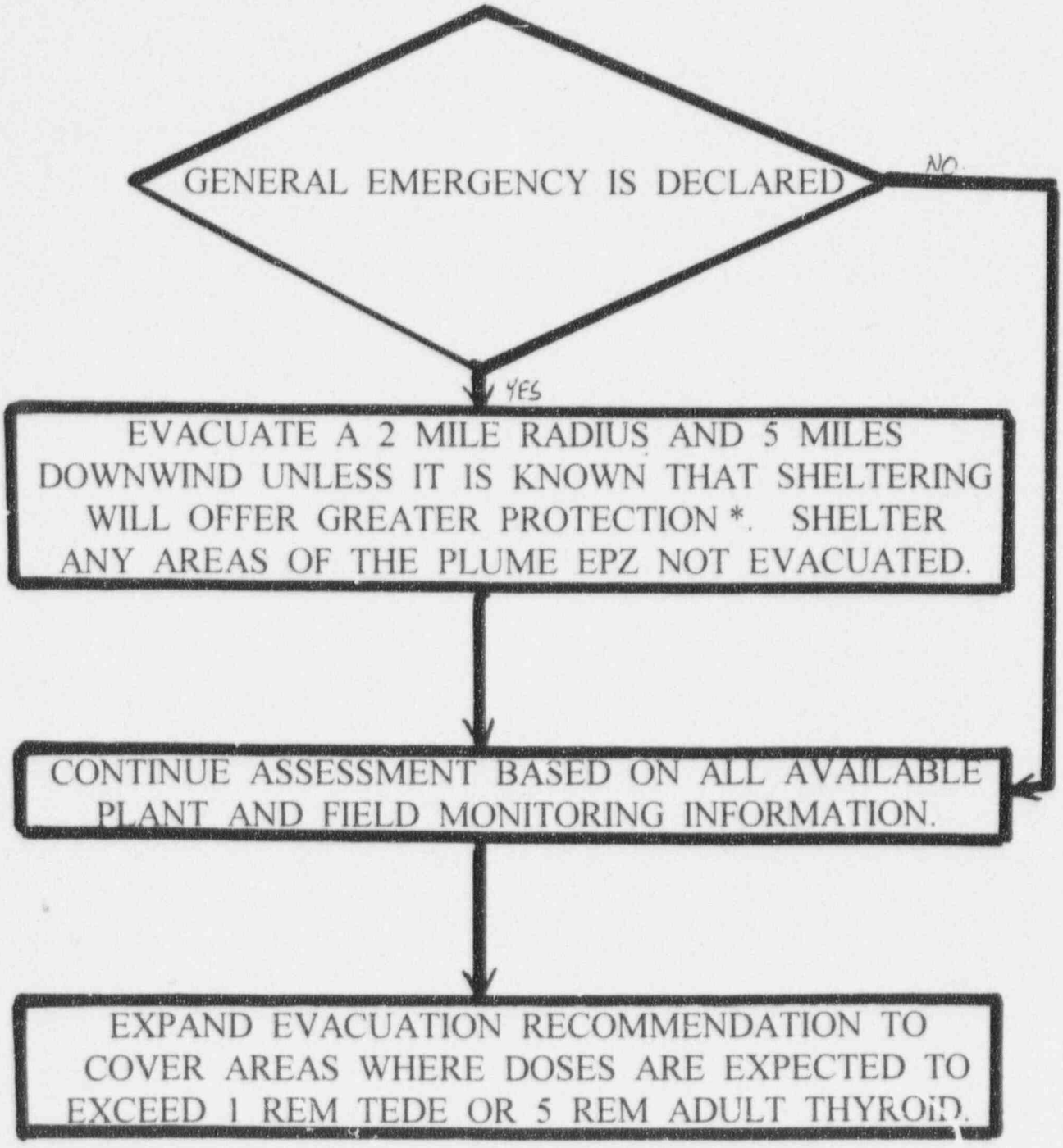
ENCLOSURE 3

TMI PAR LOGIC DIAGRAM



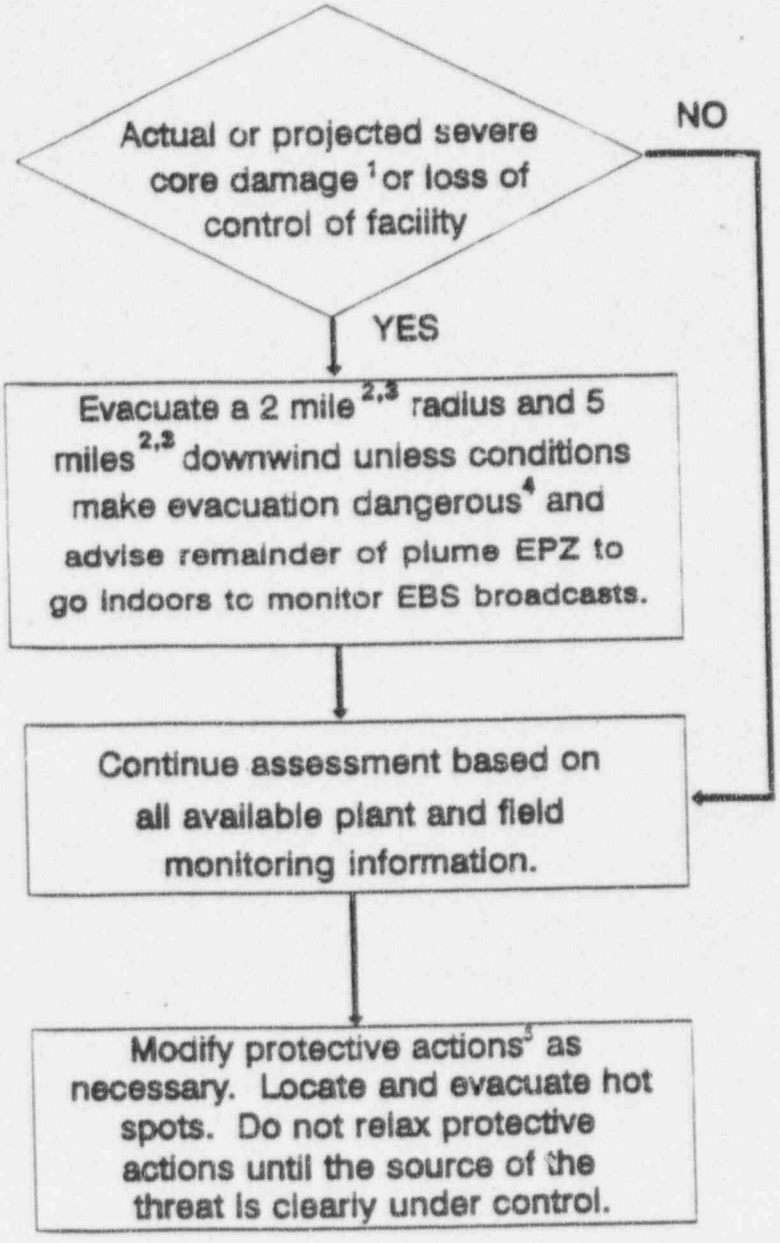
* The decision to recommend sheltering rather than evacuation should be made only when it is clear that sheltering will result in less dose to the public (For example, if it is KNOWN that the release will be terminated within 2 hours of the declaration.)

OYSTER CREEK PAR LOGIC DIAGRAM



* The decision to recommend sheltering rather than evacuation should be made only when it is clear that sheltering will result in less dose to the public (For example, if it is KNOWN that the release will be terminated within 2 hours of the declaration.)

SEVERE CORE DAMAGE OR LOSS OF CONTROL OF FACILITY PUBLIC PROTECTIVE ACTIONS



1 - Severe core damage is indicated by (1) loss of critical functions required for core protection (e.g., loss of injection combined with a LOCA); (2) high core temperatures (PWR) or partially covered core (BWR); (3) very high radiation levels in area or process monitors.

2 - Distances are approximate - actual distances will be determined by the size of the preplanned sub-areas that are based on local geo-political boundaries.

3 - Transit-dependent persons should be advised to remain indoors until transportation resources arrive if possible.

4 - If there are very dangerous travel conditions or if there is a mobility impaired population (i.e. acute care patients) then shelter those affected.

5 - Consider EPA PAGs (page I-4).

EPA RECOMMENDED PROTECTIVE ACTIONS GUIDES FOR EARLY PHASES OF A NUCLEAR INCIDENT

CAUTION:

For non-reactor nuclear incidents, base protective actions on Table I-1 or for UF_6 releases on the guidance in Section E.

NOTE:

- Table I-1 depicts the new EPA PAGs published in 1991 and are based on the sum of the effective dose equivalent resulting from external exposure and the committed effective dose equivalent (CEDE) from inhalation. Additional guidance is provided on thyroid or skin exposures.
- For most reactor accidents, the projected thyroid dose (5-25 rem) should determine the protective actions to be recommended (even under the previous guidance).
- **TEDE** = CEDE + effective cloud shine + 4 days effective ground shine.

Table I-1: PAGs[a] for the Early Phase of a Nuclear Incident

Protective Action	PAG Projected Dose	Comments
Evacuation[b] (or sheltering)	1-5 rem[c] TEDE or 5-25 rem thyroid[c] or 50-500 rem skin[c]	Evacuation (or for some situations, sheltering[b]) should normally be initiated at the lowest level of the range.
Administration of stable iodine	25 rem thyroid[d]	For mobility impaired who are unable to evacuate. Requires approval of State Medical Officials.

[a]EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, 1991, Section 2.3 The Protective Action Guides

[b]Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions.

[c]The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

[d]Committed dose equivalent to the thyroid from radioiodine.

Table 2-1 PAGs for the Early Phase of a Nuclear Incident

Protective Action	PAG (projected dose)	Comments
Evacuation (or sheltering[a])	1-5 rem[b]	Evacuation (or, for some situations, sheltering[a]) should normally be initiated at 1 rem. Further guidance is provided in Section 2.3.1
Administration of stable iodine	25 rem[c]	Requires approval of State medical officials.

[a]Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions (see Section 2.3.1).

[b]The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

[c]Committed dose equivalent to the thyroid from radioiodine.

protective action at projected doses up to 5 rem. In addition, under unusually hazardous environmental conditions use of sheltering at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified. Sheltering may also provide protection equal to or greater than evacuation due to the nature of the source term and/or in the presence of temporal or other site-specific conditions. Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and d) local physical factors which impede evacuation. Examples of situations or groups for which evacuation at 1 rem normally would be appropriate include: a) an

incident which occurs at night, b) an incident which occurs when children are in school, and c) institutionalized persons who are readily mobile. Evacuation seldom will be justified at less than 1 rem. The examples described above regarding selection of the most appropriate protective action are intended to be illustrative and not exhaustive. In general, sheltering should be preferred to evacuation whenever it provides equal or greater protection.

No specific minimum level is established for initiation of sheltering. Sheltering in place is a low-cost, low-risk protective action that can provide protection with an efficiency ranging from zero to almost 100 percent, depending on the circumstances. It can also be particularly useful to assure that a population is positioned so that, if the need arises, communication with the population can be carried out expeditiously. For the above reasons, planners and decision makers should consider implementing sheltering at projected doses below 1 rem; however, implementing protective actions for projected doses at very low levels would not be reasonable (e.g. below 0.1 rem). (This guidance should not be construed as establishing an additional lower level PAG for sheltering.) Sheltering should always be implemented in cases when evacuation is not carried out at projected doses of 1 rem or more.

Analyses for some hypothesized accidents, such as short-term releases of transuranic materials, show that sheltering in residences and other buildings can be highly effective at reducing dose, may provide adequate protection, and may be more effective than evacuation when evacuation cannot be completed before plume arrival (DO-90). However, reliance on large dose reduction factors for sheltering should be accompanied by cautious examination of possible failure mechanisms, and, except in very unusual circumstances, should never be relied upon at projected doses greater than 10 rem. Such analyses should be based on realistic or "best estimate" dose models and include unavoidable dose during evacuation. Sheltering and evacuation are discussed in more detail in Section 5.5.

2.3.2 Thyroid and Skin Protection

Since the thyroid is at disproportionately high risk for induction of nonfatal cancer and nodules, compared to other internal organs, additional guidance is provided to limit the risk of these effects (see footnote to Table 2-1). In addition, effective dose, the quantity used to express the PAG, encompasses only the risk of fatal cancer from irradiation of organs within the body, and does not include dose to skin. Guidance is also provided, therefore, to protect against the risk of skin cancer (see Table 2-1, footnote b).

The use of stable iodine to protect against uptake of inhaled radioiodine by the thyroid is recognized as an effective alternative to evacuation for situations involving radioiodine releases when evacuation cannot be

NRC PAR ADVANTAGES

- EASIER TO USE

- FASTER

GPUN PAR DISADVANTAGES

- MORE COMPLEX
- GREATER CHANCE FOR ERROR
- RELIES ON ACCURATE EVACUATION TIME ESTIMATES

REALITY

- WE MAY NOT BE ABLE TO PRECISELY ESTIMATE TERMINATION TIME

- ALMOST ALWAYS ARRIVE AT THE SAME ANSWER

- VERY UNLIKELY TO HAVE A SHELTERING SITUATION

- NOT WORTH DOING THE "FINE-TUNING"

EXHIBIT 1
Three Mile Island PAR Logic Diagram
Development of Protective Action Recommendations

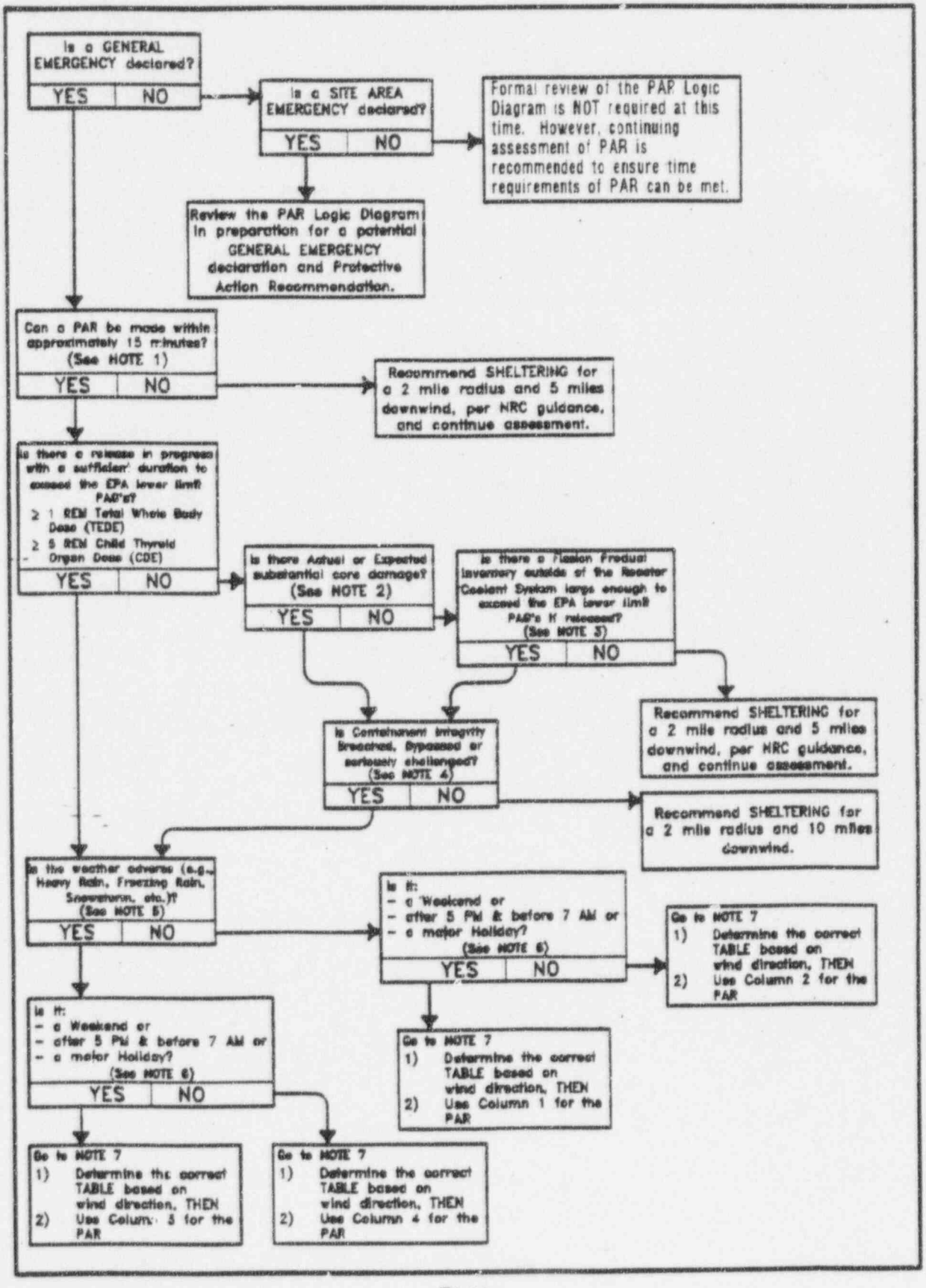


EXHIBIT 1C (Cont'd)

Protective Action Recommendation (PAR) Logic Diagram Notes

NOTE 1: Review the **ENTIRE** PAR Logic Diagram before making this decision. Use data that is currently available **DO NOT WAIT FOR DATA** that could cause you to delay making the PAR within ~ 15 minutes. The PAR may be modified and reissued as information becomes available or changes.

NOTE 2: **AS INDICATED BY ONE OF THE FOLLOWING:**

1. RCS post accident sample analysis indicates fuel damage classification of ≥ 2.
2. RAC software code calculation indicates fuel damage classification of ≥ 2.
3. Incore thermocouples (5 highest) indicate ≥ 1400°F T_{CLAD} curve.
4. Letdown monitor readings (RM-L-1 low and RM-L1 high) are off scale high.
   (If this reading is desired the isolation interlocks will have to be bypassed in order to get a representative sample.)
5. "Expected Core Damage" whereby presently there is no core damage, but based upon deteriorating plant conditions, it is anticipated that one of the above 4 conditions will occur.

NOTE 3: **AS INDICATED BY ONE OF THE FOLLOWING:**

1. High range containment area monitor (RM-G-22 or RM-G-23) in high alarm.
2. Steam Generator indications:
   2.1 RM-G-25 reading ≥ 100,000 mR/hr
   2.2 RM-G-26 or RM-G-27 reading ≥ 60,000 CPM
   2.3 Main Steam (contact) reading ≥ 100,000 mR/hr
3. RM-A-8 Gas High reading ≥ 120 CPM

NOTE 4: **AS INDICATED BY ONE OF THE FOLLOWING:**

BREACHED

1. Containment is breached if there is a direct reactor building to atmosphere release pathway such as RB purge valves failure to close.

BYPASSED

1. OTSG leakage ≥ 1 GPM (TS limit) with a direct release to atmosphere.
   (Steam Line break outside the RB, Atmospheric Dump Valve open, Stuck open Code Safety Valve or Emergency Feedwater Pump exhaust)
2. OTSG leakage ≥ 50 GPM steaming through the condenser.
3. Leakage ≥ 100 GPM in the Decay Heat System while on Decay Heat.
4. RM-A-8 Gas High reading ≥ 120 CPM.

CHALLENGED

1. Containment will be determined to be seriously challenged through a detailed engineering analysis.
2. If a detailed analysis of containment integrity is not available then containment will be considered challenged if:
   2.1 Reactor Building pressure > 30 PSIG.
   2.2 Reactor Building Hydrogen concentration is ≥ 4%.

EXHIBIT 10 (Cont'd)

NOTE 5: **AS INDICATED BY ONE OF THE FOLLOWING:**

Adverse Weather - Weather that has caused or is expected to cause road conditions to deteriorate to the point where the road capacity has been reduced by more than 20 percent. Some examples would be actual or expected:

1. Heavy Rain - heavy enough to significantly slow traffic.
2. Snow - where the major highways are snow covered with more than 2 inches of snow.
3. Freezing Rain - where ice has accumulated on the road surfaces.
4. Dense Fog - where the visibility is near zero.

NOTE 6: **MAJOR HOLIDAYS**

New Year's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Day After Thanksgiving
Christmas Day

NOTE 7: Determine the appropriate Table based on wind direction to make your PAR.

Are any of the affected or adjacent sectors 15, 16, 1, 2, 3, or 4?

No | Yes

Use Table 1

Are any of the affected or adjacent sectors 5, 6, or 7?

No | Yes

Use Table 2

Are any of the affected or adjacent sectors 8, 9, 10 or 11?

No | Yes

Use Table 4 | **Use Table 3**

Note 7 continues on Pages E1-17 through E1-28.

2082d

Note 7 (Cont'd)

Table 1

(Use this Table if Sectors 15, 16, 1, 2, 3, or 4 are downwind or adjacent)

1. DOWNWIND - The sectors that are projected to be affected (outside the 2 mile radius) during the course of the release plus the two adjacent sectors.

2. Determine "X", which equals the number of hours from NOW until the current or projected release is estimated to STOP. If it is unknow when the release will start or stop, assume "X" = 8.

3. Determine the Protective Action Recommendation by determining which block of the column determined from the diagram that "X" falls into.
(If "X" falls on a line use the block below the line.)

"X" Number of hours	COLUMN 1 (Night time, holiday, weekends) NORMAL WEATHER	COLUMN 2 Daytime (Workday) NORMAL WEATHER	COLUMN 3 (Night time, holiday, weekends) ADVERSE WEATHER	COLUMN 4 Daytime (Workday) ADVERSE WEATHER
≤ 3	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind
	3.50	3.50	3.75	3.50
4	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind
5	5.00			
6	EVACUATE 5 mile radius and SHELTER 10 miles downwind		6.25 EVACUATE 5 mile radius and SHELTER 10 miles downwind	
7	7.25	7.25		
8		EVACUATE 5 mile radius and SHELTER 10 miles downwind		
9	EVACUATE 5 mile radius and EVACUATE 10 miles downwind			9.25
10		9.25 EVACUATE 5 mile radius and EVACUATE 10 miles downwind		EVACUATE 5 mile radius and SHELTER 10 miles downwind
11			9.75	
12			EVACUATE 5 mile radius and EVACUATE 10 miles downwind	12.00
≥ 13				EVACUATE 5 mile radius and EVACUATE 10 miles downwind

4. Return to the beginning of the PAR logic diagram if there has been a substantial change in conditions.

THE ABOVE IS GUIDANCE AND SHOULD BE ADHERED TO, HOWEVER, IT MAY BE DEVIATED FROM IF, IN THE EDTESD's JUDGEMENT, SUCH DEVIATION IS WARRANTED.

Note 7 (Cont'd)

Table 2

(Use This Table if Sectors 5,6, or 7 are Downwind or Adjacent But Sectors 15, 16, 1, 2, 3, or 4 are Not Downwind or Adjacent)

1. DOWNWIND - The sectors that are projected to be affected (Outside the 2 mile radius) during the course of the release plus the two adjacent sectors.

2. Determine "X", which equals the number of hours from NOW until the current or projected release is estimated to STOP. If it is unknown when the release will stop assume "X" = 8.

3. Determine the Protective Action Recommendation by determining which block of the column determined from the diagram that "X" falls into.
(If "X" falls on a line use the block below the line.)

"X" Number of hours	COLUMN 1 (Night time, holiday, weekends) NORMAL WEATHER	COLUMN 2 Daytime (Workday) NORMAL WEATHER	COLUMN 3 (Night time, holiday, weekends) ADVERSE WEATHER	COLUMN 4 Daytime (Workday) ADVERSE WEATHER
≤3	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind
	3.50	3.50	3.75	3.50
4	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind
	4.50			
5	EVACUATE 5 mile radius and SHELTER 10 miles downwind			
		5.00	5.25	6.00
6	5.50	EVACUATE 5 mile radius and SHELTER 10 miles downwind	EVACUATE 5 mile radius and SHELTER 10 miles downwind	EVACUATE 5 mile radius and SHELTER 10 miles downwind
7	EVACUATE 5 mile radius and EVACUATE 10 miles downwind		6.50	
8		7.25	EVACUATE 5 mile radius and EVACUATE 10 miles downwind	9.50
9		EVACUATE 5 mile radius and EVACUATE 10 miles downwind		EVACUATE 5 mile radius and EVACUATE 10 miles downwind
≥10				

4. Return to the beginning of the PAR logic diagram if there has been a substantial change in conditions.

THE ABOVE IS GUIDANCE AND SHOULD BE ADHERED TO. HOWEVER, IT MAY BE DEVIATED FROM IF, IN THE EDMSD's JUDGEMENT, SUCH DEVIATION IS WARRANTED.

Note 7 (Cont'd)

Table 3

(Use This Table if Sectors 8, 9, 10 or 11 are Downwind or Adjacent But Sectors 15, 16, 1, 2, 3, 4, 5, 6, or 7 are Not Downwind or Adjacent)

1. DOWNWIND - The sectors that are projected to be affected (Outside the 2 mile radius) during the course of the release plus the two adjacent sectors.

2. Determine "X", which equals the number of hours from NOW until the current or projected release is estimated to STOP. If it is unknown when the release will stop assume "X" = 8.

3. Determine the Protective Action Recommendation by determining which block of the column determined from the diagram that "X" falls into.
(If "X" falls on a line use the block below the line.)

"X" Number of hours	COLUMN 1 (Night time, holiday, weekends) NORMAL WEATHER	COLUMN 2 Daytime (Workday) NORMAL WEATHER	COLUMN 3 (Night time, holiday, weekends) ADVERSE WEATHER	COLUMN 4 Daytime (Workday) ADVERSE WEATHER
≤3	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind
	3.50	3.50		
	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	3.75	3.75
	3.75			
4	EVACUATE 5 mile radius and SHELTER 10 miles downwind		EVACUATE 5 mile radius and SHELTER 10 miles downwind	
		4.25		
		EVACUATE 5 mile radius and SHELTER 10 miles downwind		EVACUATE 2 mile radius and SHELTER 10 miles downwind
5	5.00			
			5.50	
6	EVACUATE 5 mile radius and EVACUATE 10 miles downwind	5.50		5.75
		EVACUATE 5 mile radius and EVACUATE 10 miles downwind		EVACUATE 5 mile radius and SHELTER 10 miles downwind
7			EVACUATE 5 mile radius and EVACUATE 10 miles downwind	7.00
≥8				EVACUATE 5 mile radius and EVACUATE 10 miles downwind

4. Return to the beginning of the PAR logic diagram if there has been a substantial change in conditions.

THE ABOVE IS GUIDANCE AND SHOULD BE ADHERED TO. HOWEVER, IT MAY BE DEVIATED FROM IF, IN THE EDRSO's JUDGEMENT, SUCH DEVIATION IS WARRANTED.

Note 7 (Cont'd)

Table 4

(Use This Table if Sectors 12, 13, or 14 are Downwind or Adjacent But Sectors 15, 16, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11 are Not Downwind or Adjacent)

1. DOWNWIND - The sectors that are projected to be affected (Outside the 2 mile radius) during the course of the release plus the two adjacent sectors.

2. Determine "X", which equals the number of hours from NOW until the current or projected release is estimated to STOP. If it is unknown when the release will stop assume "X" = 8.

3. Determine the Protective Action Recommendation by determining which block of the column determined from the diagram that "X" falls into.
(If "X" falls on a line use the block below the line.)

"X" Number of hours	COLUMN 1 (Night time, holiday, weekends) NORMAL WEATHER	COLUMN 2 Daytime (Workday) NORMAL WEATHER	COLUMN 3 (Night time, holiday, weekends) ADVERSE WEATHER	COLUMN 4 Daytime (Workday) ADVERSE WEATHER
≤3	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind	SHELTER 2 mile radius and SHELTER 10 miles downwind
	3.50	3.50		
	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind		
	3.75	3.75	3.75	3.75
	EVACUATE 5 mile radius and SHELTER 10 miles downwind	EVACUATE 5 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind	EVACUATE 2 mile radius and SHELTER 10 miles downwind
4	4.00	4.00	4.00	4.75
5	EVACUATE 5 mile radius and EVACUATE 10 miles downwind	EVACUATE 5 mile radius and EVACUATE 10 miles downwind	EVACUATE 5 mile radius and EVACUATE 10 miles downwind	EVACUATE 5 mile radius and SHELTER 10 miles downwind
				5.50
≥6				EVACUATE 5 mile radius and EVACUATE 10 miles downwind

4. Return to the beginning of the PAR logic diagram if there has been a substantial change in conditions.

THE ABOVE IS GUIDANCE AND SHOULD BE ADHERED TO. HOWEVER, IT MAY BE DEVIATED FROM IF, IN THE ED/EOF's JUDGEMENT, SUCH DEVIATION IS WARRANTED.

EXHIBIT 1C
OYSTER CREEK
PAR LOGIC DIAGRAM

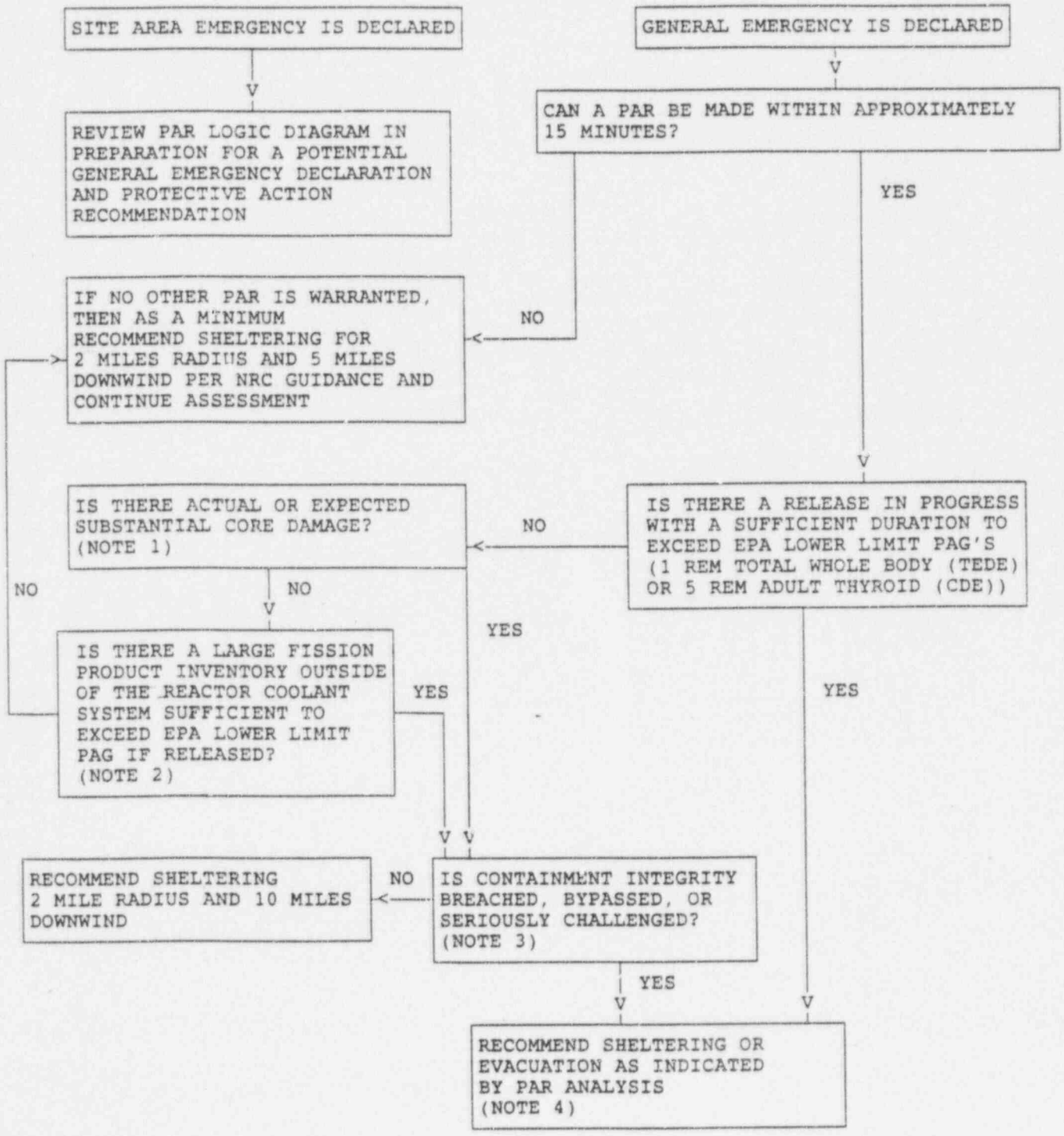


EXHIBIT 1C (Continued)

OYSTER CREEK

PAR LOGIC DIAGRAM NOTES

NOTE 1

SUBSTANTIAL CORE DAMAGE IS A POTENTIAL IF:
* RPV WATER LEVEL IS LESS THAN OR EQUAL TO - 30 INCHES FOR GREATER THAN OR EQUAL TO 2 MINUTES

ACTUAL SUBSTANTIAL CORE DAMAGE IS INDICATED BY:
* CHRRMS READING GREATER THAN 3.0E4 R/HR
DRYWELL H_2 CONCENTRATION IN EXCESS OF 25%

NOTE 2

UNDER WORST CASE METEOROLOGICAL CONDITIONS, A CHRRMS READING OF 1300 R/HR IS INDICATIVE OF A FISSION PRODUCT INVENTORY SUFFICIENT TO EXCEED EPA LOWER LIMIT PAG'S.

NOTE 3

CONTAINMENT IS BREACHED IF THERE IS A RELEASE TO THE SECONDARY CONTAINMENT OR ENVIRONMENT OR A DECISION TO VENT THE CONTAINMENT HAS BEEN MADE.

SOME EXAMPLES OF CONTAINMENT BEING BYPASSED INCLUDE ISO CONDENSER LEAKS, STEAM LINE BREAKS IN THE TURBINE BUILDING WITH NO MSIV CLOSURE, AND REACTOR CLEANUP SYSTEM LEAKS.

CONTAINMENT WILL BE DETERMINED TO BE SERIOUSLY CHALLENGED THROUGH A DETAILED ENGINEERING ANALYSIS. IF AN ANALYSIS OF CONTAINMENT INTEGRITY IS NOT AVAILABLE, THEN CONTAINMENT WILL BE CONSIDERED SERIOUSLY CHALLENGED IF CONTAINMENT PRESSURE EXCEEDS 38 PSIG AND BULK TEMPERATURE IS ABOVE 280° DEGREES F.

NOTE 4

AS GUIDANCE, IF 5 TIMES THE MAXIMUM PROJECTED INTEGRATED DOSE IS LESS THAN THE EPA LOWER LIMIT PAG, RECOMMEND SHELTERING 2 MILES RADIUS AND 5 MILES DOWNWIND. OTHERWISE, THE COMPUTERIZED PAR ANALYSIS OF THE RAC CODE OR ATTACHMENT 1 TO THIS NOTE MAY BE USED TO DETERMINE THE PAR.

EXHIBIT 1C

NOTE 4 ATTACHMENT 1

USE IF WIND DIRECTION (from) IS: 192 - 281 Degrees

Modified Evacuation Time Estimates (METE's)

	WINTER				SUMMER			
	Daytime		Nighttime		Daytime		Nighttime	
	Normal	Adverse	Normal	Adverse	Normal	Adverse	Normal	Adverse
2 mile radius	3.5	3.9	3.0	3.3	3.5	3.9	3.0	3.2
5 miles downwind	3.9	4.3	3.7	4.2	4.1	4.6	4.2	4.8
10 miles downwind	5.4	6.0	5.5	6.1	6.8	8.0	7.0	8.2

1) Choose the appropriate METE's and fill in A, B, & C.

2 mile radius _____ A
5 mile downwind _____ B
10 mile downwind _____ C

2) Calculate X using the following formula:

X = [The # of hours from now until the release is estimated to start, if known. (Use 0 if a release is in progress or if the time of release is unknown.)] + [The # of hours the release is estimated to last.]

X = _____ + _____ = _____

3) Fill in the blanks with the values for A, B, & C and choose a PAR using the value for X calculated above.

$X < \frac{\quad}{A}$ Shelter 2 mile radius and 10 miles downwind

or

$\frac{\quad}{A} \leq X < \frac{\quad}{B}$ Evacuate 2 mile radius and shelter 10 miles downwind

or

$\frac{\quad}{B} \leq X < \frac{\quad}{C}$ Evacuate 2 mile radius, 5 miles downwind, and shelter 10 miles downwind

or

$\frac{\quad}{C} \leq X$ Evacuate 2 mile radius and 10 miles downwind

EXHIBIT 1C

NOTE 4 ATTACHMENT 1 (Continued)

USE IF WIND DIRECTION (from) IS: 282 - 11 Degrees

Modified Evacuation Time Estimates (METE's)

	WINTER				SUMMER			
	Daytime		Nighttime		Daytime		Nighttime	
	Normal	Adverse	Normal	Adverse	Normal	Adverse	Normal	Adverse
2 mile radius	3.5	3.9	3.0	3.2	3.5	3.9	3.0	3.2
5 miles downwind	3.6	4.0	3.1	3.3	3.6	4.0	3.2	3.5
10 miles downwind	4.1	4.4	4.2	4.5	5.7	6.9	6.2	7.2

1) Choose the appropriate METE's and fill in A, B, & C.

2 mile radius _____ A
5 mile downwind _____ B
10 mile downwind _____ C

2) Calculate X using the following formula:

X = [The # of hours from now until the release is estimated to start, if known. (Use 0 if a release is in progress or if the time of release is unknown.)] + [The # of hours the release is estimated to last.]

X = _____ + _____ = _____

3) Fill in the blanks with the values for A, B, & C and choose a PAR using the value for X calculated above.

$X < \frac{\quad}{A}$ Shelter 2 mile radius and 10 miles downwind

or

$\frac{\quad}{A} \leq X < \frac{\quad}{B}$ Evacuate 2 mile radius and shelter 10 miles downwind

or

$\frac{\quad}{B} \leq X < \frac{\quad}{C}$ Evacuate 2 mile radius, 5 miles downwind, and shelter 10 miles downwind

or

$\frac{\quad}{C} \leq X$ Evacuate 2 mile radius and 10 miles downwind

EXHIBIT 1C

NOTE 4 ATTACHMENT 1 (Continued)

USE IF WIND DIRECTION (from) IS: 12 - 191 Degrees

Modified Evacuation Time Estimates (METE's)

	WINTER				SUMMER			
	Daytime		Nighttime		Daytime		Nighttime	
	Normal	Adverse	Normal	Adverse	Normal	Adverse	Normal	Adverse
2 mile radius	3.5	3.9	3.0	3.2	3.5	3.9	3.0	3.2
5 miles downwind	3.6	4.0	3.1	3.3	3.6	4.0	3.1	3.3
10 miles downwind	3.7	4.2	3.2	3.5	3.7	4.2	3.2	3.5

1) Choose the appropriate METE's and fill in A, B, & C.

2 miles radius _____ A
5 mile downwind _____ B
10 mile downwind _____ C

2) Calculate X using the following formula:

X = [The # of hours from now until the release is estimated to start, if known. (Use 0 if a release is in progress or if the time of release is unknown.)] + [The # of hours the release is estimated to last.]

X = _____ + _____ = _____

3) Fill in the blanks with the values for A, B, & C and choose a PAR using the value for X calculated above.

$X < \frac{\quad}{A}$ Shelter 2 mile radius and 10 miles downwind

or

$\frac{\quad}{A} \leq X < \frac{\quad}{B}$ Evacuate 2 mile radius and shelter 10 miles downwind

or

$\frac{\quad}{B} \leq X < \frac{\quad}{C}$ Evacuate 2 mile radius, 5 miles downwind, and shelter 10 miles downwind

or

$\frac{\quad}{C} \leq X$ Evacuate 2 mile radius and 10 miles downwind