



No special radiological medical provisions for the general public

No new construction of special public facilities for emergency use

No special stockpiles of emergency animal feed

No special decontamination equipment for property and equipment

No participation by the general public in test exercises of emergency plans.

Some capabilities in these areas, of course, already exist under the general emergency plans of Federal and State agencies.

B. Size of the Emergency Planning Zone

Several possible rationales were considered for establishing the size of the EPZs. These included risk, probability, cost effectiveness and accident consequence spectrum. After reviewing these alternatives, the Task Force chose to base the rationale on a full spectrum of accidents and corresponding consequences tempered by probability considerations. These rationales are discussed more fully in Appendix I.

The Task Force agreed that emergency response plans should be useful for responding to any accident that would produce offsite doses in excess of the PAGs. This would include the more severe design basis accidents and the accident spectrum analyzed in the RSS. After reviewing the potential consequences associated with

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In the matter of Phyllis E. Guckelmeier
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Inspector ✓
Date 5/23/54
Status 5/23/54
NRC: EAG REGU A1001 COMMISSION
AP-139

these types of accidents, it was the consensus of the Task Force that emergency plans could be based upon a generic distance out to which predetermined actions would provide dose savings for any such accidents. Beyond this generic distance it was concluded that actions could be taken on an ad hoc basis using the same considerations that went into the initial action determinations.

The Task Force judgment on the extent of the Emergency Planning Zone is derived from the characteristics of design basis and Class 9 accident consequences. Based on the information provided in Appendix I and the applicable PAGs a radius of about 10 miles was selected for the plume exposure pathway and a radius of about 50 miles was selected for the ingestion exposure pathway, as shown in table 1. Although the radius for the EPZ implies a circular area, the actual shape would depend upon the characteristics of a particular site. The circular or other defined area would be for planning whereas initial response would likely involve only a portion of the total area.

The EPZ recommended is of sufficient size to provide dose savings to the population in areas where the projected dose from design basis accidents could be expected to exceed the applicable PAGs under unfavorable atmospheric conditions. As illustrated in Appendix I, consequences of less severe Class 9 accidents would not exceed the

PAG levels outside the recommended EPZ distance. In addition, the EPZ is of sufficient size to provide for substantial reduction in early severe health effects (injuries or deaths) in the event of the more severe Class 9 accidents.

Table 1. Guidance on Size of the Emergency Planning Zone

Accident Phase	Critical Organ and Exposure Pathway	EPZ Radius
Plume Exposure Pathway	Whole body (external)	about 10 mile radius*
	Thyroid (inhalation)	
	Other organs (inhalation)	
Ingestion Pathway**	Thyroid, whole body, bone marrow (ingestion)	about 50 mile radius***

* Judgment should be used in adopting this distance based upon considerations of local conditions such as demography, topography, land characteristics, access routes, and local jurisdictional boundaries.

** Processing plants for milk produced within the EPZ should be included in the emergency response plans regardless of their location.

***The recommended size of the ingestion exposure EPZ is based on an expected revision of milk pathway Protective Action Guides based on FDA-Bureau of Radiological Health recommendations. The Task Force understands that measures such as placing dairy cows on stored feed will be recommended for projected exposure levels as low as about 1.5 rem to the infant thyroid. Should the current FRC guidelines, 10 rem⁽⁸⁾, be maintained, an EPZ of about 25 miles would achieve the objectives of the Task Force.

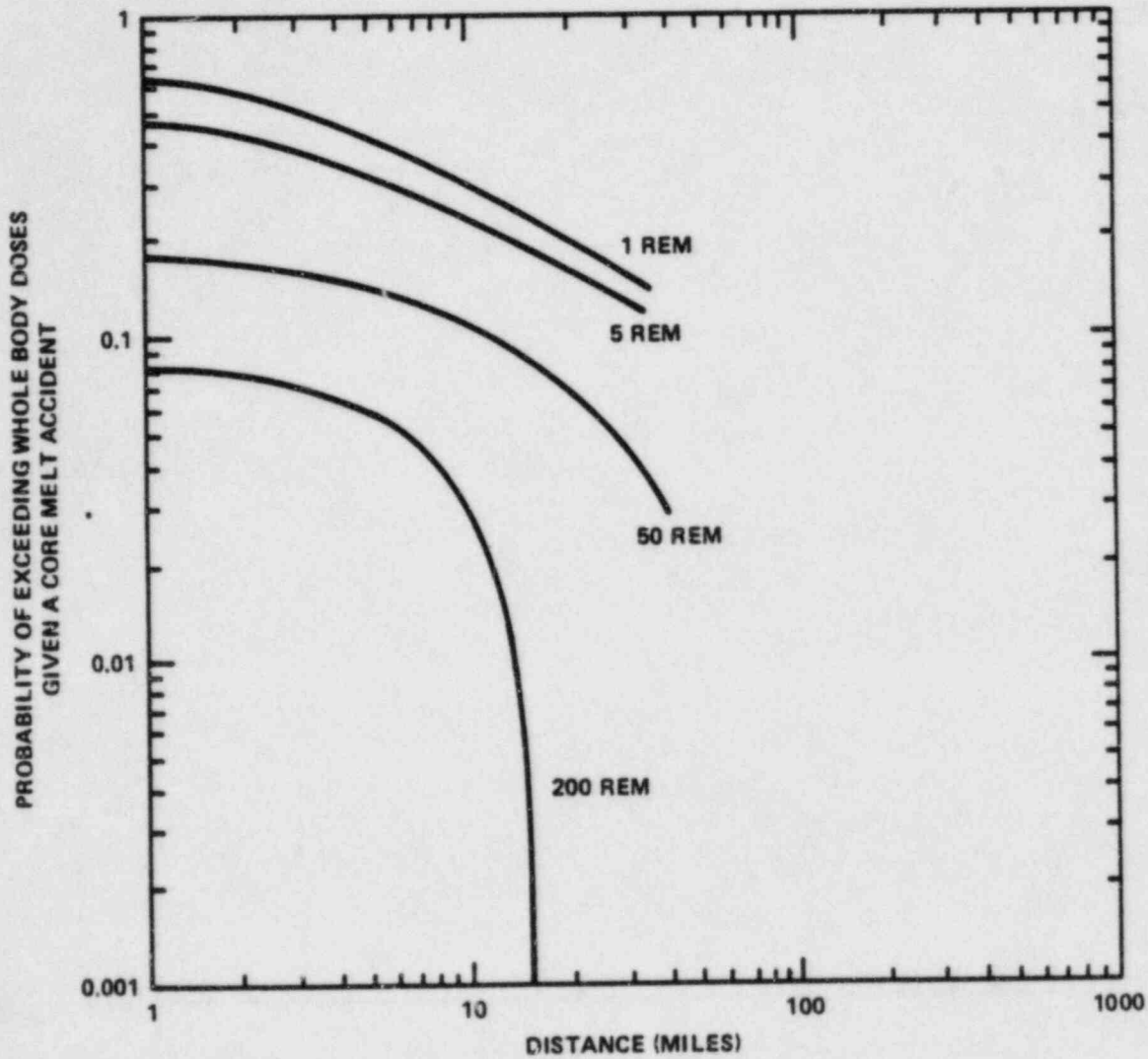
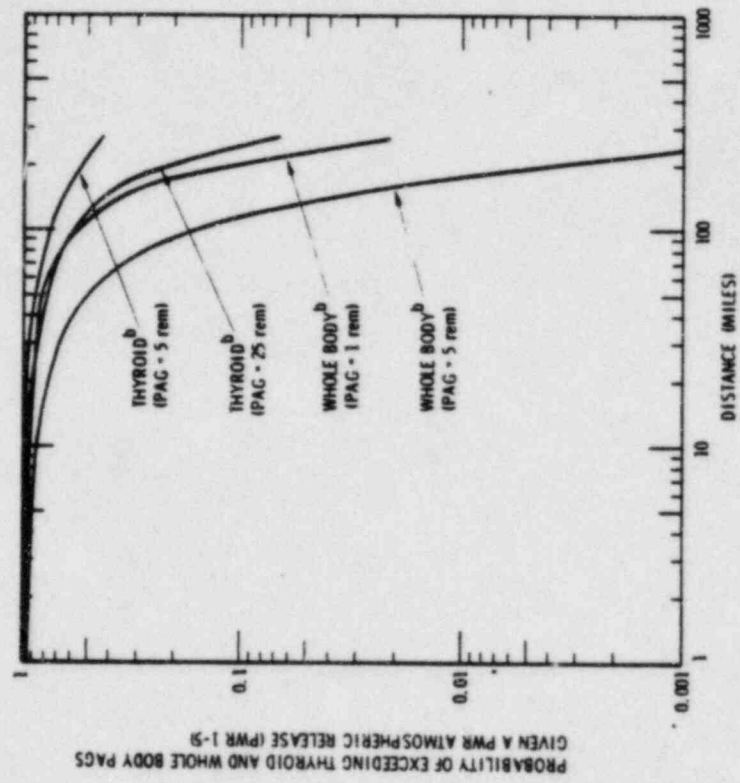


Figure I-11. Conditional Probability of Exceeding Whole Body Dose Versus Distance. Probabilities are Conditional on a Core Melt Accident (5×10^{-5}).

Whole body dose calculated includes: external dose to the whole body due to the passing cloud, exposure to radionuclides on ground, and the dose to the whole body from inhaled radionuclides.

Dose calculations assumed no protective actions taken, and straight line plume trajectory.



PROBABILITY OF EXCEEDING THYROID AND WHOLE BODY PAGS GIVEN A PWR ATMOSPHERIC RELEASE (PWR 1-5)

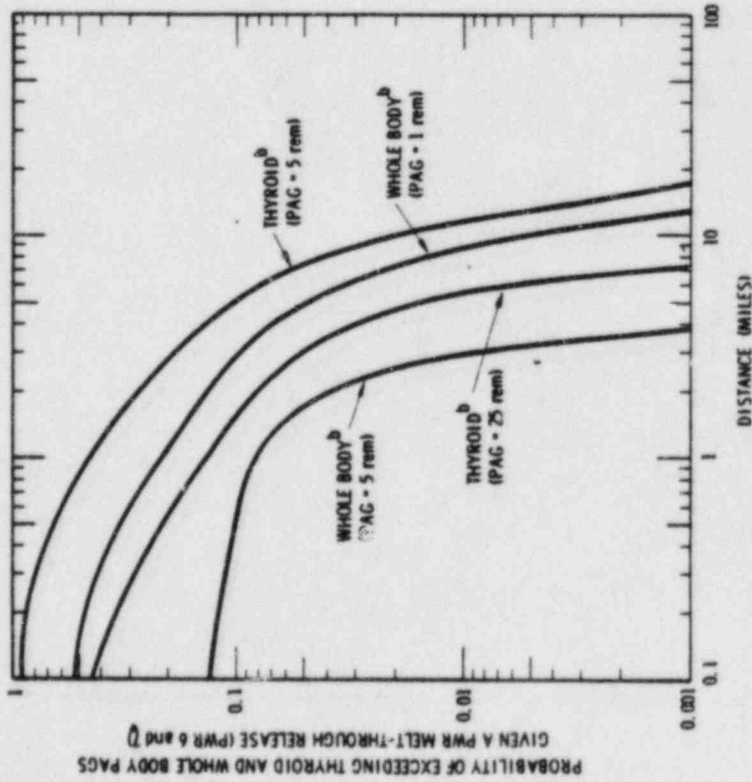


Figure 1-15. Conditional Probability of Exceeding Thyroid and Whole Body Protective Action Guides (PAGs) Versus Distance for an Individual Located Outdoors.^a Probabilities are Conditional on a PWR "Melt-Through" Release (PWR 6 and 7).

^aShielding factor for airborne radionuclides = 1.0. Shielding factor for radionuclides deposited on ground = 0.7. 1-day exposure to radionuclides on ground.

^bWhole body (thyroid) dose calculated includes: external dose to the whole body (thyroid) due to the passing cloud and 1-day exposure to radionuclides on ground, and the dose to the whole body (thyroid) from inhaled radionuclides within 1 year.

Figure 1-16. Conditional Probability of Exceeding Thyroid and Whole Body Protective Action Guides (PAGs) Versus Distance for an Individual Located Outdoors.^a Probabilities are Conditional on a PWR "Atmospheric" Release (PWR 1-5).

^aShielding factor for airborne radionuclides = 1.7. Shielding factor for radionuclides deposited on ground = 0.7. 1-day exposure to radionuclides on ground.

^bWhole body (thyroid) dose calculated includes: external dose to the whole body (thyroid) due to the passing cloud and 1-day exposure to radionuclides on ground, and the dose to the whole body (thyroid) from inhaled radionuclides within 1 year.