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Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

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Washington D.C. 20472

FOREWORD

The purpose of this guidance and upgraded acceptance criteria is to provide a basis for NRC licensees, State and local governments to develop radiological emergency plans and improve emergency preparedness. The guidance is the product of the joint FEMA/NRC Steering Committee established to coordinate the agencies' work in emergency preparedness associated with nuclear power plants. The interim version of this document was published in January 1980, and subjected to public comment under Federal Register Notice 44 FR 9768 of February 13, 1980. Based upon the comments received, meetings with the Interorganizational Advisory Committee (made up of State and local representatives) and later at a September 1980 Workshop sponsored by FEMA for State officials, the final version was prepared for publication. The principal changes in the document consist of clarification of intent and accommodation of many of the unique situations which arise in State/local/utility interfaces. Therefore, plans prepared using the interim guidance should not require substantial revision. This document is consistent with NRC and FEMA regulations and supersedes other previous guidance and criteria published by FEMA and NRC on this subject. It will be used by reviewers in determining the adequacy of State, local and nuclear power plant licensee emergency plans and preparedness.

October 1980

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FEMA/NRC STEERING COMMITTEE

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The Steering Committee acknowledges with thanks the contributions of the Interorganizational Advisory Committee on Radiological Emergency Planning and Preparedness (IOAC) of the Conference of (State) Radiation Control Program Directors. Members of this Committee also include representatives of the National Emergency Management Association and the U. S. Civil Defense Council. The Steering Committee also acknowledges with thanks the contributions made by other Federal agencies, State and local governmental organizations, members of the public, and the nuclear industry.

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U. S. Nuclear Regulatory Commission - Federal Emergency Management Agency

CRITERIA FOR PREPARATION AND EVALUATION OF RADIOLOGICAL EMERGENCY RESPONSE PLANS AND PREPAREDNESS IN SUPPORT OF NUCLEAR POWER PLANTS

I. INTRODUCTION

A. Purpose

The purpose of this document is to provide a common reference and guidance source for:

1. State and local governments and nuclear facility operators in the develoment of radiological emergency response plans and preparedness in support of nuclear power plants.

2. Federal Emergency Management Agency (FEMA), Nuclear Regulatory Commission (NRC), and other Federal agency personnel engaged in the review of State, local government and licensee plans and preparedness.

3. The Federal Emergency Management Agency, the Nuclear Regulatory Commission and other Federal agencies in the development of the National Radiological Emergency Preparedness Plan.

B. Background

The NRC and FEMA staff have prepared this document as part of their responsibilities under the Atomic Energy Act, as amended, and the President's Statement of December 7, 1979, with the accompanying

B. Background (continued)

Fact Sheet. These responsibilities include development and promulgation of guidance to nuclear facility operators, States and local governments, in cooperation with other Federal agencies, for the preparation of radiological emergency response plans and assessing the adequacy of such plans.[1/]

This guidance is classified as final guidance. The interim version of this guidance, published in January, 1980, was commented upon by interested parties during the formal public comment period solicited by the Federal Register Notice 44 FR 9768 of February 13, 1980. Additionally, comments received on "Draft Emergency Action Level Guidelines", (September 1979), NUREG-0610 solicited by Federal Register Notice 44 FR 55446 of September 26, 1979 were also considered in the revision to Appendix 1 of the criteria document. A separate document has been prepared by NRC and FEMA which lists the comments received and which indicates the NRC and FEMA response to these comments. FEMA, NRC, and other involved Federal agencies intend to use the guidance contained in this document in their individual and joint reviews of State and local government radiological emergency response plans and preparedness, and of the plans and preparedness of NRC facility licensees. The NRC Final Rule on Emergency Planning

1/ In light of the President's Statement of December 7, 1979, the agency responsibilities assigned on January 24, 1973 by the Office of Emergency Preparedness, (and later reassigned on December 24, 1975 by the Federal Preparedness Agency/GSA) are being revised and will be promulgated in the near future by FEMA.

B. Background (continued)

(45 FR 55402) of August 19, 1980 has an effective date of November 3, 1980. This document is supportive of the NRC Final Rule and is referenced therein. This document is also supportive of the proposed FEMA Rule concerning the review and approval of State and local radiological emergency plans and preparedness, which at this writing is in the process of revision as a result of comments received during the public comment period.

NRC has now established a schedule for the implementation of the "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies" set forth in Table B-1, (see II.B.5), and for Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants" (see Annex to Appendix 2).

C. Scope

This document is concerned with accidents at fixed commercial nuclear power reactors which might have impact on public health and safety.[2/]

2/ Many of the planning elements contained in this guide may be useful for planners in the vicinity of test and research reactors, fuel processing plants, or other facilities using or producing large quantities of radioactive material. None of the numerical values in this document need be used for planning at such facilities. Similarly, while some planning elements presented here may apply to transportation accidents involving radioactive material, such accidents have unique characteristics which warrant separate guidance. These accidents are not specifically covered in this document and will be the subject of future guidance.

C. Scope (continued)

The guidance intended for use by NRC licensees and operators of commercial nuclear power reactors is based upon several existing documents familiar to such operators: first, NRC Regulatory Guide 1.101 (March 1977); second, NRC's letters of October 10, 1979 and November 29, 1979 to its power reactor licensees; third, NRC's final rule including the revised Appendix E to 10 CFR Part 50 and fourth, NRC's NUREG-0610, "Draft Emergency Action Level Guidelines for Nuclear Power Plants," September 1979, the revised version of which is Appendix 1 to this document.

The guidance intended for use by State and local governments has been drawn in large part from existing documents already familiar to planners: first, the NRC Guide and Checklist for the Development and Evaluation of State and Local Government Radiological Emergency Response Plans in Support of Fixed Nuclear Facilities, NUREG 75/111 (1974) and its Supplement No. 1 (March 1977); and second, guidance on the planning basis contained in the Report of the NRC/EPA Task Force on Emergency Planning, NUREG-0396, EPA 520/1-78-016 (December 1978). The Guide and Checklist, its supplement and the NRC/EPA Task Force Report, were subjected to very broad State and local government reviews prior to publication, in both draft and final form. NRC specifically endorsed the guidance contained in each of these documents. NRC's formal policy statement on the Emergency

C. Scope (continued)

Planning Zone concept was published in the Federal Register of October 23, 1979, (44 FR 61123). EPA's endorsement of the Emergency Planning Zone concept was published in the Federal Register of January 15, 1980 (45 FR 2893). This document supersedes NUREG 75/111 and Regulatory Guide 1.101. As in the January, 1980 version of this document, FEMA formally endorses this guidance concerning Emergency Planning Zones and urges its immediate use by States and local governments and by NRC licensed nuclear power plant operators. Also included in this document are some obvious lessons learned during and after the accident at Three Mile Island. The criteria put added emphasis on the following elements: Notification Methods and Procedures, Emergency Communications, Public Education and Information, Emergency Facilities and Equipment, Accident Assessment, and Exercises and Drills. FEMA and NRC regard all of the planning standards identified and contained herein as essential for an adequate radiological emergency plan.

D. Planning Basis

1. Background

The NRC/EPA Task Force Report on Emergency Planning, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants, NUREG-0396, EPA 520/1-78-016" provides a planning basis

D. Planning Basis (continued)

for offsite emergency preparedness efforts considered necessary and prudent for large power reactor facilities. The NRC's policy statement of October 23, 1979 (44 FR 61123), directs the NRC staff to incorporate the guidance in the report into emergency preparedness documents. Additionally, the guidance in the NRC/EPA Task Force Report on Emergency Planning is now reflected in the NRC Final Rule on Emergency Planning. FEMA has also concluded that the guidance in NUREG-0396 should be used as the planning basis for emergency preparedness around nuclear power facilities.

The overall objective of emergency response plans is to provide dose savings (and in some cases immediate life saving) for a spectrum of accidents that could produce offsite doses in excess of Protective Action Guides (PAGs).[3/,4/] No single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Further, the range of possible selection for a planning basis is very large, starting with a zero point of requiring no planning at all because significant offsite radiological accident consequences are unlikely to occur,

3/ Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA-520/1-75-001, September 1975, U. S. Environmental Protection Agency.

4/ Accidental Radioactive Contamination of Human Food and Animal Feeds, U. S. Department of Health, Education and Welfare (now U. S. Department of Health and Human Services), 43 FR 58790 of December 15, 1978.

D. Planning Basis (continued)

to planning for the worst possible accident, regardless of its extremely low likelihood. The NRC/EPA Task Force did not attempt to define a single accident sequence or even a limited number of sequences. Rather, it identified the bounds of the parameters for which planning is recommended, based upon knowledge of the potential consequences, timing, and release characteristics of a spectrum of accidents. Although the selected planning basis is independent of specific accident sequences, a number of accident descriptions were considered in the development of the guidance, including the core melt accident release categories of the Reactor Safety Study.

The most important guidance in the Report for planning officials is the definition of the area over which planning for predetermined actions should be carried out.

Information on the time frames of accidents is also important. The time between the initial recognition at the nuclear facility that a serious accident is in progress and the beginning of the radioactive release to the surrounding environment is critical in determining the type of protective actions which are feasible. Knowledge of the potential duration of release and the time

D. Planning Basis (continued)

available before exposures are expected several miles offsite is important in determining what specific instructions can be given to the public.

A knowledge of kinds of radioactive materials potentially released is necessary to decide the characteristics of monitoring instrumentation, to develop tools for estimating projected doses, and to identify the most important exposure pathways.

The need for specification of areas for the major exposure pathways is evident. The location of the population for whom protective measures may be needed, responsible authorities who would carry out protective actions and the means of communication to these authorities and to the population are all dependent on the characteristics of the planning areas. Emergency preparedness should be related to two predominant exposure pathways. They are:

a. Plume exposure pathway -- The principal exposure sources from this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited material; and (b) inhalation exposure from the passing radioactive plume. The duration of the release leading to potential exposure could range from one-half hour to

D. Planning Basis (continued)

days. For the plume exposure pathway, shelter and/or evacuation would likely be the principal immediate protective actions to be recommended for the general public. When evacuation is chosen as the preferred protective measure, initial evacuation of a 360° area around the facility is desirable out to a distance of about two to five miles although initial efforts would, of course, be in the general downwind direction. This concept is indicated in Figure 1. The precise boundaries of such evacuations and sectors evacuated at extended downwind distances would be largely determined by political boundaries and would not fit the precise pattern of Figure 1. The possible administration of the thyroid blocking agent, potassium iodide, should also be considered.[5/] The U. S. Department of Health and Human Services (DHHS) is preparing guidance on the potassium iodide issue which will be considered by NRC and FEMA. The ability to best reduce potential exposure under the specific conditions during the course of an accident should determine the appropriate response.

b. Ingestion exposure pathway -- The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk, fresh vegetables or aquatic foodstuffs.

5/ Potassium Iodide as a Thyroid-Blocking Agent in a Radiation Emergency, U. S. Department of Health, Education and Welfare (now U. S. Department of Health and Human Services), 43 FR 58798 of December 15, 1978.

D. Planning Basis (continued)

The duration of potential exposure could range in length from hours to months. For the ingestion exposure pathway, the planning effort involves the identification of major exposure pathways from contaminated food and water and the associated control and interdiction points and methods. The ingestion pathway exposures in general would represent a longer term problem, although some early protective actions to minimize subsequent contamination of milk or other supplies should be initiated (e.g., remove cows from pasture and put them on stored feed).

Separate guidance is provided for these two exposure pathways, although emergency plans for a particular site will include elements common to assessing or taking protective actions for both pathways.

2. Emergency Planning Zones

With regard to the area over which planning efforts should be carried out, "Emergency Planning Zones" (EPZs) about each nuclear facility must be defined both for the short term "plume exposure pathway" and for the longer term "ingestion exposure pathways." The Emergency Planning Zone concept is illustrated in Figure 1. EPZs are defined as the areas for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The criteria in NUREG-0396 are to be applied by the response organizations in these

D. Planning Basis (continued)

zones as applicable. The NRC/EPA Task Force Report on Emergency Planning (NUREG-0396, EPA 520/1-78-016) anticipates that State, rather than local, response organizations will be principally responsible for the planning associated with the ingestion exposure pathway.

The choice of the size of the Emergency Planning Zones represents a judgment on the extent of detailed planning which must be performed to assure an adequate response base. In a particular emergency, protective actions might well be restricted to a small part of the planning zones. On the other hand, for the worst possible accidents, protective actions would need to be taken outside the planning zones.

The Task Force selected a radius of about 10 miles for the plume exposure pathway and a radius of about 50 miles for the ingestion exposure pathway, as shown in Figure 1 and in Table 1.[6/] Although the radius for the EPZ implies a circular area, the actual shape would depend upon the characteristics of a particular site.

6/ These radii are applicable to light water nuclear power plants, rated at 250 MWt or greater. The FEMA/NRC Steering Committee has concluded that small water cooled power reactors (less than 250 MWt) and the Fort St. Vrain gas cooled reactor may use a plume exposure emergency planning zone of about 5 miles in radius and an ingestion pathway emergency planning zone of about 30 miles in radius. In addition, the requirements for the alerting and notification system (Appendix 3) will be scaled on a case-by-case basis. This conclusion is based on the lower potential hazard from these facilities (lower radionuclide inventory and longer times to release significant amounts of activity for many accident scenarios). The radionuclides considered in planning should be the same as recommended in NUREG-0396/EPA-520/1-78-016.

D. Planning Basis (continued)

The size (about 10 miles radius) of the plume exposure EPZ was based primarily on the following considerations:

a. projected doses from the traditional design basis accidents would not exceed Protective Action Guide levels outside the zone;

b. projected doses from most core melt sequences would not exceed Protective Action Guide levels outside the zone;

c. for the worst core melt sequences, immediate life threatening doses would generally not occur outside the zone;

d. detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

The NRC/EPA Task Force concluded that it would be unlikely that any protective actions for the plume exposure pathway would be required beyond the plume exposure EPZ. Also, the plume exposure EPZ is of sufficient size for actions within this zone to provide for substantial reduction in early severe health effects (injuries or deaths) in the event of a worst case core melt accident.

The size of the ingestion exposure EPZ (about 50 miles in radius, which also includes the 10-mile radius plume exposure EPZ) was selected because:

D. Planning Basis (continued)

a. the downwind range within which contamination will generally not exceed the Protective Action Guides is limited to about 50 miles from a power plant because of wind shifts during the release and travel periods;

b. there may be conversion of atmospheric iodine (i.e., iodine suspended in the atmosphere for long time periods) to chemical forms which do not readily enter the ingestion pathway;

c. much of any particulate material in a radioactive plume would have been deposited on the ground within about 50 miles from the facility; and

d. the likelihood of exceeding ingestion pathway protective action guide levels at 50 miles is comparable to the likelihood of exceeding plume exposure pathway protective action guide levels at 10 miles.

3. Time Factors Associated with Releases

The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours. The subsequent time period over which radioactive material may be expected to be released is of the order of one-half hour (short-term release) to a few days (continuous release). Table 2 summarizes the guidance on the time of the release, which

D. Planning Basis (continued)

has been used in developing the criteria for notification capabilities in Part II. (Other reasons for requiring prompt notification capabilities include faster moderate releases for which protective actions are desirable and the need for substantial lead times to carry out certain protective measures, such as evacuation, when this is indicated by plant conditions.)

4. Radiological Characteristics of Releases

Planners will need information on the characteristics of potential radioactivity releases in order to specify the characteristics of monitoring instrumentation,[7/] develop decisional aids to estimate projected doses, and identify critical exposure modes.

For atmospheric releases from nuclear power facilities, three dominant exposure modes have been identified: (a) whole body (bone marrow) exposure from external gamma radiation and from ingestion of radioactive material; (b) thyroid exposure from inhalation or ingestion of radioiodines; and (c) exposure of other organs (e.g., lung) from inhalation or ingestion of radioactive materials. Any of these exposure modes could dominate (i.e., result in the largest exposures) depending upon the relative quantities of various isotopes released.

7/ An interagency Task Force on Emergency Instrumentation (offsite) is now preparing guidance on offsite radiation measurement systems, accident assessment techniques, and the type and quantity of instruments needed for the various exposure pathways. Federal agencies represented on the Instrumentation Task Force include FEMA, NRC, EPA, HEW, and DOE.

D. Planning Basis (continued)

Radioactive materials produced in the operation of nuclear reactors include fission products, transuranics and activation products generated by neutron exposure of the structural and other materials within and immediately around the reactor core. The fission products consist of a very large number of different kinds of isotopes (nuclides), almost all of which are initially radioactive. The amounts of these fission products and their potential for escape from their normal places of confinement represent the dominant potential for consequences to the public. Radioactive fission products exist in a variety of physical and chemical forms of varied volatility. Virtually all activation products and transuranics exist as non-volatile solids. The characteristics of these materials show quite clearly that the potential for releases to the environment decreases dramatically in this order: (a) gaseous materials; (b) volatile solids, and (c) non-volatile solids. For this reason, guidance for source terms representing hypothetical fission product activity within a nuclear power plant containment structure emphasizes the development of plans relating to the release of noble gases and/or volatiles such as iodine. Consideration of particulate materials, however, should not be completely neglected. For example, capability to determine the presence or absence of key particulate radionuclides will be needed to identify requirements for additional resources. Table 3 provides a list of dominant radionuclides for each exposure pathway.

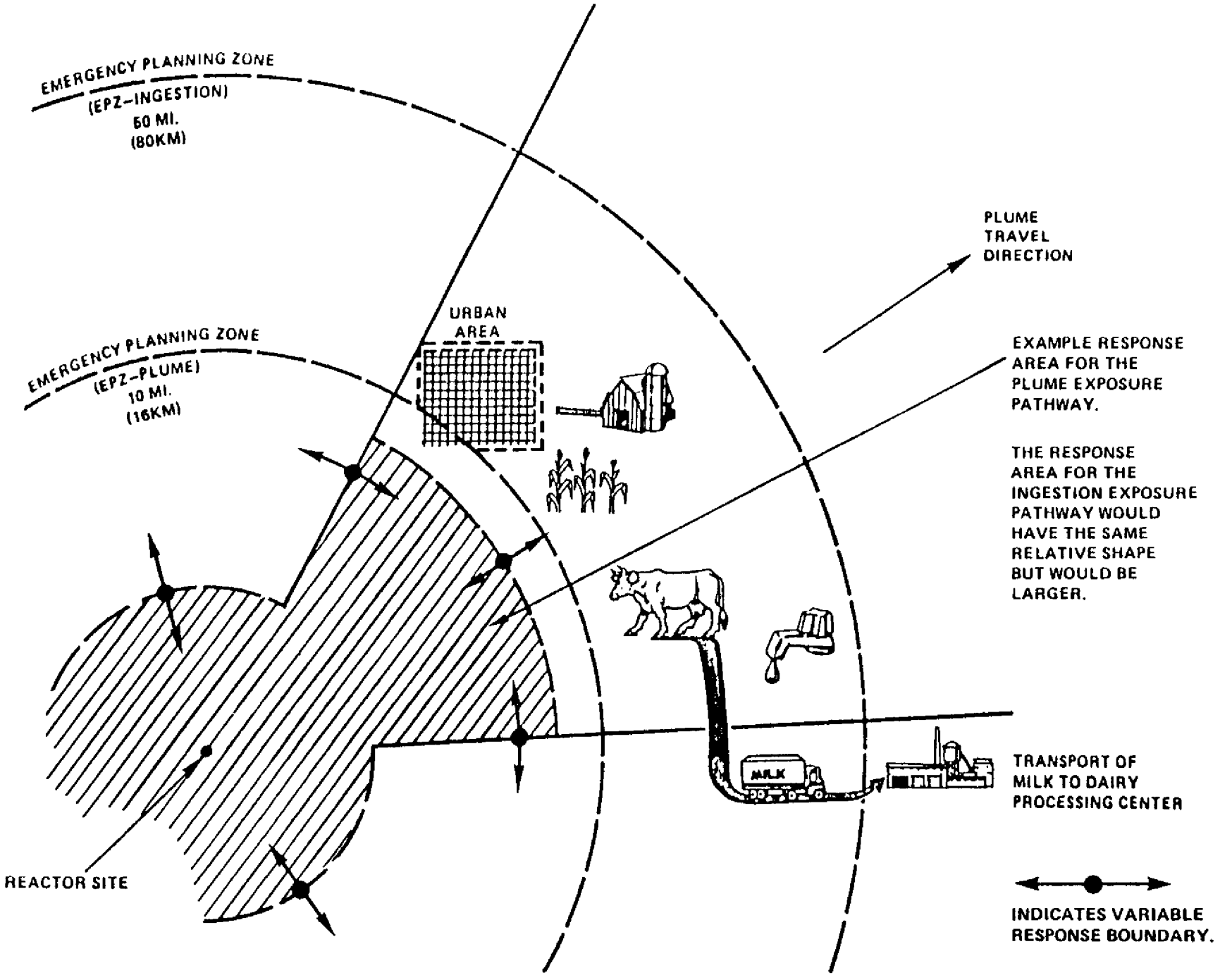

Figure 1 Concept of Emergency Planning Zones

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 emergency response plans regardless of their location.

TABLE 2

GUIDANCE ON INITIATION AND DURATION OF RELEASE

Time from the initiating event to start of atmospheric release	0.5 hours to one day
Time period over which radioactive material may be continuously released	0.5 hours to several days
Time at which major portion of release may occur	0.5 hours to 1 day after start of release
Travel time for release to exposure point (time after release)	5 miles -- 0.5 to 2 hours 10 miles - 1 to 4 hours

Table 3

RADIONUCLIDES WITH SIGNIFICANT CONTRIBUTION TO DOMINANT EXPOSURE MODES

Radionuclides with Significant Contribution to Thyroid Exposure		Radionuclides with Significant Contribution to Whole Body Exposure		Radionuclides with Significant Contribution to Lung Exposure* (Lung only controlling when thyroid dose is reduced by iodine blocking or there is a long delay prior to releases).	
Radionuclide	Half Life (days)	Radionuclide	Half Life (days)	Radionuclide	Half Life (days)
I-131	8.05	I-131	8.05	I-131	8.05
I-132	0.0958	Te-132	3.25	I-132	0.0958
I-133	0.875	Xe-133	5.28	I-133	0.875
I-134	0.0366	I-133	0.875	I-134	0.0366
I-135	0.280	Xe-135	0.384	I-135	0.280
Te-132	3.25	I-135	0.280	Cs-134	750
		Cs-134	750	Kr-88	0.117
		Kr-88	0.117	Cs-137	11,000
		Cs-137	11,000	Ru-106	365
				Te-132	3.25
				Ce-144	284

*Derived from the more probable Reactor Safety Study core melt categories and from postulated design basis accident releases.

E. Contiguous-Jurisdiction Governmental Emergency Planning

The concept of Emergency Planning Zones (EPZs) necessarily implies mutually supportive emergency planning and preparedness arrangements by several levels of government: Federal, State and local governments, including counties, townships and even villages. For the purposes of this document, it is not necessary to outline the varied governmental and jurisdictional situations that can and do exist throughout the United States, nor is it necessary to describe in detail the varied emergency planning and preparedness mechanisms that can be developed among these governmental entities.

It would be useful to offer several generally representative governmental-jurisdictional situations relating to the Emergency Planning Zone concept. There are obvious permutations and combinations of these situations, but these are examples of what is desirable in terms of cross-jurisdictional emergency planning. The important point is that integrated emergency planning will benefit all of the communities within the Emergency Planning Zones.

Example No. 1 Local Government Jurisdictions Within the Plume Exposure Pathway (10 miles) Emergency Planning Zone

A variety of local government jurisdictions may be found within the 10-mile plume exposure pathway Emergency Planning Zone (EPZ). In some situations several county-level governments and municipal or township

E. Contiguous-Jurisdiction Governmental Emergency Planning (continued)

governments will have jurisdictional authority within the EPZ and these separate governmental entities will control their own emergency response organizations and resources. In multi-jurisdictional situations like this, an integrated multi-county level emergency response plan is preferable. The response organizations and resources of municipal or township governments can be integrated -- by mutual agreement -- into the overall multi-county emergency response plan.

In other situations, a municipal or township government might have a larger emergency response organization than its parent county. Under these circumstances, the municipality or township government might be mutually designated the "lead" emergency planning and response organization, incorporating the resources available to the county in the overall emergency plan.

Local government plans and response mechanisms are particularly important for the 10-mile EPZ. This is because relatively shorter times may be available to implement immediate protective measures associated with the plume exposure pathway (sheltering, thyroid blocking, evacuation), as opposed to the generally

E. Contiguous-Jurisdiction Governmental Emergency Planning (continued)

longer times available for implementing protective measures for the ingestion exposure pathway. State government resources may be too far away from the involved local jurisdictions to be of much immediate help for a plume exposure problem in the early hours of an accident. Local government emergency plans should be made a part of the State emergency plan.

Example No. 2 Local Government Within the Plume Exposure Pathway (10-mile) Emergency Planning Zone Whose Boundaries Are Also a State Boundary

This situation will normally be found where the nuclear facility is situated on a river which forms a boundary between States and local governments. In this case, the fact that a State boundary is now involved within the EPZ makes it necessary to have contiguous State emergency planning within the EPZ, involving cooperative planning at a higher level of government. This should not preclude cooperative planning between adjacent counties, municipalities or townships located in different States.

Example No. 3 State vs. Local Government Emergency Planning Within the Ingestion Exposure Pathway (50-mile) Emergency Planning Zone

The 50-mile EPZ for the ingestion (agricultural products consumption) exposure pathway may encompass one or

E. Contiguous-Jurisdiction Governmental Emergency Planning (continued)

several States, as well as many local government, municipal or township jurisdictions. Planning for the implementing of protective measures associated with the ingestion exposure pathway is best handled by the State governments, with support from local governments, particularly at the county level, with backup from the Federal Government. This is because the involved areas could be quite large, crossing many jurisdictional boundaries and involving the use of relatively sophisticated radiological analysis equipment generally found only at State and Federal Government levels. Further, the time available to implement protective measures associated with the ingestion exposure pathway is generally greater than the time available to implement protective measures associated with the plume exposure pathway. The State, with support from the Federal Government, should be able to respond quickly enough to implement any desirable protective measures for the ingestion exposure pathway.

E. Contiguous-Jurisdiction Governmental Emergency Planning (continued)

Example No. 4 State and Local Government Jurisdictions Near An International Boundary

At present, the only U. S. situations involving emergency planning considerations across an international boundary involve Canada. Both the U. S. and Canada have nuclear facilities near their common borders. Mutual emergency planning with Canada is desirable and the NRC and FEMA are pursuing this matter through appropriate channels.

F. Integrated Guidance and Criteria

NRC and FEMA have deliberately consolidated in this document guidance intended for use by State and local governments and that intended to guide the emergency planning and preparedness activities of NRC licensees because of a shared belief that an integrated approach to the development of response plans to radiological hazards is most likely to provide the best protection of the health and safety of the public. NRC and FEMA recognize that plans of licensees, State and local governments should not be developed in a vacuum or in isolation from one another. Should an accident occur, the public can be best protected when the response by all parties is fully integrated. Each party involved must have a clear understanding of what the overall level of preparedness must be and what role it will play in the event of

F. Integrated Guidance and Criteria (continued)

a nuclear accident. This understanding can be achieved best if there is an integrated development and evaluation of plans. There must also be an acceptance by the parties and a clear recognition of the responsibility they share for safeguarding public health and safety.

Although the guidance indicates that the criteria are appliable to one or more specific organizations, the intention throughout has been to provide for an adequate state of emergency preparedness around the facility. If weaknesses in one organization are identified, but compensated for in another organization, the reviewers can still find that an adequate state of emergency preparedness exists.

This consolidated guidance should also allow the parties to recognize and understand each other's capabilities, responsibilities and obligations. The guidance makes clear which party has responsibility for which essential element. In many cases, the NRC licensee, the State and the local governments are all called upon to produce material for the same essential element. The consolidated guidance will allow reviewers to do a more thorough analysis and to probe the relationship of one plan with another. This document has been designed to assist reviewers in their work.

G. Funding and Technical Assistance

While funding and technical assistance are not addressed in this document, it is a subject which must be discussed between the individual nuclear utilities and the involved State and local governments who must prepare emergency plans to support the nuclear facilities. The nuclear utility may have an incentive based on its own self interest as well as its responsibility to provide electric power, to assist in providing manpower, items of equipment, or other resources that the State and local governments may need but are themselves unable to provide. The Federal Regional Assistance Committees, now under the chairmanship of FEMA, will play an increasing role in the development of these plans. Training programs for State and local officials formerly sponsored by NRC and now sponsored by FEMA will continue without interruption.

H. Nuclear Facility Licensee Response Organization

NRC and FEMA agree that the licensees of nuclear facilities have a primary responsibility for planning and implementing emergency measures within their site boundaries. These emergency measures include corrective actions at the site and protective measures and aid for persons onsite. Since facility licensees cannot do this alone, it is a necessary part of the facility emergency planning to make advance arrangements with State and local organizations for special emergency assistance such as ambulance, medical, hospital, fire and police services.

H. Nuclear Facility Licensee Response Organization (continued)

An additional emergency activity for which facility licensees have primary responsibility is accident assessment. This includes prompt action to evaluate any potential risk to the public health and safety, both onsite and offsite, and timely recommendations to State and local governments concerning protective measures. In some situations, there could be a need for protective measures within short time intervals -- a half-hour or perhaps even less -- after determination that a hazard exists. For this reason, licensee emergency planners must recognize the importance of prompt accident assessment at the source. The criteria in this document reflect the identification and classification of accidents and the notification of offsite agencies by the facility licensee consistent with NRC rules as set forth in Appendix 1.

Emphasis on inplant identification of potential hazards is a change from the previous emphasis in many licensee response plans on measurement of actual levels of radioactivity before notifications of offsite organizations are made and actions to protect the public recommended.

Because of the potential need to take immediate action offsite in the event of a significant radiological accident, notifications to appropriate offsite response organizations (State or States and local government organizations) must go directly from the facility licensee. The response organizations which receive these notifications should

H. Nuclear Facility Licensee Response Organization (continued)

have the authority and capability to take immediate predetermined actions based on recommendations from the facility licensee. These actions could include prompt notification of the public in the offsite area, followed by advisories to the public in certain areas to stay inside (take shelter) or, if appropriate, evacuate to predetermined relocation or host areas. State agencies, which are likely to have greater radioprotective resources than local agencies, would bring their resources to bear and make decisions with regard to whether the recommended protective measures are adequate.

In the longer time frame, substantial corporate and private sector organization resources should also supplement the initial response of the nuclear facility licensee. A facility licensee organization is therefore required to have a "recovery organization" similar to the one recommended by the Atomic Industrial Forum, which can use and absorb Federal and private support which in all likelihood will be available following any radiological accident.

I. Federal Response

The Department of Energy's current Radiological Assistance Program (RAP), the Federal Interagency Radiological Assistance Plan (IRAP), other radiological emergency assistance plans, and DOE's National Laboratories capabilities as well as those of the U. S. Environmental Protection

I. Federal Response (continued)

Agency and the Department of Health and Human Services and other Federal capability, are being incorporated in a Federal Radiological Monitoring and Assessment Plan. Response plans should contain provisions for integration of this important Federal assistance.

The facility licensee must make provisions for an NRC presence onsite following an accident and for supplying information to and receiving advisories from NRC regional or headquarters operations centers. In addition, the plan should provide for communication between State authorities, NRC and FEMA.

The interrelationships of the Federal agencies and their roles during a radiological emergency will be defined in a National Radiological Emergency Preparedness Plan now being developed by FEMA, and in an NRC agency plan. These plans will be compatible with State, local and licensee plans developed using the "Planning Standards" of this guidance and criteria document.

J. Form and Content of Plans

The criteria in this document are organized under the topic headings of NUREG-75/111 (the principal previous NRC guidance to State and local response organizations) wherever possible. That format may be followed by planners.

J. Form and Content of Plans (continued)

The guidance does not specify a single format for emergency response plans but it is important that the means by which all criteria are met be clearly set forth in the plans. All plans should contain a table of contents, and a cross-reference to the criteria contained in this document is also needed. Applicable supporting and reference documents and tables may be incorporated by reference, and appendices should be used whenever necessary. The plans should be kept as concise as possible. The average plan should consist of perhaps hundreds of pages, not thousands. The plans should make clear what is to be done in an emergency, how it is to be done and by whom.

In addition to addressing the substance of all criteria, the plans must, of course, define the facility or facilities and area to which the plans apply. The plans should include definitions of any terms that are unique to the facility under consideration or are given connotations that differ from normally accepted usage.

Findings by FEMA and NRC with regard to the adequacy of emergency preparedness will be related to the capability of the facility licensee, State and local response organizations, to respond in a coordinated manner to emergencies at or related to particular nuclear facilities.

J. Form and Content of Plans (continued)

A continued state of readiness must be maintained by all organizations. Periodic reviews by FEMA and NRC will verify the capability of response organizations to implement various aspects of the response plans. This will include observation of exercises and certain drills by NRC, FEMA and other Federal agencies participating in the Regional Assistance Committees.