

NUREG-0654
FEMA-REP-1
Rev. 1
Supp. 1

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

Criteria for Utility Offsite Planning and Preparedness

Final Report

E.M. Podolak, Jr./NRC
M.E. Sanders, V.L. Wingert, R.W. Donovan/FEMA

U.S. Nuclear Regulatory
Commission



Federal Emergency Management
Agency



8810030156 880930
PDR NUREG
0654 R PDR

NOTICE

Availability of Reference Materials Cited in NRC Publications

Most documents cited in NRC publications will be available from one of the following sources:

1. The NRC Public Document Room, 1717 H Street, N.W.
Washington, DC 20555
2. The Superintendent of Documents, U.S. Government Printing Office, Post Office Box 37082,
Washington, DC 20013-7082
3. The National Technical Information Service, Springfield, VA 22161

Although the listing that follows represents the majority of documents cited in NRC publications, it is not intended to be exhaustive.

Referenced documents available for inspection and copying for a fee from the NRC Public Document Room include NRC correspondence and internal NRC memoranda; NRC Office of Inspection and Enforcement bulletins, circulars, information notices, inspection and investigation notices; Licensee Event Reports; vendor reports and correspondence; Commission papers; and applicant and licensee documents and correspondence.

The following documents in the NUREG series are available for purchase from the GPO Sales Program: formal NRC staff and contractor reports, NRC-sponsored conference proceedings, and NRC booklets and brochures. Also available are Regulatory Guides, NRC regulations in the *Code of Federal Regulations*, and *Nuclear Regulatory Commission Issuances*.

Documents available from the National Technical Information Service include NUREG series reports and technical reports prepared by other federal agencies and reports prepared by the Atomic Energy Commission, forerunner agency to the Nuclear Regulatory Commission.

Documents available from public and special technical libraries include all open literature items, such as books, journal and periodical articles, and transactions. *Federal Register* notices, federal and state legislation, and congressional reports can usually be obtained from these libraries.

Documents such as theses, dissertations, foreign reports and translations, and non-NRC conference proceedings are available for purchase from the organization sponsoring the publication cited.

Single copies of NRC draft reports are available free, to the extent of supply, upon written request to the Division of Information Support Services, Distribution Section, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Copies of industry codes and standards used in a substantive manner in the NRC regulatory process are maintained at the NRC Library, 7920 Norfolk Avenue, Bethesda, Maryland, and are available there for reference use by the public. Codes and standards are usually copyrighted and may be purchased from the originating organization or, if they are American National Standards, from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

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

Criteria for Utility Offsite Planning and Preparedness

Final Report

Manuscript Completed: August 1988
Date Published: September 1988

E.M. Podolak, Jr./NRC
M.E. Sanders, V.L. Wingert, R.W. Donovan/FEMA

U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Federal Emergency Management Agency
Washington D.C. 20472



ABSTRACT

The Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency (FEMA) have added a supplement to NUREG-0654/FEMA-REP-1, Rev. 1 that provides guidance for the development, review, and evaluation of utility offsite radiological emergency response planning and preparedness for those situations in which State and/or local governments decline to participate in emergency planning. While this guidance primarily applies to plants that do not have full-power operating licenses, it does have relevance to operating nuclear power plants.

TABLE OF CONTENTS

	Page
I. Introduction	
A. Purpose	1
B. Use of Document	1
C. Authorities	1
D. Assumptions	2
E. Scope	2
F. Definitions	3
G. Summary of Changes	3
H. Application of the "Realism" Rule	4
II. Planning Standards and Evaluation Criteria	
A. Assignment of Responsibility (Organization Control)	7
B. Onsite Emergency Organization	9
C. Emergency Response Support and Resources	9
D. Emergency Classification System	10
E. Notification Methods and Procedures	11
F. Emergency Communications	13
G. Public Education and Information	14
H. Emergency Facilities and Equipment	16
I. Accident Assessment	17
J. Protective Response	18
K. Radiological Exposure Control	21
L. Medical and Public Health Support	22
M. Recovery and Reentry Planning and Postaccident Operations	23
N. Exercises and Drills	24
O. Radiological Emergency Response Training	27
P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans	29

CRITERIA FOR UTILITY OFFSITE PLANNING AND PREPAREDNESS

I. INTRODUCTION

A. Purpose

The Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency (FEMA) have added a supplement to NUREG-0654/FEMA-REP-1, Rev. 1 that provides guidance for the development, review and evaluation of utility offsite radiological emergency response planning and preparedness for those situations in which State and/or local governments¹ decline to participate in emergency planning. While this guidance primarily applies to plants that do not have full-power operating licenses, it does have relevance to operating nuclear power plants.

B. Use of Document

This document has been developed for use in reviewing and evaluating utility-prepared offsite emergency plans and preparedness. This document is intended to be used with Section I and Appendices 1-5 of the existing NUREG-0654/FEMA-REP-1, Rev. 1. A notice has been provided in the Federal Register to announce the availability of this document. Except where specifically modified, the existing licensee-only evaluation criteria of the current Section II are not affected by this document. For those situations in which State and/or local governments are participating in the emergency planning process, the existing NUREG-0654/FEMA-REP-1, Rev. 1 evaluation criteria will apply.

C. Authorities

This document is intended to facilitate the implementation of the changes to 10 CFR Part 50.47(c)(1) and 10 CFR Part 50, Appendix E, Section IV.F of the NRC regulations, effective December 3, 1987 (52 FR 42078) dealing with the following: "Evaluation of the Adequacy of Offsite Emergency Planning for Nuclear Power Plants at the Operating License Review Stage Where State and/or Local Governments Decline to Participate in Offsite Emergency Planning." The relevancy of this rule change to full-power operating nuclear power plants is explained in the "Supplementary Information" Section:

"The rule does not specifically apply to plants that already have operating licenses...10 CFR 50.54(s)(2)(11) of the Commission's regulations already provides a mechanism (the "120-day clock") for addressing situations in which deficiencies are identified

¹This refers to State and local governments identified as having an emergency preparedness and response role in the offsite plan. It is not restricted to the Emergency Planning Zones (EPZs) but may include governments that are identified in the plan as having a role, such as, providing reception and congregate care centers.

in emergency planning at operating plants. To the extent that this rule provides criteria by which a utility plan would be judged by State and local withdrawal from participation in emergency planning, those criteria would presumably be of assistance to decisionmakers in determining under 10 CFR 50.54(s)(2)(11), whether remedial action should be taken, and if so, what kind and where deficiencies in emergency planning remain uncorrected after 120 days."

The document is consistent with the provisions of the FEMA/NRC Memorandum of Understanding dated April 18, 1985, wherein the parties agreed to evaluate offsite plans prepared by utilities and provided to FEMA by the NRC.

D. Assumptions

The following NRC assumptions are used for the development, review and evaluation of utility offsite plans and preparedness.

1. In an actual radiological emergency, State and local officials that have declined to participate in emergency planning will:
 - a. Exercise their best efforts to protect the health and safety of the public;
 - b. Cooperate with the utility and follow the utility offsite plan; and
 - c. Have the resources sufficient to implement those portions of the utility offsite plan where State and local response is necessary.

Although it is assumed that non-participating State and local organizations will respond and follow the utility's offsite plan, it is not assumed that these organizations will be as familiar with the plan as if they had participated in the planning process and exercised with the utility. Therefore, the utility's offsite response plan and the offsite response organization will provide compensating actions through the use of liaisons to deal with the coordination of information and resources with State and local governments and to provide advice and assistance to responding State and local governments in implementing their assigned roles and functions under the utility's offsite response plan. In accordance with agreement between the NRC and FEMA, the NRC will defend any legal challenges to these assumptions.

E. Scope

In developing this document, the planning standards of NUREG-0654/FEMA-REP-1, Rev. 1 have not been changed and they apply to the offsite response organization defined below. This complies with the NRC rule change cited in C. above. The guidance will be used for the development, review and evaluation of offsite emergency plans and preparedness in which State and/or local governments decline to participate in emergency planning and

preparedness. The planning standards are the same as those used to evaluate licensee, State and local plans and preparedness. The evaluation criteria have been modified with due allowance for the non-participation of State and local governments and for the compensatory measures that must be proposed, developed and implemented by the utility. Under 10 CFR 50.47(c)(i)(ii) the utility is expected to make a sustained good faith effort to secure and retain the participation of the pertinent State and/or local governments. The degree of participation that the utility is able to gain from State and local organizations during the planning process should be reflected in the utility's offsite plans and preparedness; and the resources to implement the offsite plan must be identified and committed by the utility and by State and local governments participating in the planning process. The appropriate FEMA guidance memoranda, policy memoranda and REP documents (e.g., FEMA REP-2, 10, 12) will be applied to define the conditions of adequacy and inadequacy of emergency plans and preparedness for specific evaluation criteria. The numbering pattern for the evaluation criteria in this document is the same as that used in the existing Section II of NUREG-0654/FEMA-REP-1, Rev. 1. Therefore, numbers that apply to licensee-only evaluation criteria are missing and additional criteria have been assigned new numbers.

F. Definitions

The following definitions apply to the use of this document.

1. Offsite Response Organization (ORO): The utility offsite emergency response organization comprised of other participating voluntary and private organizations, and local, State and Federal governments engaging in the development of offsite emergency plans and preparedness for a nuclear power plant.
2. Nonparticipating Organization: State and local governments that decline to participate in emergency planning and preparedness for a nuclear power plant.

G. Summary of Changes

The following is a summary of the changes to the evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1.

1. The concept of "offsite response organization" is adopted and defined. Throughout the revised evaluation criteria "offsite response organization" replaces references to "State and local governments" as that phrase was used in NUREG-0654/FEMA-REP-1, Rev. 1.
2. In addition, evaluation criteria were modified or added to compensate for lack of participation by State and local governments in the planning process, for these functions:
 - a. Identification of the functions which require State and local authorization before implementing (A.2.a.).
 - b. Identification of additional liaison personnel to advise and assist State and local officials in an emergency (C.5.).

- c. Provision for advising State and local officials on emergency actions to be taken (D.4., J.10.f.).
- d. Provision for coordinating emergency messages with State and local governments (E.8.).
- e. Provision for communications with non-participating State and local emergency operations facilities (F.1.).
- f. Provision for public information describing the role of the offsite response organization vs. the State and local organizations during the emergency (G.1.e.).
- g. Establishment of an emergency operations center for use in directing and controlling offsite response functions (H.3.).
- h. Offsite response organization shall have the administrative and physical means (even though they might not have the responsibility) for activating the alert and notification system (E.6. and J.9.).
- i. Recommendation on the use of potassium iodide (KI) for the general public (J.10.f.).
- j. Provision for encouraging participation in exercises and drills by State and local governments but not requiring it (N.2.a. and N.6.).
- k. Provision of training to persons in the utility's offsite response organization who will be responders (O.4.k.).
- l. Provision for offering training to non-participating State and local governments and other organizations (O.6.).
- m. Provision for providing copies of the offsite plan and its revisions to non-participating State and local government entities with which the offsite response organization identifies interfaces in its offsite plan (P.11).

H. Application of the "Realism" Rule

The Commission amended its rules in 10 CFR 50.47c(1) to provide criteria for the evaluation at the operating license review stage of utility-prepared emergency plans in situations in which state and/or local governments decline to participate further in emergency planning (52 FR 42079). The revised rule reads as follows (emphasis added):

(c)(1) Failure to meet the applicable standards set forth in paragraph (b) of this section may result in the Commission declining to issue an operating license; however, the applicant will have an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant

operations. Where an applicant for an operating license asserts that its inability to demonstrate compliance with requirements of paragraph (b) of this section results wholly or substantially from the decision of state and/or local governments not to participate further in emergency planning, an operating license may be issued if the applicant demonstrates to the Commission's satisfaction that:

(i) The applicant's inability to comply with the requirements of paragraph (b) of this section is wholly or substantially the result of the non-participation of state and/or local governments.

(ii) The applicant has made a sustained, good faith effort to secure and retain participation of the pertinent State and/or local governmental authorities, including the furnishing of copies of its emergency plan.

(iii) The applicant's emergency plan provides reasonable assurance that public health and safety is not endangered by operation of the facility concerned. To make that finding, the applicant must demonstrate that, as outlined below, adequate protective measures can and will be taken in the event of an emergency. A utility plan will be evaluated against the same planning standards applicable to a state or local plan, as listed in paragraph (b) of this section, with due allowance made both for--

(A) Those elements for which state and/or local non-participation makes compliance infeasible and

(B) The utility's measures designed to compensate for any deficiencies resulting from state and/or local non-participation.

In making its determination on the adequacy of a utility plan, the NRC will recognize the reality that in an actual emergency, State and local government officials will exercise their best efforts to protect the health and safety of the public. The NRC will determine the adequacy of that expected response, in combination with the utility's compensating measures, on a case-by-case basis, subject to the following guidance. In addressing the circumstance where applicant's inability to comply with the requirements of paragraph (b) of this section is wholly or substantially the result of non-participation of state and/or local governments, it may be presumed that in the event of an actual radiological emergency, State and local officials would generally follow the utility plan. However, this presumption may be rebutted by, for example, a good faith and timely proffer of an adequate and feasible state and/or local radiological emergency plan that would in fact be relied upon in a radiological emergency.

At the same time the Commission added a new Paragraph 6 Section IV.F. of 10 CFR Part 50, Appendix E, which reads as follows:

6. The participation of state and local governments in an emergency exercise is not required to the extent that the applicant has identified those governments as refusing to participate further in emergency planning activities pursuant to 10 CFR 50.47(c)(1). In such cases, an exercise shall be held with the applicant or licensee and such governmental entities as elect to participate in the emergency planning process.

The emphasized portion above is the kernel of the so called "realism rule". In its "realism rule", the Commission provides the details of how a utility-sponsored offsite utility plan would be evaluated. While asserting that State and local participation in emergency planning is essential to the maximum effectiveness of a plan, the Commission has provided that, in the case of non-participation of State and local governments in the planning process, a license can be issued even if emergency planning falls short of the ideal, but is still adequate to protect the public health and safety. Specifically, a license can be issued under 10 CFR 50.47c(1)(iii) if the Commission finds that the applicants emergency plan provides reasonable assurance that the public health and safety is not endangered by operation of the facility (provided that the non-participation tests are met). As stated in the preamble to the final rule (52 FR 42084):

The rule recognizes - as did Congress when it enacted and re-enacted the provisions of Section 109 of the NRC Authorization Act of 1980 - that no utility plan is likely to be able provide the same degree of public protection that would obtain under ideal conditions, i.e., a state or local participation, but that it may nevertheless be adequate (emphasis added).

Thus, ultimately, the Commission will have to determine the adequacy of utility prepared offsite plans and preparedness².

²The "realism" concept can be applied to resolve deficiencies in emergency plans and exercises. For example, if towing cars is not identified as a State or local responsibility in a utility prepared offsite plan or if more cars need to be "towed" during an exercise than the utility can accommodate, the "realism" concept could be applied to resolve what otherwise might be a planning deficiency.

II. PLANNING STANDARDS AND EVALUATION CRITERIA

i. Assignment of Responsibility (Organization Control)

Planning Standard

Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

Evaluation Criteria

1. a. The offsite plan shall identify the elements of the offsite response organization for Emergency Planning Zones (see Appendix 5 of NUREG-0654/FEMA-REP-1, Rev. 1).³
- b. The offsite response organization shall specify its concept of operations, and its relationship to the total effort. The concept of operation will explain how the offsite response organization will function with non-participating State and local governments, and will specify the various modes of operation.
- c. The offsite plan shall illustrate these interrelationships in a block diagram. This diagram will define the roles for the offsite response organization and non-participating State and local governments, and identify the lead interfaces.
- d. The offsite response organization shall identify a specific individual by title who shall be in charge of the emergency response.
- e. The offsite response organization shall provide for 24-hour per day emergency response, including 24-hour per day staffing of communications links.
2. a. The offsite response organization shall specify the functions and responsibilities for major elements and key individuals by title, of emergency response, including the following: Command and Control, Alerting and Notification, Communications, Public Information, Accident Assessment, Public Health and Sanitation, Social Services, Fire and Rescue, Traffic Control, Emergency Medical Services, Law Enforcement, Transportation, Protective Response (including authority to request Federal assistance and to initiate other protective actions), and Radiological Exposure

³Offsite response organization is defined as the utility offsite emergency response organization along with other participating voluntary and private organizations, and local, State and Federal governments engaging in the development of offsite emergency plans for a nuclear power plant.

Control. The description of these functions shall include a clear and concise summary such as a table of primary and support responsibilities using the agency as one axis, and the function as the other. This description shall specify those functions which may require State or local authorization before implementing, such as:

- i. Directing traffic;
- ii. Blocking roadways, erecting barriers in roadways and channeling traffic;
- iii. Posting traffic signs on roadways;
- iv. Removing obstructions from public roadways, including towing vehicles;
- v. Activating sirens and directing the broadcasting of EBS messages;
- vi. Making decisions and recommendations to the public concerning protective actions for the plume exposure pathway;
- vii. Making decisions and recommendations to the public concerning protective actions for the ingestion exposure pathway;
- viii. Making decisions and recommendations to the public concerning recovery and reentry;
- ix. Dispensing fuel from tank trucks to automobiles along roadsides;
- x. Performing access control at an EOC, relocation centers and the EPZ perimeters; and

The offsite plan shall also identify similar functions and responsibilities and interfaces for an anticipated State and local response to an emergency.

- b. The offsite plan shall contain where applicable (by reference to specific acts, codes or statutes) the legal basis for such authorities including those that reserve functions to State and local governments.
3. The offsite plan shall include written agreements referring to the concept of operations developed between Federal agencies, the offsite response organization, and other support organizations having an emergency response role within the Emergency Planning Zones. The agreements shall identify the emergency measures to be provided and the mutually acceptable criteria for their implementation, and specify the arrangements for exchange of information. These agreements may be provided in an appendix to the offsite plan or the offsite plan itself may contain descriptions of these matters and a signature page in the offsite plan may serve to verify the agreements. The signature page format is appropriate for organizations where response functions are covered by laws, regulations or executive orders where separate written agreements are not necessary.
 4. The offsite response organization shall be capable of continuous (24-hour) operations for a protracted period. The individual in the offsite response organization who will be responsible for assuring continuity of resources (technical, administrative, and material) shall be specified by title.

B. Onsite Emergency Organization (Not Applicable)

C. Emergency Response Support and Resources

Planning Standard

Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

Evaluation Criteria

1. The Federal government maintains in-depth capability to assist licensees, States and local governments through the Federal Radiological Emergency Response Plan. Each offsite response organization and licensee shall make provisions for incorporating the Federal response capability into its operation plan, including the following:
 - a. specific persons by title authorized to request Federal assistance; see A.1.d., A.2.a.;
 - b. specific Federal resources expected, including expected times of arrival at specific nuclear facility sites; and
 - c. specific licensee and offsite response organization resources available to support the Federal response, e.g., air fields, command posts, telephone lines, radio frequencies and telecommunications centers.
2. The offsite response organization may dispatch representatives to the licensee's near-site Emergency Operations Facility. (Technical analysis representatives at the near-site EOF are preferred.)
3. The offsite response organization shall identify radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency.
4. The offsite response organization shall identify nuclear and other facilities, organizations or individuals which can be relied upon in an emergency to provide assistance. Such assistance shall be identified and supported by appropriate letters of agreement.
5. The offsite response organization shall identify liaison personnel to advise and assist State and local officials during an actual emergency in implementing those portions of the offsite plan where State or local response is identified.

D. Emergency Classification System

Planning Standard

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Evaluation Criteria

3. The offsite response organization shall establish an emergency classification and emergency action level scheme consistent with that established by the facility licensee.
4. The offsite response organization should have procedures in place that provide for implementing emergency actions and that provide for advising State and local officials on emergency actions to be taken which are consistent with the emergency actions recommended by the nuclear facility licensee, taking into account local offsite conditions that exist at the time of the emergency.

E. Notification Methods and Procedures

Planning Standard

Procedures have been established for notification by the licensee of State and local response organizations and for notification of emergency personnel by all response organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

Evaluation Criteria

1. The offsite response organization shall establish procedures which describe the bases for notification of all response organizations consistent with the emergency classification and action level scheme set forth in Appendix 1 of NUREG-0654/FEMA-REP-1, Rev. 1. These procedures shall include means for verification of messages. The specific details of verification need not be included in the offsite plan.
2. The offsite response organization shall establish procedures for alerting, notifying, and mobilizing its own emergency response personnel and for alerting and notifying non-participating State and local governments.
3. The offsite response organization shall establish a system for disseminating to the public appropriate information contained in initial and followup messages received from the licensee (see Evaluation Criteria E.3 and E.4 in NUREG-0654/FEMA REP-1, Rev. 1) including the appropriate notification to appropriate broadcast media, e.g., the Emergency Broadcast System (EBS).
4. The offsite response organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone (see Appendix 3 of NUREG-0654/FEMA-REP-1, Rev. 1). It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this requirement. The offsite response organization shall have the administrative and physical means to activate the system.
5. The offsite response organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instructions with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the offsite plans. The prescribed messages should address the various conditions such as the delegation of authority by the State and local governments to the offsite response organization to issue prompt instructions. Such messages should include the appropriate aspects of sheltering, ad hoc respiratory protection e.g., handkerchief

over mouth, thyroid blocking or evacuation. The role of the licensee is to provide supporting information for the messages. For ad hoc respiratory protection see "Respiratory Protective Devices Manual" American Industrial Hygiene Association, 1963 pp. 123-126.

8. There shall be provisions for coordinating emergency messages if possible with participating and non-participating State and local governments.

F. Emergency Communications

Planning Standard

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Evaluation Criteria

1. The communication plans for emergencies shall include organizational titles and alternates for both ends of the communication links. Reliable primary and backup means of communication for the utility and the offsite response organization shall be established. The utility and the offsite response organization shall establish the capability to communicate with non-participating State and local governments via normal emergency telephone number(s) (e.g., 911) and via one other backup mode such as the ability to transmit via existing emergency radio frequencies. Each offsite plan shall include:
 - a. provision for 24-hour per day notification to and activation of the offsite response organization's emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communication links that initiate emergency response actions;
 - b. provision for communications with contiguous States and local governments within the Emergency Planning Zones;
 - c. provision for communications as needed with Federal emergency response organizations;
 - d. provision for communications between the nuclear facility and the licensee's near-site Emergency Operations Facility, offsite response organization's emergency operations centers, and radiological monitoring teams;
 - e. provision for alerting or activating emergency personnel in each response organization;
2. The offsite response organization shall ensure that a coordinated communication link for fixed and mobile medical support facilities exists.
3. The offsite response organization shall conduct periodic testing of the entire emergency communications system (see evaluation criteria H.10, N.2.a and Appendix 3 of NUREG-0654/FEMA-REP-1, Rev. 1).

G. Public Education and Information

Planning Standard

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions shall be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

Evaluation Criteria

1. The offsite response organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to:
 - a. educational information on radiation;
 - b. contact for additional information;
 - c. protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs;
 - d. special needs of the handicapped; and
 - e. special steps to be taken to describe the role of the offsite response organization vs. the State and local organizations during the emergency.

Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; posting in public areas; and publications distributed on an annual basis.

2. The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices, or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that will be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.
3. The offsite response organization shall designate the points of contact and physical locations for use by news media during an emergency. This should include provisions for accommodating State and local government public information personnel assigned a role under the offsite plan.

4. a. The offsite response organization shall designate a spokesperson who shall have access to all necessary information.
 - b. The offsite response organization shall establish arrangements for timely exchange of information among designated spokespersons.
 - c. The offsite response organization shall establish coordinated arrangements for dealing with rumors.
5. The offsite response organization shall conduct coordinated programs at least annually to acquaint news media with the offsite emergency plans, information concerning radiation, and points of contact (see G.1.e) for release of public information in an emergency.

H. Emergency Facilities and Equipment

Planning Standard

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Evaluation Criteria

3. The offsite response organization shall establish an emergency operations center for use in directing and controlling offsite response functions.
4. The offsite response organization shall provide for timely activation and staffing of the facilities and centers described in the offsite plan.
7. The offsite response organization, where appropriate, shall provide for offsite radiological monitoring equipment in the vicinity of the nuclear facility.
10. The offsite response organization shall make provisions to inspect, inventory and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. There shall be sufficient reserves of instruments/equipment to replace those which are removed from emergency kits for calibration or repair. Calibration of equipment shall be at intervals recommended by the supplier of the equipment.
11. The offsite plan shall, in an appendix, include identification of emergency kits by general category (protective equipment, communications equipment, radiological monitoring equipment and emergency supplies).
12. The offsite response organization shall establish a central point (preferably associated with the licensee's near-site Emergency Operations Facility), for the receipt and analysis of all field monitoring data and coordination of sample media.

I. Accident Assessment

Planning Standard

Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Evaluation Criteria

7. The offsite response organization shall describe the capability and resources for field monitoring within the plume exposure Emergency Planning Zone which are an intrinsic part of the concept of operations for the facility.
8. The offsite response organization, where appropriate, shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times.
9. The offsite response organization shall have a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10^{-7} $\mu\text{Ci/cc}$ (microcuries per cubic centimeter) under field conditions. Interference from the presence of noble gas and background radiation shall not decrease the stated minimum detectable activity.
10. The offsite response organization shall establish means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes (i.e., those given in Table 3, page 18 of NUREG-0654/FEMA-REF-1, Rev. 1) and gross radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures.
11. Arrangements to locate and track the airborne radioactive plume shall be made, using either or both Federal and offsite response organization resources.

J. Protective Response

Planning Standard

A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Evaluation Criteria

2. Each licensee and the offsite response organization shall make provisions for evacuation routes and transportation for onsite individuals to some suitable offsite location, including alternatives for inclement weather, high traffic density and specific radiological conditions.
9. The offsite response organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. The offsite response organization shall describe the means for recommending protective actions to the public, for activating the alert and notification system, and for notifying the public of protective action recommendations. This shall be consistent with the recommendations of EPA regarding exposure resulting from passage of radioactive airborne plumes (EPA-520/1-75-001), and with those of DHHS/FDA regarding radioactive contamination of human food and animal feeds as published in the Federal Register on October 22, 1982 (47 FR 47073).
10. The offsite response organization's plans to implement protective measures for the plume exposure pathway shall include:
 - a. Maps showing evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas (identification of radiological sampling and monitoring points shall include the designations in Table J-1 of NUREG-0654/FEMA-REP-1, Rev. 1 or an equivalent uniform system described in the offsite plan);
 - b. Maps showing population distribution around the nuclear facility. This shall be by evacuation areas (licensees shall also present the information in a sector format);
 - c. Means for notifying all segments of the transient and resident population;
 - d. Means for identifying or protecting those persons whose mobility may be impaired due to such factors as institutional or other confinement. These means shall include notification, support and assistance in implementing protective measures where appropriate;
 - e. Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult, including quantities, storage, and means of distribution;

- f. The offsite response organization's plans should include the method by which decisions by the State Health Department for administering radioprotective drugs to the general population can be made during an emergency. The plan shall adopt the method used by the State where such a method is available. The plans shall provide for advising State Health Departments regarding such decisions; and the predetermined condition under which such drugs may be used by offsite emergency workers;¹
- g. Means of relocation;
- h. Relocation centers in host areas which are at least 5 miles, and preferably 10 miles, beyond the boundaries of the plume exposure emergency planning zone (see J.12.);
- i. Projected traffic capacities of evacuation routes under emergency conditions;
- j. Control of access to evacuated areas and organization responsibilities for such control;
- k. Identification of and means for dealing with potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes and contingency measures;
- l. Time estimates for evacuation of various sectors and distances based on a dynamic analysis (time-motion study under various conditions) for the plume exposure pathway emergency planning zone (see Appendix 4, NUREG-0654/FEMA-REP-1, Rev. 1); and
- m. The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates.²

¹See DHHS Federal Register notice of July 24, 1985 (50 FR 30258) entitled Federal Policy on Distribution of Potassium Iodide Around Nuclear Power Sites for Use as a Thyroid Blocking Agent.

²The following reports may be considered in determining protection afforded.

- (1) "Public Protection Strategies for Potential Nuclear Reactor Accidents" Sheltering Concepts with Existing Public and Private Structures" (SAND 77-1725), Sandia Laboratory.
- (2) "Examination of Offsite Radiological Emergency Measures for Nuclear Reactor Accidents Involving Core Melt" (SAND 78-0454), Sandia Laboratory.
- (3) "Protection Action Evaluation Part II, Evacuation and Sheltering as Protective Actions Against Nuclear Accidents Involving Gaseous Releases" (EPA 520/1-78-001B). U.S. Environmental Protection Agency.

11. The offsite response organization shall specify the protective measures to be used for the ingestion pathway, including the methods for protecting the public from consumption of contaminated foodstuffs. This shall include criteria for deciding whether dairy animals shall be put on stored feed. The offsite plan shall identify procedures for detecting contamination, for estimating the dose commitment consequences of uncontrolled ingestion, and for imposing protection procedures such as impoundment, decontamination, processing, decay, product diversion, and preservation. Maps for recording survey and monitoring data, key land use data (e.g., farming), dairies, food processing plants, water sheds, water supply intake and treatment plants and reservoirs shall be maintained. Provisions for maps showing detailed crop information may be by including reference to their availability and location and a plan for their use. The maps shall start at the facility and include all of the 50-mile ingestion pathway EPZ. Up-to-date lists of the name and location of all facilities which regularly process milk products and other large amounts of food or agricultural products originating in the ingestion pathway Emergency Planning Zone, but located elsewhere, shall be maintained.

12. The offsite response organization shall describe the means for registering and monitoring of evacuees at relocation centers in host areas. The personnel and equipment available shall be capable of monitoring within about a 12-hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.

K. Radiological Exposure Control

Planning Standard

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Evaluation Criteria

3. a. The offsite response organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers who are part of the offsite response organization. They shall also make provisions for distribution of dosimeters, both self-reading and permanent record devices.
- b. The offsite response organization shall ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident.
4. The offsite response organization shall establish the decision chain for authorizing emergency workers to incur exposures in excess of the EPA General Public Protective Action Guides (i.e., EPA PAGs for emergency workers and lifesaving activities).
5. a. The offsite response organization, as appropriate, shall specify action levels for determining the need for decontamination.
- b. The offsite response organization, as appropriate, shall establish the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.

L. Medical and Public Health Support

Planning Standard

Arrangements are made for medical services for contaminated injured individuals.¹

Evaluation Criteria

1. The offsite response organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals
3. The offsite response organization shall develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. The listing shall include the name, location, type of facility and capacities and any special radiological capabilities. These emergency medical services should be able to radiologically monitor contamination personnel, and have facilities and trained personnel able to care for contaminated injured persons.
4. The offsite response organization shall arrange for transporting victims of radiological accidents to medical support facilities.

¹The availability of an integrated emergency medical services system and a public health emergency plan serving the area in which the facility is located and, as a minimum, equivalent to the Public Health Service Guide for Developing Health Disaster Plans, 1974, and to the requirements of an emergency medical services system as outlined in the Emergency Medical Services System Act of 1973 (PL 93-154 and amendments in 1979 PL 96-142), should be a part of and consistent with overall State or local disaster control plans and should be compatible with the specific overall emergency response plans for the facility.

M. Recovery and Reentry Planning and Postaccident Operations

Planning Standard

General plans for recovery and reentry are developed.

Evaluation Criteria

1. The offsite response organization, as appropriate, shall develop general plans and procedures for reentry and recovery and describe the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process should consider both existing and potential conditions.
3. The offsite plan shall specify means for informing members of the offsite response organization that a recovery operation is to be initiated, and of any changes in the organizational structure that may occur.
4. The offsite plan shall establish a method for periodically estimating total population exposure.

N. Exercises and Drills

Planning Standard

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Evaluation Criteria

1. a. An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations. The emergency preparedness exercise shall simulate an emergency that results in offsite radiological releases which will require response by offsite response organizations. Exercises shall be conducted as set forth in NRC and FEMA rules.
 - b. An exercise shall include mobilization of offsite response organization resources adequate to verify the capability to respond to an accident scenario requiring response. This includes the demonstration of offsite response organization capabilities to interface with non-participating State and local government. The offsite response organization shall provide for a critique of the biennial exercise by Federal and offsite response organization observers/evaluators. The scenario should be varied from exercise to exercise such that all major elements of the plans and preparedness organizations are tested within a six-year period. Each organization should make provisions to start an exercise between 6:00 p.m. and 4:00 a.m. Exercises should be conducted during different seasons of the year. At least one exercise shall be unannounced.
2. A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise. A drill shall be supervised and evaluated by a qualified drill instructor. The offsite response organization shall conduct drills, in addition to the biennial exercise at the frequencies indicated below:

a. Communication Drills

Communications between the licensee and the offsite response organization within the plume exposure pathway Emergency Planning Zone shall be tested monthly. Communications with Federal emergency response organizations and offsite response organizations within the ingestion pathway shall be tested quarterly. Communications between the nuclear facility, offsite response organization's operations centers, and field assessment teams shall be tested annually. Communication drills shall also include the aspect of understanding the content of messages. If practicable, attempts should be made to include non-participating organizations in the monthly communications drills.

c. Medical Emergency Drills

A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) shall be conducted annually. The offsite portions of the medical drill may be performed as part of the required biennial exercise.

d. Radiological Monitoring Drills

Plant environs and radiological monitoring drills (onsite and off-site) shall be conducted annually. These drills shall include collection, and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. Where appropriate, local organizations shall participate.

e. Health Physics Drill

Health Physics drills shall be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

3. The offsite response organization shall describe how exercises and drills are to be carried out to allow free play for decisionmaking and to meet the following objectives. Pending the development of exercise scenarios and exercise evaluation guidance by NRC and FEMA the scenarios for use in exercises and drills shall include but not be limited to the following:
- a. The basic objective(s) of each drill and exercise and appropriate evaluation criteria;
 - b. The date(s), time period, place(s) and participating organizations;
 - c. The simulated events;
 - d. A time schedule of real and simulated initiating events;
 - e. A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and
 - f. A description of the arrangements for and advance materials to be provided to official observers.
4. Official observers from Federal government and the offsite response organization shall observe, evaluate, and critique the required exercises. A critique shall be scheduled at the conclusion of the exercise to evaluate the ability of organizations to respond as called for in the offsite plan. The critique shall be conducted as soon as practicable after the exercise, and a formal evaluation shall result from the critique.

5. The offsite response organization shall establish means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural changes, and for assigning responsibility for implementing corrective actions. The offsite response organization shall establish management control used to ensure that corrective actions are implemented.
6. The offsite response organization shall attempt to involve the non-participating State and local governments in the exercises and drills, but their participation is not required.

0. Radiological Emergency Response Training

Planning Standard

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Evaluation Criteria

1. The offsite response organization shall assure the training of appropriate individuals. The offsite response organization shall participate in and receive training. Where mutual aid agreements exist between local agencies such as fire, police and ambulance/rescue, the training shall also be offered to the other departments who are members of the mutual aid district.¹
4. The offsite response organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans.² The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories:
 - a. Directors or coordinators of the response organizations;
 - b. Personnel responsible for accident assessment;
 - c. Radiological monitoring teams and radiological analysis personnel;

¹Training for hospital personnel, ambulance/rescue, police and fire department shall include the procedures for notification, basic radiation protection, and their expected roles. For those local services support organizations who will enter the site, training shall also include site access procedures and the identity (by position and title) of the individual in the onsite emergency organization who will control the organizations support activities. Offsite emergency response support personnel should be provided with appropriate identification cards where required.

²If the offsite response organization lacks the capability and resources to accomplish this training, they may look to the licensee and the Federal government (FEMA) for assistance in this training.

- d. Police, security and fire fighting personnel;
 - f. First aid and rescue personnel;
 - g. Local support services personnel including Civil Defense/Emergency Service personnel;
 - h. Medical support personnel;
 - j. Personnel responsible for transmission of emergency information and instructions; and
 - k. Liaison personnel responsible for interfacing with State and local responders.
5. The offsite response organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.
 6. The offsite response organization shall offer training to non-participating State and local governments and other organizations.

P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

Planning Standard

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Evaluation Criteria

1. The offsite response organization shall provide for the training of individuals responsible for the offsite planning effort.
2. The offsite response organization shall identify by title the individual with the overall authority and responsibility for radiological emergency response planning.
3. The offsite response organization shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these offsite plans with other response organizations.
4. The offsite response organization shall update its plan and agreements as needed, review and certify it to be current on an annual basis. The update shall take into account changes identified by drills and exercises.
5. The offsite emergency response plans and approved changes to the plans shall be forwarded to all participating organizations and appropriate individuals with responsibility for implementation of the plans. Revised pages shall be dated and marked to show where changes have been made.
6. The offsite plan shall contain a detailed listing of supporting plans and their source.
7. The offsite plan shall contain as an appendix listing, by title, procedures required to implement the offsite plan. The listing shall include the section(s) of the offsite plan to be implemented by each procedure.
8. The offsite plan shall contain a specific table of contents. Plans submitted for review should be cross-referenced to these criteria.
10. The offsite response organization shall provide for updating telephone numbers in emergency procedures at least quarterly.
11. The offsite response organization shall provide copies of the offsite plan and its revisions to non-participating State and local government entities where interfaces are identified in Planning Standard A.

BIBLIOGRAPHIC DATA SHEET

1 REPORT NUMBER (Assigned by TIDC, add Vol. No., if any)

NUREG-0654
FEMA-REP-1
Rev. 1, Supp. 1

SEE INSTRUCTIONS ON THE REVERSE

2 TITLE AND SUBTITLE
Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants: Criteria for Utility Offsite Planning and Preparedness

3 LEAVE BLANK

4 DATE REPORT COMPLETED

MON/H YEAR

August 1988

5 DATE REPORT ISSUED

MONTH YEAR

September 1988

5 AUTHOR(S)

E.M. Podolak, Jr./NRC
M.E. Sanders, V.L. Wingert, R.W. Donovan/FEMA

7 PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

NRC/FEMA Task Force
Nuclear Regulatory Commission
Washington, D.C. 20555

8 PROJECT/TASK/WORK UNIT NUMBER

9 PIN OR GRANT NUMBER

10 SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

NRC/FEMA Task Force
Nuclear Regulatory Commission
Washington, D.C. 20555

11a TYPE OF REPORT

Guidance Report

b PERIOD COVERED (Inclusive dates)

12 SUPPLEMENTARY NOTES

13 ABSTRACT (200 words or less)

This document has been developed for use in reviewing and evaluating utility-prepared offsite emergency plans and preparedness. The document is intended to be used with Section 1 and Appendices 1-5 of the existing NUREG-0654/FEMA-REP-1, Rev. 1. The document was previously issued in draft for interim use and to invite public review and comment. Changes have been made to this final document where appropriate. A notice has been provided in the Federal Register. Except where specifically modified, the existing licensee-only evaluation criteria of the current Section II are not affected by this document. For those situations in which State and/or local governments are participating in the emergency planning process, the existing NUREG-0654/FEMA-REP-1 Rev. 1 evaluation criteria will apply.

14 DOCUMENT ANALYSIS - a KEYWORDS/DESCRIPTORS

emergency preparedness
radiological emergency planning
radiological emergency
emergency response plans

radiological emergency response plans

b IDENTIFIERS/OPEN-ENDED TERMS

15 AVAILABILITY STATEMENT

Unlimited

16 SECURITY CLASSIFICATION

(This page)
Unclassified

(This report)
Unclassified

17 NUMBER OF PAGES

18 PRICE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

120555139217 1 IANICFIC01C41
US NRC-OARM-ADM
DIV FOIA & PUBLICATIONS SVCS
RRES-PDR NUREG
P-210
WASHINGTON DC 20555

SPECIAL FOURTH-CLASS RATE
POSTAGE & FEES PAID
USNRC
PERMIT No. G-87

NUREG-0654, Rev. 1, Supp. 1

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

SEPTEMBER 1988