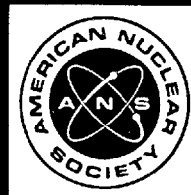


American Nuclear Society

**criteria for radiological emergency
response functions and organizations**

an American National Standard



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**American National Standard
Criteria for Radiological Emergency
Response Functions and Organizations**

Secretariat
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Prepared by the
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American National Standard

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Foreword

(This Foreword is not a part of American National Standard Criteria for Radiological Emergency Response Functions and Organizations, ANSI/ANS-3.8.1-1995.)

Every nuclear power plant owner organization is required by federal regulations to have a detailed radiological emergency response plan. The plant operators are required to perform routine, abnormal, and emergency actions in a manner to reduce to the extent feasible the likelihood of any particular event developing into an emergency condition. An objective of sound operations is to prevent emergency conditions. The objective of an emergency response program is emergency mitigation. The plant operators are the key to emergency prevention and mitigation at all times.

If a situation arises which activates the radiological emergency response plan, the plant operators identify developing trends and take the appropriate action to prevent or mitigate a radiological release. The plant operators identify the need for emergency support, make initial contact with emergency response organizations, and activate the radiological emergency response plan. As the emergency develops, the administrative, notification, and coordinating functions are transferred from the plant operators to other individuals within the emergency organization as defined in the radiological emergency response plan. Regardless of the functions shifted from the plant operators to the emergency organization, the responsibility for placing the plant in a safe configuration remains with the plant operators.

The ANS-3.8 series of standards provides guidance to nuclear power plant utilities pertaining to radiological emergency response plan preparation based upon the experience of the licensed nuclear facilities. The American National Standards in this series are:

ANSI/ANS-3.8.1-1995 - Criteria for Radiological Emergency Response Functions and Organizations

ANSI/ANS-3.8.2-1995 - Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities

ANSI/ANS-3.8.3-1995 - Criteria for Radiological Emergency Response Plans and Implementing Procedures

ANSI/ANS-3.8.4-1995 - Criteria for Maintaining Radiological Emergency Response Capability

ANSI/ANS-3.8.5-1992 - Criteria for Emergency Radiological Field Monitoring, Sampling, and Analysis

ANSI/ANS-3.8.6-1995 - Criteria for Conduct of Offsite Radiological Assessment for Emergency Response for Nuclear Power Plants

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Criteria for Radiological Emergency Response Functions and Organizations

1. Scope

This standard establishes criteria for developing an overall preplanned emergency response organization for commercial nuclear power plants. The criteria address:

- (1) basic emergency response functions
- (2) emergency response support functions to ensure that the basic functions are adequately implemented
- (3) emergency response organization
- (4) personnel responsibilities.

2. Definitions

The definitions given below are of a restricted nature for the purpose of this standard.

corrective actions. Those measures taken to terminate or mitigate the consequences of an emergency at or near the source of the emergency.

emergency. Any unplanned situation which activates the plant's radiological emergency response plan.

emergency classes. The following four emergency classes have been established:

notification of unusual event (NUE): Events which are in progress or have occurred, which indicate a potential degradation of the level of safety of the plant. Notification of unusual events are nonroutine occurrences which might be of interest to government authorities or to the public. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

alert: Events which are in progress or have occurred, which involve actual or potential substantial degradation of the level of safety of the plant. Any radiological releases are expected to be limited to small fractions of the Environmental Protection Agency (EPA) Pro-

TECTIVE ACTION Guideline (*Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, EPA 400-R-92-001, [1]¹) exposure levels.

site area emergency: Events which are in progress or have occurred, which involve actual or likely major failures of plant functions needed for protection of station personnel and the public. Any radioactive releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary.

general emergency: Events which are in progress or have occurred, which involve actual or imminent substantial core degradation with potential for loss of containment integrity. Radiological releases can reasonably be expected to exceed EPA Protective Action Guideline exposure levels offsite.

emergency response facility (ERF). An area or collection of areas designated for emergency use that include:

control room (CR): Onsite facility from which the nuclear power plant is operated. The control room is normally the facility where basic response functions are initially performed.

emergency news center (ENC): Facility outside protected area where designated Public Information Officers, from licensee and government agencies, provide media updates and respond to information requests.

emergency operations facility (EOF): Facility outside the protected area from which the overall accident management and coordination with offsite response organizations are performed.

operations support center (OSC): Onsite facility separate from the control room where designated operations, health physics, and maintenance support personnel assemble and await specific assignments during an emergency.

technical support center (TSC): Onsite facility separate from the control room where

¹ Numbers in brackets refer to corresponding numbers in Section 5, References.

technical analysis, direction, communications, and other designated emergency functions are performed.

government agency. Any federal, state, or local government organization designated in the plant's radiological emergency response plan.

licensee. The organization that holds the operating license for the facility.

offsite. All areas not onsite.

onsite. That area surrounding the reactor in which the licensee has the authority to control all activities including exclusion or removal of personnel and property.

parameter. Any specific variable or value which affects or describes the theoretical or measurable characteristics of a unit being considered, and which behaves as an independent variable or depends upon some functional interaction of other quantities in a theoretically determinable manner.

protected area. The area within the site security fence and controlled under the security plan.

protective action. An action taken to avoid or reduce the projected dose to individuals.

protective action guide (PAG). Those specified dose levels which, if projected to be exceeded for individuals in the population, cause pre-established protective actions to be recommended (e.g., see EPA 400-R-92-001 [1] and Title 21, "Food and Drugs," Code of Federal Regulations, Part 1090, "Accidental Radioactive Contamination of Human and Animal Feeds" [2]).

protective action recommendation (PAR). A recommendation to implement protective actions.

radiological emergency response plan (Plan). A licensing document that describes the licensee's overall emergency response functions, organization, facilities, and equipment, as well as appropriate government agency

plans. The radiological emergency response plan is implemented by specific procedures.

recovery. Actions taken after the plant has been brought to a stable or shutdown condition, including those taken to mitigate the emergency and ultimately return the plant to normal operation.

shall, should, and may. "Shall" is used to denote a requirement; "should" to denote a recommendation; and "may" to denote permission, neither a requirement nor a recommendation.

thyroid blocking agent. A material introduced into the body that minimizes uptake of radioiodine into the thyroid by saturating the thyroid with stable iodine.

3. Emergency Response Functions

This section specifies those functions necessary to support the plant operators effectively and respond to the needs of government agencies in protecting the health and safety of the general public during an emergency. The licensee shall ensure that the functions described in this section are implemented, recognizing that some individuals are assigned two or more functions within their assigned responsibilities.

Effective response to any emergency at a nuclear power plant requires the performance of four basic functions: emergency management, plant operations, emergency assessment, and recommendations of protective actions. Support functions are identified to ensure that basic functions are adequately fulfilled. To ensure the performance of these basic and support functions, the radiological emergency response plan (referred to hereinafter as the Plan) shall provide for augmentation of the on-shift staff of the plant by additional personnel. The appropriate activation of the emergency response organization is contingent upon the emergency conditions (i.e., which emergency class is in effect) that occur and the resulting emergency functions. The number of personnel required to staff each Emergency Response Facility (ERF) shall be predetermined. This should be done by functional analysis.

The minimum staffing of the emergency organization shall be documented to indicate the number of individuals assigned to each ERF. Table 1 indicates the relationship between basic and support functions and the emergency classification level at which they may be required. Table 2 identifies the support functions which may be necessary to perform each basic function. Table 3 identifies the recommended ERF(s) where the support functions should be implemented.

3.1 Basic Functions. Four basic emergency response functions shall be performed independent of the emergency conditions and the emergency classification. These functions are:

3.1.1 Emergency Management. The actions taken to maintain and coordinate required human and physical resources available to the licensee in responding to an emergency.

3.1.2 Plant Operations. The actions taken or directed by licensed operators to mitigate the emergency, to stabilize the event, and to return to or maintain the plant in a safe condition. Plant operations shall be performed at all times to minimize the impact of the emergency on the public.

3.1.3 Emergency Assessment. The evaluation of the past, present, and potential future physical plant status and external conditions. This assessment guides emergency response personnel in their efforts to mitigate the emergency and formulate protective action recommendations.

3.1.4 Recommendation of Protective Actions. The actions taken to determine or develop a Protective Action Recommendation (PAR) for the public and to communicate or provide the PAR to the responsible government or offsite agencies for implementation.

3.2 Support Functions. Support functions are those activities performed to ensure that the basic functions can be adequately fulfilled. The extent to which the support functions are implemented is dependent upon the nature of the emergency and the emergency classification level. The plant's Plan shall address the scope, responsibility, and facilities for each support

function. Implementation of support functions will depend upon organizational structure, and the size, design, and location of the plant. Requirements for each of the support functions are specified below:

3.2.1 Technical Support. Technical support shall be provided to advise on the present status of the plant during the emergency and to predict possible future conditions. Guidance should be provided by these technical support personnel (e.g., licensing, nuclear steam supply system vendor, plant architect/engineer, Nuclear Regulatory Commission, and licensee corporate engineering functions) to management and operations on mid- to long range decisionmaking for plant operations to mitigate the emergency, to stabilize the event, and to maintain or return the plant to a safe condition.

3.2.2 Communications. Communications support shall be provided to maintain control of the emergency organization and to allow effective communications among key individuals. American National Standard Criteria for Functional and Physical Characteristics of Radiological Emergency Response Facilities, ANSI/ANS-3.8.2-1995 [3], shall be evaluated for additional guidance in the design of a communications system that meets the needs of the organization described in this document.

3.2.3 Notifications. Notification methods shall be established to support emergency management and to provide recommendations for protective actions. Equipment, personnel, and procedures shall be available to ensure that licensee and government emergency response organizations are properly activated and informed of changes in emergency classifications.

3.2.4 Data Distribution. Relevant plant and environmental data shall be provided on a timely basis to support the response effort. Selected data shall be displayed and critical parameters shall be trended so that the plant status can be rapidly evaluated.

3.2.5 Administration and Logistics. Appropriate transportation, meals, accommodations, purchasing, finance, insurance, legal