

# U.S. Department of Energy

Washington, D.C.

## ORDER

DOE 5500.3A

4-30-91

SUBJECT: PLANNING AND PREPAREDNESS FOR OPERATIONAL EMERGENCIES

1. PURPOSE. To establish requirements for planning and preparedness for Operational Emergencies involving the Department of Energy (DOE) or requiring DOE assistance.
2. CANCELLATION. DOE 5500.3, REACTOR AND NONREACTOR NUCLEAR FACILITY EMERGENCY PLANNING, PREPAREDNESS, AND RESPONSE PROGRAM FOR DOE OPERATIONS, of 8-13-81
3. SCOPE. The provisions of this Order apply to all DOE Elements and contractors performing work for DOE as provided for by law and/or contract and as implemented by the appropriate contracting officer.
4. EXCLUSIONS.
  - a. All DOE facilities subject to Nuclear Regulatory Commission (NRC) license requirements are specifically exempted from the requirements of this Order.
  - b. The Power Marketing Administrations are temporarily exempted from the coverage of this directive provided that, within one calendar year of the effective date of this Order, the Power Marketing Administrations shall develop, in coordination with the Director of Emergency Operations (DEO), emergency management directives appropriate to their specific regional power missions, compatible with DOE's EMS and supplementary DOE EMS directives.
  - c. If a DOE Element or contractor can demonstrate that it is subject to emergency management program requirements under the authority of other Federal regulatory agencies that are at least as stringent as the requirements of this Order, then an exemption may be requested. Requests for exemptions from the requirements of this Order shall document the basis for each exemption and shall establish and justify alternatives equivalent to, or exceeding, this Order. Requests for exemptions shall be submitted for approval by the Under Secretary, with the concurrence of: the cognizant Program Senior Official (PSO); the DEO; and, if applicable, the Assistant Secretary for Environment, Safety, and Health (EH-1). The Under Secretary shall resolve any differences among the PSO, DEO, and, if applicable, EH-1.
5. BACKGROUND.
  - a. Operational Emergencies are those radiological and non-radiological accidents and events associated with the serious degradation of safety or security at a DOE owned or leased facility, operation, or activity. Other Orders in the DOE 5500 series address planning and preparedness for Energy and Continuity of Government Emergencies.

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**DISTRIBUTION:**

All Departmental Elements

**INITIATED BY:**

Director of Emergency Operations

- b. This Order extensively revises the previous criteria used to establish and maintain emergency planning, preparedness, and response programs for DOE facilities. Emergency planning and preparedness programs are expanded herein to cover all DOE facilities, not just reactor and non-reactor nuclear facilities. The Order identifies 13 elements for an emergency management program:
- (1) Emergency Response Organization;
  - (2) Offsite Response Interfaces;
  - (3) Operational Emergency Event Classes;
  - (4) Notification;
  - (5) Consequence Assessment;
  - (6) Protective Actions;
  - (7) Medical Support;
  - (8) Recovery and Reentry;
  - (9) Public Information;
  - (10) Emergency Facilities and Equipment;
  - (11) Training;
  - (12) Drills and Exercises;
  - (13) Program Administration.
- c. The technical basis for the emergency management program is provided by the hazards assessment, which is used to determine the extent and scope of emergency planning and preparedness activities. This hazards assessment is to be derived from existing documentation such as: Safety Analysis Reports; vulnerability and target analyses; probabilistic risk assessments (PRAs); environmental assessments; environmental impact statements; and other assessment, planning, and material inventory documents.
- d. This Order uses a broad definition of the term 'facility' that encompasses operations and activities.

## 6. REFERENCES.

- a. DOE 5500.1B, EMERGENCY MANAGEMENT SYSTEM, of 4-30-91, which establishes the DOE Emergency Management System.
- b. For all other references, see Attachment 1 to DOE 5500.1B.

7. DEFINITIONS.

- a. Facility. Any equipment, structure, *system*, process, or activity that fulfills a specific purpose. Examples include accelerators, storage areas, fusion research devices, nuclear reactors, production or processing plants, coal conversion plants, magnetohydrodynamics experiments, windmills, radioactive waste disposal systems and burial grounds, testing laboratories, research laboratories, transportation activities, and accommodations for analytical examinations of irradiated and unirradiated components.
- b. For all other definitions, see Attachment 2 to DOE 5500.1B.
- c. Acronyms, see Attachment 4 to DOE 5500.1B.

8. POLICY. It is DOE policy to:

- a. Operate facilities and conduct operations and activities in a responsible manner, thereby ensuring the safety and health of workers and members of the general public, as well as protecting the environment;
- b. Develop and maintain emergency planning, preparedness, and response capabilities, as well as effective public and interagency communications, in order to minimize the consequences to workers, national security, the public, and the environment from incidents involving DOE operations;
- c. Respond to emergencies in an effective and timely manner to mitigate the consequences and bring the emergency situation under control;
- d. Maintain consistency in the general approach and nomenclature of emergency planning and preparedness among elements within DOE, other Federal agencies, private industry, and state, tribal, and local authorities;
- e. Provide support, within resource constraints, to other local, state, tribal, and Federal agencies and international organizations, as requested, and in accordance with pertinent Federal regulations and plans, appropriate interagency agreements, and international conventions; and
- f. Comply with the provisions of applicable legislation, implementing regulations, Executive Orders, and Federal plans, such as:
  - (1) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) ;
  - (2) The Resource Conservation and Recovery Act (RCRA);
  - (3) The Emergency Planning and Community Right-to-Know Act (EPCRA);
  - (4) Executive Orders 12580 and 12656;

- (5) Title 40 CFR 300, NATIONAL OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLAN;
- (6) Title 40 CFR 302, DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION; and
- (7) The various Federal Plans for-responses to manmade and natural disasters (e. ., the Federal Radiological Emergency Response Plan, the Federal Radiological Monitoring and Assessment Plan, and the Federal Response Plan).

#### 9. CONCEPT OF OPERATIONS.

- a. Emergency management programs provide the final barrier of DOE's defense-in-depth concept for ensuring the safety and health of workers and the public and for protecting property and the environment in the event of an Operational Emergency. Emergency management programs enable organizations to respond to an emergency in a timely, efficient, and effective manner, resulting in improved mitigation of consequences. Emergency management programs are developed and maintained to ensure adequate response for many potential accident scenarios and to provide the framework for responding to accident scenarios not specifically considered.
- b. The DOE Emergency Management System (EMS) is comprised of several comprehensive emergency management concepts such as planning, preparedness, and response.
  - (1) "Planning" includes the development and preparation of emergency plans and procedures and the identification of necessary personnel and resources to provide an effective response.
  - (2) "Preparedness" includes the training of personnel, acquisition and maintenance of resources, and exercising of the plans, procedures, personnel, and resources essential for emergency response.
  - (3) "Response" represents the implementation of planning and preparedness during an emergency and involves the effective decisions, actions, and application of resources that must be accomplished to mitigate consequences and recover-from an emergency.
- c. DOE and DOE contractors are involved in operations and activities incorporating a broad range of hazards and targets which must be considered in effective emergency planning and preparedness. Because of this broad diversity within DOE, the emergency management programs for the various facilities within the DOE complex may be consistent in framework, but vary considerably in scope. The scope of emergency management programs and the extent of emergency planning and preparedness required are based upon, and are commensurate with, the hazards and consequences associated with a specific facility.

- d. Hazards assessments provide the technical basis for emergency management programs. The extent of emergency planning and preparedness required for a Particular facility directly corresponds to the type and scope of hazards present and the potential consequences of accidents or events. A hazards assessment includes identification of any hazards and targets unique to a facility, analyses of potential accidents or events, and evaluation of potential accident or event consequences. For the most part, hazard assessments used for emergency planning purposes can be derived from DOE assessments of hazards required by DDE Orders 5481.1B and 5630.11. It is understood that not every-conceivable situation will be analyzed, and, thus, not every response can be preplanned. However, the existence of an adequate hazards assessment, in combination with effective emergency planning and preparedness, provides the framework for response to virtually any Operational Emergency.
- e. DOE emergency management programs are based on emergency plans, procedures to implement the plans, and other supporting documents. All emergency plans must include facility-unique information describing the individual program elements plus a clear statement of how the plan relates to the overall DOE EMS. Emergency procedures must contain the detailed information and specific instructions for emergency response personnel to implement the emergency plan. Additional supporting documents may include technical manuals, engineering drawings, and Safety Analysis Reports.

10. RESPONSIBILITIES AND AUTHORITIES. These responsibilities and authorities are supplemental to those in DOE 5500.1B, although some authorities and responsibilities are repeated for emphasis within the context of this order.

- a. The Director of Emergency Operations (DEO) shall:
  - (1) Coordinate the development and implementation of the DOE EMS in all DOE programs and elements to ensure effective planning and preparedness for Operational Emergencies;
  - (2) Manage the Headquarters (HQ) Emergency Operations Center (EOC) and coordinate with the PSOs to provide timely and effective methods of meeting every DOE program's emergency management requirements; and
  - (3) Issue standards and criteria for emergency management to DOE elements and contractors.
- b. Program Senior Officials (PSOs) shall, for all DOE- or contractor-operated facilities under their jurisdiction:
  - (1) Be responsible and accountable for the planning and execution of the DOE EMS;
  - (2) Ensure, in coordination with the DEO, that the Under Secretary assigns a single Program Office as the Office of Primary Responsibility for emergency preparedness activities to avoid duplication of effort at DOE facilities where more than one PSO provides funding or direction;

- (3) Ensure that emergency management functions and programs are established and maintained in accordance with the provisions of the DOE 5500 series Orders;
  - (4) Establish organizational structures and administrative mechanisms to ensure line organization responsibility and accountability for emergency management in accordance with established plans and procedures;
  - (5) Ensure participation in a continuing program of emergency management drills and exercises;
  - (6) Provide funding and resources adequate for the continuing and effective implementation of emergency management programs;
  - (7) Perform management self-assessment functions of the DOE EMS;
  - (8) Provide for the handling and control of information on the emergency situation, including approval, in coordination with the Director of Public Affairs (PA-1), other agencies, and the public; and
  - (9) Ensure incorporation of EH-1 and DEO guidance and assistance in the areas of hazard assessments, release characteristics, emergency planning zones, exposure pathways, emergency action levels (EALs), event categorization, protective actions, drills, and exercises into applicable plans and procedures.
- c. The Assistant Secretary for Environment, Safety, and Health (EH-1), in coordination with the DEO, shall:
- (1) Develop and promulgate generic guidance on topics such as criteria for establishing emergency planning zones, hazards and consequence assessments, release characteristics and exposure pathways analyses, and protective *action* guides; and
  - (2) Conduct oversight as required to ensure that those aspects of both radiological and non-radiological emergency management which effect environmental protection, radiation safety, worker safety, and those aspects of public health and safety that deal with epidemiology and exposure to hazardous materials are properly addressed.
- d. The Assistant Secretary for International Affairs and Energy Emergencies (IE-1) shall provide a methodology for DOE liaise with the Department of State, international organizations, and foreign countries and shall advise PSOs on the international aspects of Operational Emergencies, including advice on whether a planned response will conform to international policy and treaty obligations.
- e. The Heads of DOE Field Elements shall:
- (1) Implement the directives and criteria for emergency management;

- (2) Establish organizational structure and administrative mechanisms to ensure line organization responsibility and accountability for emergency management. Coordinate the development and implementation of each contractor's emergency management program;
- (3) Ensure that hazards assessments are adequately performed and documented;
- (4) Ensure that emergency management programs are established, maintained, and commensurate with the respective potential hazards;
- (5) Ensure participation in a continuing program of emergency management drills and exercises;
- (6) Conduct assessments of area office and facility emergency management programs to verify compliance with DOE directives and policy and provide the results/conclusions to the cognizant PSO;
- (7) Establish a field level emergency management program to coordinate the development and implementation of contractor emergency management programs. The purpose of this coordination is to ensure effective and consistent emergency management systems as prescribed by DOE 5500.1B;
- (8) Ensure that the Manager/Administrator of each DOE- or contractor-operated facility, as the first or operating level of the line management structure, shall:
  - (a) Develop, implement, and maintain an emergency management program commensurate with the facility's potential hazards;
  - (b) Perform and document hazards assessments;
  - (c) Schedule a continuing program of emergency management drills and exercises; and
  - (d) Conduct assessments of their emergency management program to verify compliance with DOE directives and policy.

## 11. REQUIREMENTS

- a. General Requirements. As part of the EMS, DOE elements and DOE contractors shall establish and maintain emergency management programs consisting of plans and procedures for response to Operational Emergencies involving or affecting DOE facilities, including DOE transportation activities. These emergency management programs must be commensurate with the assessment of potential hazards and targets and must include the following elements: Emergency Response Organization, Offsite Response Interfaces, Operational Emergency Event Classes, Notification, Consequence Assessment, Protective Actions, Medical Support, Recovery and Reentry, Public Information, Emergency Facilities and Equipment, Training, Drills and Exercises, and

Program Administration. Further, DOE elements and the managers/administrators of DOE- or contractor operated facilities shall establish Emergency Readiness Assurance Programs, as set forth in DOE 5500.10. DDE emergency management programs must comply with, but are not limited to, the requirements for hazards assessment, program elements, and documentation set forth in this Order.

b. Hazards Assessment.

- (1) A hazards assessment shall be prepared and maintained for each facility and shall be used for emergency planning purposes. This hazards assessment provides the technical basis for the emergency management program and shall include information sufficient to determine the scope and extent of the program elements comprising the emergency management program for the respective facility. This hazards assessment shall be derived from information provided by the assessment of the potential hazards and targets and will be performed in compliance with existing DOE requirements. The use of vulnerability and target analyses may include sensitive or classified information which will need special handling.
- (2) The hazards assessment shall consider the broad range of emergency events that could affect the facility. These emergency events may result from operation of the facility; accidents; hostile attack, terrorism, sabotage, or malevolent acts; or earthquakes or other natural phenomena. The hazards assessment shall include descriptions of those hazards relevant to potential Operational Emergencies and characterizations of the potential consequences on workers, the public, and the environment. For each potential Operational Emergency considered, the assessment must address the determination of initiating events, accident mechanisms, equipment or system failures, event indications, contributing events, source terms, material release characteristics, topography, environmental transport and diffusion, and exposure considerations.
- (3) Assumptions, methodology, models, and evaluation techniques used in the hazards assessment shall be fully documented. Also, the hazards "assessment shall include a determination of the size of the EPZ, i.e., the area surrounding the facility for which special planning and preparedness efforts are required to ensure that prompt and effective protective actions can be taken to minimize the risk to workers, the general public, and the environment.
- (4) DOE requirements for assessment of hazards, primarily in DOE 5481.1B and 5630.11, are longstanding. Safety Analysis Reports, as defined by DOE 5481.1B, address identification of hazards, probability of occurrence and predicted consequences of hazards expressed in qualitative or quantitative terms, physical design features and administrative controls to prevent or mitigate potential accidents, and the potential accidents associated with the hazards. Safety Analysis Reports provide analyses and consequences of the worst credible and/or



Design Basis Accidents (DBAs). These analyses are used to determine the design and performance specifications of safety features. DBAs and their associated assumptions can be used as a starting point for emergency response planning. However, their use for emergency response planning may be limited because they may contain a number of conservative assumptions that may not be appropriate. A spectrum of potential accidents ranging from minor to beyond-the-design basis should be postulated and realistically analyzed. The emergency response plan must be responsive to this full spectrum of accidents. The vulnerability and target analyses performed in accordance with DOE 5630.11 are used to determine the appropriate level of protection for each identified target. The analyses and level of protection are then documented in facility-specific Master Safeguards and Security Agreements (MSSAs).

- (5) Other hazards assessments are documented in Material Safety Data Sheets; Safety Assessments; Spill Prevention, Control, and Countermeasure Plans; Pre-Fire Plans; Environmental Assessments and Impact Statements (EAs and EISs); PRAs; Severe Accident Analyses; and the Emergency and Hazardous Chemical Inventory Forms and Toxic Chemical Release Forms, prepared pursuant to the requirements of the Emergency Planning and Community Right-to-Know Act (SARA Title III).
- c. Program Elements. All DOE emergency management programs must include, as a minimum, the following program elements:
- (1) Emergency Response Organization. An element with clearly specified authorities and responsibilities for emergency response and mitigation which must be established and maintained for each facility. It must have overall responsibility for the initial and ongoing response to, and mitigation of, an emergency, and must:
    - (a) Perform, but not be limited to, the following functions: event categorization, determination of the emergency class, notification, provision of protective action recommendations, management and decision making, control of onsite emergency activities, consequence assessment, protective actions, medical support, public information, activation and coordination of onsite response resources, security, communications, administrative support, and coordination and liaison with offsite support and response organizations;
    - (b) Consist of an adequate number of experienced and trained personnel, including designated alternates, for timely performance of the functions identified above;
    - (c) Assign emergency response responsibilities and tasks to specific individuals identified by name, title, or position; and
    - (d) Integrate local agencies and organizations which would be relied upon to provide onsite response services and include those

contractor and private organizations that may be relied upon to provide specialized expertise and assistance to all emergency planning, preparedness, and readiness assurance activities.

- (2) Offsite Response Interfaces. Provisions must be in place for interface and coordination with Federal, state, tribal, and local agencies and organizations responsible for offsite emergency response and for protection of the environment and the health and safety of the public. Where possible, interrelationships with Federal, state, tribal, and local organizations must be prearranged and documented in formal plans, agreements, understandings, and/or other pre-arrangements for mutual assistance which detail the emergency measures to be provided by non-DOE entities. State, tribal, and local governments should be encouraged to prepare their own response plans for those facilities where the EPZ extends beyond DOE property. If state, tribal, and local governments refuse to participate, DOE should include probable state, tribal, and local response activities in DOE plans.
- (3) Operational Emergency Event Classes. Operational Emergencies involving or effecting DOE facilities must be characterized as one of the Operational Emergency classes (e.g., Alert, Site Area Emergency, or General Emergency) in accordance with DOE 5500.2B. EALs, the specific criteria used to recognize and categorize events, must be developed for the spectrum of potential Operational Emergencies identified by the hazards assessment. EALs form the basis for notification and participation of offsite organizations and for determining what and when protective measures will be implemented. EAL initiating conditions (i.e., individual instrument readings, equipment status, valve positions, parameter values, onsite and/or offsite monitor readings, etc.) must be specifically identified in procedures and must be observable and recognizable in a timely manner by responsible personnel. The EALs and related information must be consistent and integrated with the emergency plans and procedures of offsite Federal, state, tribal, and local organizations and should be reviewed annually, as appropriate, by all parties involved in response activities.
- (4) Notification. Notification and communication of emergency information must be consistent with the requirements of DOE 5000.3A and 5500.2B. Provisions must be in place for prompt initial notification of emergency response personnel and response organizations, including appropriate DOE elements and other Federal, state, tribal, and local organizations, and for continuing effective communication among the response organizations throughout an emergency. The content and format of the initial notification and follow-up messages must be prearranged and standardized in the emergency plan. The handling of classified and/or controlled information during an emergency must be in accordance with established procedures and DOE requirements.
- (5) Consequence Assessment. Provisions must be in place to adequately assess the actual or potential onsite and offsite consequences of an emergency and must include:

- (a) Timely initial assessment of the actual or potential consequences of an emergency and continuous, in-depth assessment of events throughout an emergency;
  - (b) Integration of the consequence assessment process with the process for categorization of an event as an emergency, determination of the appropriate emergency class, and protective action decision making, including projections of onsite and offsite consequences;
  - (c) Monitoring and evaluation of the specific indicators necessary to continually assess the consequences of emergency events and to monitor safety, health, environmental, and security conditions which may affect or exacerbate the emergency; and
  - (d) Coordination with Federal, state, tribal, and local organizations to locate and track hazardous materials released to the environment; estimate the integrated impact of such release on the public and the environment; and locate and recover materials, especially those with national security implications.
- (6) Protective Actions. Provisions must be in place for specific, predetermined actions to be taken in response to emergency conditions to protect onsite personnel and the public and must include:
- (a) Protective Action Guides (PAGs) and Emergency Response Planning Guidelines (ERPGs), prepared in conformance with DOE approved guidance applicable to the actual or potential release of hazardous materials to the environment for use in protective action decision making;
  - (b) Control, monitoring, and maintenance of records of onsite personnel exposures to hazardous materials;
  - (c) Accountability for all facility personnel, within 30 minutes (not to exceed 45 minutes) of emergency determination, and timely sheltering and/or evacuation of workers, to include predetermined criteria, procedures, assembly areas, transportation methods, and routes;
  - (d) Radiological and/or hazardous material decontamination of workers and equipment evacuated from the site;
  - (e) Determination of the area surrounding the specific facility actually affected by an Operational Emergency; and
  - (f) Timely recommendation to appropriate state, tribal, or local authorities of protective actions, such as sheltering and/or evacuation, for the general public.

- (7) Medical Support. Provisions must be in place for medical support for workers, including those with radiological and/or hazardous material contamination, and must include:
- (a) Immediate, onsite first aid and emergency medical treatment capability;
  - (b) Transportation of injured onsite personnel to onsite or offsite medical facilities, as appropriate; and .
  - (c) Documented arrangements with onsite and offsite medical facilities to accept and treat contaminated, injured personnel.
- (8) Recovery and Reentry. Provisions must be made for recovery from an "Operational Emergency and reentry into the affected facility.
- (a) The approach and general procedures for recovery include: decision making and communications associated with termination of an emergency; dissemination of information to Federal, state, tribal, and local organizations regarding the emergency and relaxation of public protective actions; establishment of a recovery organization; and establishment of general criteria for resumption of normal operations.
  - (b) The means must exist for estimating dosage and for protecting workers and the general public from hazardous exposure during recovery and reentry activities.
- (9) Public Information. An emergency public information program, consistent with DOE 5500.4, must be established and integrated into the emergency management program and must include:
- (a) Methods and procedures for the timely release of accurate information regarding an emergency to the news media and the coordination of this information within DOE and with other Federal, state, tribal, and local response organizations;
  - (b) A designated spokesperson and staff able to access emergency information; exchange information with spokespersons of Federal, state, tribal, and local organizations; disseminate information to the news media; and manage public inquiries;
  - (c) A predesignated facility to accommodate members of the news media and to facilitate the coordination of press releases; and
  - (d) An ongoing public information program, operated in conjunction with state, tribal, and local governments and the news media, to distribute realistic planning information on an appropriate basis that describes an emergency and includes sources of public information, evacuation routes, sheltering recommendations, etc.

- (10) Emergency Facilities and Equipment. Facilities and equipment, adequate support emergency response, must be established and maintained as follows:
- (a) An EOC must be established from which the emergency response organization assesses, evaluates, coordinates, and directs emergency response activities and communicates within DOE and with other Federal, state, tribal, and local response organizations. Additional emergency facilities must be designated commensurate with the scope and characteristics of response activities (e.g., technical support, security, personnel assembly, decontamination, medical services, process control, and chemical/radiological analyses).
  - (b) The staffing, operation, and response activities pertaining to the EOC, and each additional emergency facility, must be predetermined and documented in procedures for a timely and coordinated overall emergency response. The EOC must be habitable following an emergency (e.g., shielded, ventilated) or an alternate EOC must be available if the primary EOC becomes uninhabitable.
  - (c) Primary and backup means of communications must be available and capable of operating with other DOE elements, and with other Federal, state, tribal, and local response organizations.
  - (d) Adequate equipment and supplies must be available and operable for emergency response personnel to carry out their respective duties and responsibilities.
- (11) Training. General training must be provided to all workers regarding Operational Emergencies, and specialized training must be conducted for all workers and be available to all regional Federal, state, tribal, and local emergency response organizations, as follows:
- (a) Training must be provided annually to workers who may have to take protective actions (e.g., assembly, evacuation) in the event of an emergency.
  - (b) A formal training program must be in place for the instruction and qualification of all personnel (i.e., primary and alternate) comprising the facility emergency response organization to include initial training and annual retraining for both onsite and offsite incidents, including transportation incidents.
- 1 All training must be systematic and performance based, i.e., based on an analysis of tasks to be performed during an emergency, and developed with performance objectives, emphasis on team training, and facility-specific emergency response scenarios.

- 2 Annual retraining shall include training on weaknesses detected during drills and exercises, changes to plans and procedures, and lessons learned from emergencies at DOE and other industrial facilities.
  - (c) Offsite state, tribal, and local emergency response organizations must be offered facility-specific orientation training and information on hazards and emergency response annually. Information on hazards and emergency response must also be provided to the media and the public, as appropriate.
- (12) Drills and Exercises. A coordinated program of drills and exercises must be an integral part of the emergency management program as follows:
- (a) Drills must be used to develop and maintain personnel skills, expertise, and response capability. Drills must be of sufficient scope and frequency to ensure adequate response capability in all applicable areas. Drills must include emergency response activities such as notification, emergency communication, fire, medical emergencies, hazardous material detection and monitoring, environment sampling and analyses, security, personnel accountability, evacuation, emergency categorization, weapons handling, decontamination, facility activation, public information, and health physics. There must be at least one drill per year to train in notification and emergency communications with regional Federal, state, tribal, and local authorities and DOE HQ.
  - (b) Exercises
    - 1 A full participation exercise shall be conducted annually for at least one facility on each DOE site to test and demonstrate an integrated emergency response capability. For multiple-facility sites, the basis of the exercise scenario shall be rotated among those facilities with EPZs extending offsite;
    - 2 Full participation exercises for the Department's radiological emergency response assets (e.g., ARG, NEST, FRMAC, MS, ARM, and REAC/TS) must be conducted periodically, at a minimum, once every three years;
    - 3 Full participation exercises shall require the full participation of HQ and Field Elements. Federal, state, tribal, and local regulatory and/or emergency response organization participation shall be requested. When these groups respond affirmatively, they shall be accommodated;
    - 4 A control group shall be established for each exercise to ensure that events occur which address the objectives of the exercise;

- 5 An evaluation group shall be established for each exercise to assess the performance of the exercise participants against the objectives; and
  - 6 A critique process shall be conducted for each exercise to provide Initial Impressions of accomplishments and shortcomings discovered during the exercise;
- (c) Drills and exercises must be conducted in a manner which emphasizes facility-specific emergency events and response activities and which minimizes the use of generic, nonspecific simulations.
  - (d) Each member of the emergency response organization shall - participate in a drill or exercise at least annually to demonstrate proficiency in assigned response duties and responsibilities.
  - (e) Emergency management improvements and corrective actions identified during actual emergencies or during drills and exercises must be incorporated into the emergency management program.
- (13) Program Administration. Provisions must be in place for the continued administration of the emergency management program as follows:
- (a) Each PSO, each Head of Field Element, and each contractor facility subject to this Order shall designate an individual to administer the emergency management program for their program, Field Element, or facility. This individual's responsibilities shall include development and maintenance of the emergency plan, development of the Emergency Readiness Assurance Plan (ERAP) and annual updates, development and conduct of training and exercise programs, coordination of assessment activities, development of related documentation, and coordination of emergency resources.
  - (b) The emergency plan and implementing procedures shall be controlled distribution documents and shall be annually reviewed and updated.
  - (c) An internal assessment of all aspects of the emergency management program must be conducted annually by persons not directly responsible for administration of the program or response activity being assessed.
- d. Documentation. PSOs, Heads of Field Elements, and all managers/administrators of a DOE- or contractor-operated facility shall develop and maintain an emergency plan and associated procedures to document their emergency management program. These documents must be controlled distribution documents. The documentation shall include:

- (1) An emergency plan which describes the provisions for response to an operational emergency.
  - (a) The plan must contain information to describe each element of the emergency management program, describe the overall picture of emergency response capabilities, and include material necessary for the understanding of the plans (e.g., diagrams, illustrations, Raps, and transportation routes.) The emergency plan must reference procedures and supporting material. (i.e., PRAs, MSSAs, EAs, EISs, etc.) which may be used by emergency response personnel.
  - (b) The emergency plan must describe the EPZs applicable to the facility to include topographical features, demographic information, transportation routes, land use, major industrial facilities, public facilities, and jurisdictional boundaries.
  - (c) The emergency plan must be consistent with other plans for similar DOE facilities and coordinated and compatible with other applicable DOE, Federal, state, tribal, and local emergency plans. The emergency plan must integrate the response plans for specific incidents (e.g., fire, medical, security, and natural phenomena).
- (2) Procedures which describe how the emergency plan shall be implemented.
  - (a) Procedures must consist of special emergency plan implementing procedures (e.g., EALs, event categorization, notification, EOC operation) as well as other procedures currently in use (e.g., equipment operation, chemistry controls, radiological monitoring, and maintenance) which would be utilized in, or associated with, emergency response activities.
  - (b) Procedures must be consistent and compatible with the emergency plan. Emergency procedures must contain the detailed information and the specific instructions needed to carry out the emergency plan during a drill, exercise, or actual emergency. Procedures must clearly and concisely identify the individual(s) responsible for performance of response activities and delineate the specific actions steps to be performed. Procedures must identify the relevant prerequisites (i.e., conditions which must exist prior to specific actions being performed) and precautions (regarding personnel safety and equipment operation) associated with the response actions.
- (3) Emergency records which contain information for review and reconstruction of major communications and actions taken during an emergency. These records include operator logs and documentation produced by the emergency response organization. These records shall be maintained by the individual responsible for program administration.



12. IMPLEMENTING SCHEDULE AND REQUIREMENTS. Within 6 months of the date of issuance of this Order, PSOs must prepare and submit a plan, through the DEO, for Under Secretary approval which describes how the requirements of this Order shall be met, including schedules, costs, and quality assurance activities for the phased implementation of the provisions of this Order.

BY ORDER OF THE SECRETARY OF ENERGY:



JOHN J. NETTLES, JR.  
Director of Administration  
and Human Resource Management



# U.S. Department of Energy

Washington, D.C.

PAGE CHANGE

DOE 5500.3A Chg 1

2-27-92

SUBJECT: PLANNING AND PREPAREDNESS FOR OPERATIONAL EMERGENCIES

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1. PURPOSE. To transmit revised pages to DOE 5500.3A, PLANNING AND PREPAREDNESS FOR OPERATIONAL EMERGENCIES, of 4-30-91.
  2. EXPLANATION OF CHANGE. To make organizational title, routing symbol, and other administrative editorial changes required by SEN-6D-91, DEPARTMENTAL ORGANIZATIONAL AND MANAGEMENT ARRANGEMENTS, of 5-16-91. No substantive changes have been made.
  3. FILING INSTRUCTIONS.

a.	<u>Remove Page</u>	<u>Dated</u>	<u>Insert Page</u>	<u>Dated</u>
	1	4-30-91	1	2-27-92
	2	4-30-91	2	4-30-91
	5	4-30-91	5	2-27-92
	6	4-30-91	6	4-30-91

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- b. After filing the attached pages, this transmittal may be discarded.



JOHN J. NETTLES, JR.  
Director of Administration  
and Human Resource Management

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INITIATED BY:  
Director of Emergency Operations



# US. Department of Energy

Washington, D.C.

## ORDER

DOE 5500.3A
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SUBJECT: PLANNING AND PREPAREDNESS FOR OPERATIONAL EMERGENCIES

Change 1: 4-30-91  
2-27-92

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1. P U R P O S E. Establish requirements for planning and preparedness for Operational Emergencies involving the Department of Energy (DOE) or requiring DOE assistance.
  2. CANCELLATION. DOE 5500.3, REACTOR AND NONREACTOR NUCLEAR FACILITY EMERGENCY PLANNING, PREPAREDNESS, AND RESPONSE PROGRAM FOR DOE OPERATIONS, of 8-13-81.
  3. SCOPE. The provisions of this Order apply to all DOE Elements and contractors performing work for DOE as provided for by law and/or contract and as implemented by the appropriate contracting officer.
  4. EXCLUSIONS.
    - a. All DOE facilities subject to Nuclear Regulatory Commission (NRC) license requirements are specifically exempted from the requirements of this Order.
    - b. The Power Marketing Administrations are temporarily exempted from the coverage of this directive provided that, within one calendar year of the effective date of this Order, the Power Marketing Administrations shall develop, in coordination with the Director of Emergency Operations (DEO), emergency management directives appropriate to their specific regional power missions, compatible with DOE's EMS and supplementary DOE EMS directives.
    - c. If a DOE Element or contractor can demonstrate that it is subject to emergency management program requirements under the authority of other Federal regulatory agencies that are at least as stringent as the requirements of this Order, then an exemption may be requested. Requests for exemptions from the requirements of this Order shall document the basis for each exemption and shall establish and justify alternatives equivalent to, or exceeding, this Order. Requests for exemptions shall be submitted for approval by the Under Secretary, with the concurrence of: the cognizant Program Secretarial Officer (PSO); the DEO; and, if applicable, the Assistant Secretary for Environment, Safety, and Health (EH-1). The Under Secretary shall resolve any differences among the PSO, DEO, and, if applicable, EH-1.
  5. BACKGROUND.
    - a. Operational Emergencies are those radiological and non-radiological accidents and events associated with the serious degradation of safety or security at a DOE owned or leased facility, operation, or activity. Other Orders in the DOE 5500 series address planning and preparedness for Energy - and Continuity of Government Emergencies.

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- b. This Order extensively revises the previous criteria used to establish and maintain emergency planning, preparedness, and response programs for DOE facilities. Emergency planning and preparedness programs are expanded herein to cover all DOE facilities, not just reactor and non-reactor nuclear facilities. The Order identifies 13 elements for an emergency management program:
  - (1) Emergency Response Organization;
  - (2) Offsite Response Interfaces;
  - (3) Operational Emergency Event Classes;
  - (4) Notification;
  - (5) Consequence Assessment;
  - (6) Protective Actions;
  - (7) Medical Support;
  - (8) Recovery and Reentry;
  - (9) Public Information;
  - (10) Emergency Facilities and Equipment;
  - (11) Training;
  - (12) Drills and Exercises;
  - (13) Program Administration.
- c. The technical basis for the emergency management program is provided by the hazards assessment, which is used to determine the extent and scope of emergency planning and preparedness activities. This hazards assessment is to be derived from existing documentation such as: Safety Analysis Reports; vulnerability and target analyses; probabilistic risk assessments (PRAs); environmental assessments; environmental impact statements; and other assessment, planning, and material inventory documents.
- d. This Order uses a broad definition of the term "facility" that encompasses operations and activities.

## 6. REFERENCES.

- a. DOE 5500.18, EMERGENCY MANAGEMENT SYSTEM, of \_\_\_\_\_, which establishes the DOE Emergency Management System.
- b. For all other references, see Attachment 1 to DOE 5500.1B.

- d. Hazards assessments provide the technical basis for emergency management programs. The extent of emergency planning and preparedness required for a particular facility directly corresponds to the type and scope of hazards present and the potential consequences of accidents or events. A hazards assessment includes identification of any hazards and targets unique to a facility, analyses of potential accidents or events, and evaluation of potential accident or event consequences. For the most part, hazard assessments used for emergency planning purposes can be derived from DOE assessments of hazards required by DOE 5481.1B and 5630.11. It is understood that not every conceivable situation will be analyzed, and, thus, not every response can be preplanned. However, the existence of an adequate hazards assessment, in combination with effective emergency planning and preparedness, provides the framework for response to virtually any Operational Emergency.
- e. DOE emergency management programs are based on emergency plans, procedures to implement the plans, and other supporting documents. All emergency plans must include facility-unique information describing the individual program elements plus a clear statement of how the plan relates to the overall DOE EMS. Emergency procedures must contain the detailed information and specific instructions for emergency response personnel to implement the emergency plan. Additional supporting documents may include technical manuals, engineering drawings, and Safety Analysis Reports.

10. RESPONSIBILITIES AND AUTHORITIES. These responsibilities and authorities are supplemental to those in DOE 5500.1B, although some authorities and responsibilities are repeated for emphasis within the context of this Order.

a. The Director of Emergency Operations (DEO) shall:

- (1) Coordinate the development and implementation of the DOE EMS in all DOE programs and elements to ensure effective planning and preparedness for Operational Emergencies;
- (2) Manage the Headquarters (HQ) Emergency Operations Center (EOC) and coordinate with the PSOs to provide timely and effective methods of meeting every DOE program's emergency management requirements; and
- (3) Issue standards and criteria for emergency management to DOE elements and contractors.

b. Program Secretarial Officers (PSOs) shall, for all DOE- or contractor-operated facilities under their jurisdiction:

- (1) Be responsible and accountable for the planning and execution of the DOE EMS;
- (2) Ensure, in coordination with the DEO, that the Under Secretary assigns a single Program Office as the Office of Primary Responsibility for emergency preparedness activities to avoid duplication of effort at DOE facilities where more than one PSO provides funding or direction;

Vertical line denotes change.

- (3) Ensure that emergency management functions and programs are established and maintained in accordance with the provisions of the DOE 5500 series Orders;
  - (4) Establish organizational structures and administrative mechanisms to ensure line organization responsibility and accountability for emergency management in accordance with established plans and procedures;
  - (5) Ensure participation in a continuing program of emergency management drills and exercises;
  - (6) Provide funding and resources adequate for the continuing and effective implementation of emergency management programs;
  - (7) Perform management self-assessment functions of the DOE EMS;
  - (8) Provide for the handling and control of information on the emergency situation, including approval, in coordination with the Director of Public Affairs (PA-1), other agencies, and the public; and
  - (9) Ensure incorporation of EH-1 and DEO guidance and assistance in the areas of hazard assessments, release characteristics, emergency planning zones, exposure pathways, emergency action levels (EALs), event categorization, protective actions, drills, and exercises into applicable plans and procedures.
- c. The Assistant Secretary for Environment, Safety, and Health (EH-1), in coordination with the DEO, shall:
- (1) Develop and promulgate generic guidance on topics such as criteria for establishing emergency planning zones, hazards and consequence assessments, release characteristics and exposure pathways analyses, and protective action guides; and
  - (2) Conduct oversight as required to ensure that those aspects of both radiological and non-radiological emergency management which affect environmental protection, radiation safety, worker safety, and those aspects of public health and safety that deal with epidemiology and exposure to hazardous materials are properly addressed.
- d. The Assistant Secretary for International Affairs and Energy Emergencies (IE-1) shall provide a methodology for DOE to liaise with the Department of State, international organizations, and foreign countries and shall advise PSOs on the international aspects of Operational Emergencies, including advice on whether a planned response will conform to international policy and treaty obligations.
- e. The Heads of DOE Field Elements shall:
- (1) Implement the directives and criteria for emergency management;