

6. TERMINATION AND RECOVERY

6.1 Introduction

Termination and recovery are two separate but related activities, each with its own purpose and implementation concerns. For purposes of this guide event **Termination** is the conclusion of an Operational Emergency and includes a determination of when it is appropriate to cease emergency response activities and of associated notifications.

The termination process begins when personnel in charge of the response effort determine that conditions are sufficiently stabilized to begin comparing them to pre-established decisional criteria. The termination decision and subsequent notification that an event no longer constitutes an Operational Emergency marks the beginning of recovery.

Recovery is defined as those actions taken, after a facility has been brought to a stable or shutdown condition, to return the facility to normal operation. For purposes of this guide, the recovery period will begin when the emergency response to an Operational Emergency is declared terminated. The recovery phase continues until the facility and any affected areas meet predetermined criteria for the resumption of normal operation or use.

The types of activities that could be conducted during the recovery phase include (but are not limited to): damage assessment, environmental consequence assessment, long-term protective action determinations, facility and/or environmental restoration, and dissemination of information. Some activities required to implement recovery are similar to those performed during reentry in that they may involve entering a facility or affected area in which hazardous materials have been released (Also see Volume IV, Chapter 2.)

The results of the facility-specific Hazards Surveys and Assessments are used to help establish the basic criteria and organizational structure necessary for conducting termination and recovery activities. Emergency response plans provide for creation of specific procedures, criteria, and other aids to identify the point at which emergency response activities can be terminated and to implement the concept of operations for recovery in a timely and efficient fashion. Planning and implementation of termination and recovery should be coordinated with the needs and requirements of the state and local EROs. The emergency plan should explicitly give the ERO the responsibility and the authority to terminate emergency response activities and to implement the transition from emergency response to recovery.

Base Program. The Order requires that, at a minimum, recovery shall include notifications associated with termination of an emergency and establishment of criteria for resumption of normal operations. Although the guidance given in this chapter is focused

on Hazardous Materials Programs, the general concepts of termination and recovery presented can be applied to the Operational Emergencies identified by the site/facility-specific Hazards Survey for the Base Program.

6.2 Termination

The decision to terminate emergency response should be made with the concurrence of all principle participating response organizations. General criteria should be developed that, when met, will allow emergency managers to declare the emergency response phase terminated and initiate accident recovery. The following are selected examples (not all-inclusive) of event termination criteria.

- The facility/site and DOE management, in consultation with appropriate offsite agencies, do not identify a valid reason to continue operating in the emergency response mode.
- Radiation or hazardous material exposure levels within the affected facility or area(s) are stable or decreasing with time.
- The affected facility or site is in a stable condition, and there is a high probability that it can be maintained in that condition.
- Fire, flood, earthquake, or similar emergency conditions no longer constitute a hazard to critical systems/equipment or to personnel.
- Releases of hazardous material to the environment have ceased or are controlled within permissible regulatory limits, and the potential for an uncontrolled release is low.
- Existing conditions no longer meet the established emergency categorization or classification criteria, and it appears unlikely that conditions will deteriorate.
- No surveillance relative to protective actions is needed, except for ingestion pathway concerns and contamination and/or environmental assessment activities.
- The needs of all contaminated/injured personnel have been fulfilled.
- All initial emergency notifications have been completed.
- Access to affected areas necessary for conducting recovery operations has been assessed.

- The incident scene can be preserved until cognizant investigative authority concurs that recovery operations may begin.
- Initial recovery activities have been clearly identified and prioritized.
- The recovery staffing plan has been developed, approved, and can be implemented.

6.3 Recovery

The objective of the recovery effort is to return the affected facilities and areas to normal operations following the termination of emergency response. Implementation and the level of effort required will be determined by the nature and magnitude of the emergency event. The planning and procedural elements will need to address a wide range of possible circumstances and as a result will be general in nature. Recovery functions that need to be established in plans and procedures include creation of a recovery organization and conduct of recovery operations.

6.3.1 Recovery Organization

Prior to terminating an emergency response, the ERO should establish the recovery organization and determine the resources needed to begin recovery operations.

The recovery organization is responsible for coordinating all recovery activities. Responsibilities include, but are not limited to: prioritization of activities; protection of worker and general public health and safety; dissemination of information; coordination of site and offsite activities; collection of data and assessment of long-term effects associated with the release of hazardous materials; formulation and implementation of long-term protective actions for the affected areas; and providing assistance as requested to state and local agencies in formulation of long-term protective actions for affected offsite areas.

If negative effects to facilities and/or the environment are minimal, the normal operations and maintenance organizations may be able to perform all necessary recovery actions. At a minimum, a Recovery Manager should be appointed to coordinate planning and authorize recovery operations.

When a dedicated recovery organization is necessary, it should parallel the normal facility or site operating organization, when possible.

To the extent possible, recovery activities should be carried out through normal facility and site operations. This arrangement provides the recovery management and staff with

established and recognized channels of communication, authority, and control to facilitate the accomplishment of their mission.

The composition of the recovery organization should be based on the extent and nature of the emergency. Functional elements in a recovery organization should include the following.

- A Recovery Manager who has the responsibility and authority to coordinate recovery planning; authorize recovery activities; protect the health and safety of workers and the public; and initiate, change, or recommend protective actions. This position should have management authority commensurate with the requirements of the recovery activities.
- Technical advisers to the Recovery Manager, which may include health physics, industrial hygiene, industrial safety, fire protection, and other experts.
- Personnel with the technical expertise to direct post-accident assessment activities and to analyze the results. Maintenance and operations personnel and engineers normally staff these positions.
- A Public Information Specialist to deal with inquiries or concerns from employees, the public, the news media, and outside agencies. A Public Information Specialist may expect to address accident investigation results, the extent of onsite and offsite impacts, and the status of recovery operations.

6.3.2 Recovery Operations

Recovery planning and implementation will start with assessment of facility, site, and environmental conditions. Some recovery activities may be conducted under conditions similar to those of the reentry activities. Therefore, the reentry considerations discussed in Volume IV, Chapter 2 may be applicable to recovery operations. There are three general areas of recovery operations: accident assessment and investigation, recovery planning and scheduling, and repair and restoration.

Accident assessment and investigation. The following types of activities should be considered for accident assessment and investigation.

- The facility/site management, in coordinating with DOE management, should establish an Investigation Board to determine the root cause of the event and prepare a formal accident report.

- All documentation generated during the emergency response and useful to accident investigation should be collected and organized.
- Engineering/Maintenance/Operations personnel should assess the condition of the facility including structural integrity, equipment status, hazardous material containment/confinement barriers, and safety systems.
- A comprehensive assessment of contamination of all affected areas should be performed. As soon as sufficient information is available, consideration should be given to modification or termination of facility/site protective actions instituted during emergency response. Monitoring and laboratory analysis results should be used as the bases for determining long-term (e.g., ingestion pathway) protective actions for affected areas. (More information on long-term protective actions is contained in the EPA's Protective Action Manual.) Information should be provided to local and state governments concerning recommendations for long-term protective actions and the modification or termination of existing protective actions.

Recovery planning and scheduling. The following types of activities should be planned and scheduled.

- Notification to persons and agencies involved in the emergency response of the establishment of the Recovery Organization and the name of the person in charge.
- Evaluation of Emergency Plans to determine if adequate emergency preparedness status can be maintained during degraded facility conditions (i.e., inaccessibility of assembly areas, inoperative emergency/safety instrumentation and equipment, etc.).
- Establishment of specific criteria to be met prior to the resumption of normal operations or facility use. (See also Section 6.4.)
- Preparation of plans for the establishment of safe long-term conditions when the assessment indicates that a facility or affected area cannot be safely returned to normal operation or use.
- Identification of required repair and restoration work based on the assessment results.
- Plan for the proper handling and disposal of all hazardous waste generated during recovery activities.

- Establishment of a Tracking Group to monitor all assigned tasks, including developing work packages, scheduling activities, and estimating costs.
- Formation of a Procedures Review Group to determine if specialized procedures are required and should be developed and to review and approve all special procedures.
- Continued evaluation of site or facility hazards and contamination levels as well as estimating exposures to workers.

Repair and restoration activities. The following items should be considered during repair and restoration activities.

- Ensure that occupational exposure limits are followed as indicated in 10 CFR 835.202 or 10 CFR 835.204.
- Ensure that any discharges from recovery activity are controlled within regulatory and environmental compliance limits. If discharges are necessary beyond these limits, ensure that all necessary documentation is prepared, approvals obtained, and notifications made.
- Conduct recovery activities through normal work organizations, practices, limitations, and procedures to the extent practical.
- Replenish, repair, or replace any emergency equipment or consumable materials used during emergency response.
- Train applicable personnel on changes that occurred as a result of repair, restoration, and accident investigation.

6.4 Resumption of Normal Operations

Affected facilities and areas should be returned to normal operations or use only when all criteria established by the recovery organization have been met and all approvals granted by cognizant organizations and agencies. At a minimum, compliance should be required with Technical Specifications, Technical Safety Requirements, health and safety regulations, and environmental regulations. Federal, state, and local organizations should be consulted prior to terminating recovery operations, if required by regulation or MOU. Otherwise, notifications to these organizations should be made prior to the resumption of normal operations. As required, all documentation of recovery operations should be collected and processed for permanent storage.

6.5 Bibliography

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