

Independent Oversight Evaluation of

EMERGENCY MANAGEMENT PROGRAMS ACROSS THE DOE COMPLEX

Volume

2



Summary
Assessments of
DOE Site
Emergency
Management
Programs



July 1998



Office of Environment, Safety and Health

The Office of Oversight evaluated emergency management programs at ten selected Department of Energy (DOE) sites (one of the “sites” selected was the Transportation Safeguards Division of the Albuquerque Operations Office, which performs shipments of nuclear weapons and other materials for the DOE). The field reviews were performed to evaluate the effectiveness of emergency management programs and determine whether the actions and enhancements directed by the Secretary have been effectively implemented. This portion—Volume 2—of the Office of Oversight report on the evaluation of emergency management systems provides a summary assessment of the ten sites evaluated.

As shown in Table 1, the ten sites encompass three DOE program offices and seven operations offices. Consistent with the Secretary of Energy’s schedule for completing corrective actions, the Oversight evaluation was initiated in February 1998 so that sites had time to develop corrective actions. The evaluation of the site-specific emergency management programs focused on the following areas:

- Hazard analysis
- Emergency management plans and procedures
- Emergency facilities and equipment
- Emergency response and implementation of protective actions
- Classification and notification procedures
- Emergency preparedness training and drill program
- Emergency organization staffing, roles, and responsibilities
- Interface agreements and coordination with external organizations and agencies
- Joint information centers for providing information to the media and public
- Medical treatment of personnel

- Training and competencies of responsible personnel
- Review of past deficiencies and corrective action management.

These areas were evaluated by reviewing DOE-wide and site-specific policies, procedures, and implementation guidelines; interviewing managers, operators, technicians, and other responsible individuals; conducting walk-throughs of emergency response procedures; and performing tabletop exercises, which involved developing hypothetical scenarios and asking various personnel how they would respond. At each site, Oversight selected specific facilities or activities to review in more detail to gain insights about the actual effectiveness of the implementation of emergency management programs. The facilities/activities selected at each site include a wide variety of operations (e.g., research and development facilities, decontamination and decommissioning facilities, and production facilities).

The Office of Oversight also evaluated scheduled annual exercises at four sites: the Savannah River Site, Sandia National Laboratories/New Mexico, the Oak Ridge National Laboratory, and the Hanford Site. Evaluation criteria for all exercises were based on the DOE Emergency Exercise Evaluation Criteria contained in the DOE Emergency Management Guide.

For each site/operation reviewed, a field report was developed and provided to the responsible site/operations managers. Where exercises were observed, the Oversight team also developed a set of exercise observations that were provided to managers.

This volume of the Office of Oversight report provides a management-level summary of the more detailed field reports. For each site/operation evaluated, an overall assessment of performance is presented, the positive attributes and weaknesses are identified in a table, and opportunities for improvement are listed. At some sites,

Table 1. Sites and Facilities/Activities Selected for Detailed Review

Sites (in chronological order of the field reviews) -Program Office -Operations Office -Responsible Contractor	Facilities/Activities Selected for Detailed Review
Nevada Test Site -Defense Programs -Nevada Operations Office -Bechtel Nevada	<ul style="list-style-type: none"> * Device Assembly Facility - a new facility providing state-of-the-art facilities for nuclear device assembly operations * U1a Complex - preparation of underground areas and subcritical experiment support
Savannah River Site -Environmental Management -Savannah River Operations Office -Westinghouse Savannah River Corporation	<ul style="list-style-type: none"> * Defense Waste Processing Facility - immobilization of radioactive waste * Full participation exercise - scenario involving an attempt by a hostile group to sabotage irradiated fuel shipments
Los Alamos National Laboratory -Defense Programs -Albuquerque Operations Office -University of California	<ul style="list-style-type: none"> * Technical Area 55 - plutonium processing * Technical Area 18 - nuclear criticality experiments * Technical Area 16 - tritium operations
Sandia National Laboratories/New Mexico -Defense Programs -Albuquerque Operations Office -Sandia Corporation, a wholly owned subsidiary of the Lockheed-Martin Corporation	<ul style="list-style-type: none"> * Full-participation exercise - scenario involving a release of hazardous chemicals and multiple injuries in a radioactively contaminated area
Lawrence Livermore National Laboratory -Defense Programs -Oakland Operations Office -University of California	<ul style="list-style-type: none"> * Followup of September-November 1997 Oversight Safety Management Evaluation, which focused on the LLNL program and selected facilities, including facilities that process plutonium (e.g., Building 332) and activities involving high explosives
Oak Ridge National Laboratory -Lockheed Martin Energy Research -Oak Ridge Operations Office -Lockheed-Martin Energy Systems	<ul style="list-style-type: none"> * High Flux Isotope Reactor (HFIR) - production of radioisotopes for medical research and treatment; also used for neutron research * Hazardous Waste Storage Facility - storage of low- and high-level radioactive waste * Molten Salt Reactor Experiment - research reactor designed to test molten salt reactor concept; shut down and in remediation * Radiochemical Engineering Development Center - hot cell facility for handling radioisotopes produced at HFIR * Full-participation exercise - scenario involving a loss of coolant accident at HFIR causing evacuation of the facility and protective actions for the public
Idaho National Engineering and Environmental Laboratory -Environmental Management -Idaho Operations Office -Lockheed-Martin Idaho Technologies	<ul style="list-style-type: none"> * Central Facilities Area - engineering, maintenance, laboratory, and medical service support * Idaho Chemical Processing Plant - contains New Waste Calcining Facility used for solidifying high-level liquid waste; facilities for storage of irradiated and unirradiated waste
Transportation Safeguards Division -Albuquerque - Defense Programs -Albuquerque Operations Office	<ul style="list-style-type: none"> * Transportation Safeguards System, including highway convoy shipments of special nuclear material (SNM) and associated weapons program material and aviation shipments
Rocky Flats Environmental Technology Site -Environmental Management -Rocky Flats Field Office -Kaiser-Hill	<ul style="list-style-type: none"> * Building 371 - interim storage of SNM * Building 664 - preparing for shipment of transuranic and other waste to the Waste Isolation Pilot Project * Building 771 - contains significant legacy hazards being prepared for decontamination and decommissioning
Hanford Site -Environmental Management -Richland Operations Office -Fluor Daniel	<ul style="list-style-type: none"> * Plutonium Finishing Plant - storage of SNM * Followup of Plutonium Reclamation Facility accident May 1997 * Full-participation exercise - scenario involving a fire at the 105 K-East Basin facility; collapse of roof and overhead crane into the East basin. Scenario involved multiple injuries, a fatality, and protective actions both on and off site.

noteworthy practices were identified. The noteworthy practices are described in sufficient detail to enable other sites to determine whether they could benefit by adopting similar practices. In such cases, sites are encouraged to contact the site where the noteworthy practice was identified for additional information.

Following the reviews of each site/operation, Oversight provided the responsible operations offices with an opportunity to describe their plans to address the identified weaknesses. Where applicable, the site-specific plans are summarized at the end of each summary assessment.

The summaries reflect completed and planned actions as reported by the sites and/or operations office. The Office of Oversight has not yet performed followup to verify that the completed and planned actions are effective in resolving the identified weaknesses. Notwithstanding the need for continued followup, the sites have indicated they have completed, or plan to complete, numerous upgrades and enhancements. If effectively

implemented, these actions should improve the emergency management programs at DOE sites.

Office of Oversight Terminology

Noteworthy Practice: An exceptional or innovative approach that could be useful for benchmarking by other DOE sites and facilities.

Positive Attribute: A management system, process, or work practice that demonstrates a fully effective approach or relative improvement.

Weakness: A systemic or significant deficiency in a management system, process, or activity that has an actual or potential negative impact and warrants management attention.

Opportunity for Improvement: Non-prescriptive summary level enhancements or innovative approaches to the resolution of identified weaknesses provided for the benefit of and consideration by line management.

Nevada Test Site: January-February 1998

OPERATIONS OFFICE:	Nevada Operations Office
PROGRAM OFFICE:	Defense Programs
OPERATING CONTRACTOR:	Bechtel Nevada
OTHER ORGANIZATIONS:	Los Alamos National Laboratory (LANL) Lawrence Livermore National Laboratory (LLNL)
FACILITIES REVIEWED:	Device Assembly Facility (DAF) U1a Complex

The primary purpose of the Nevada Test Site (NTS) is to provide an on-continent site for testing nuclear explosives for the nation's weapons research, development, testing, and stockpile maintenance programs. The DAF, under the operational control of LANL and LLNL, provides state-of-the-art facilities for nuclear device assembly operations. The DAF has recently established emergency management elements, and when operational it will be the only NTS facility with potential for a general emergency. Operations at the U1a Complex, under LANL control, include underground areas (mining) and subcritical experiment support activities. The U1a Complex is in the process of developing and implementing emergency management elements and has the potential for a site area emergency. The hazards at U1a include handling high explosives in combination with special nuclear material. When operational, the DAF will house such activities.

The emergency management program for NTS is evolving due to a number of factors, including changing missions and activities and the transition from DOE Order 5500 to DOE Order 151.1. The NTS has only in the past year ramped up operations and begun recovering from cessation of underground testing five years ago and a workforce decline of nearly 70 percent. Emergency management at NTS is only now beginning to keep pace with the recent site changes. Two years ago, Bechtel Nevada became the consolidated management and operating contractor for NTS, changing the approach to emergency management and the related coordination and interface with the DOE Nevada Operations Office, the national laboratories, and other users.

The Nevada Operations Office has recognized the need to strengthen NTS emergency management, and a strategic plan is under development to achieve specific goals and objectives. Recent notable accomplishments include approval of the Nevada Operations Office Consolidated Emergency Management Plan, approval of hazards assessments for the U1a Complex and the DAF, and establishing the Nevada Operations Office Site Operations Division and NTS Emergency Management Center. Areas of the NTS emergency management program that already appear effective include security, the condition and availability of emergency equipment, and the combining of the NTS emergency medical services with NTS fire protection.

Nevada Operations Office management has expressed a high level of confidence in the capability of the national laboratories to safely conduct experiments and other operations at the U1a Complex and the DAF. However, the current state of emergency management and preparedness at NTS does not provide a high level of confidence in this essential capability. There is conflict and a noticeable absence of effective coordination between the Nevada Operations Office, Bechtel Nevada, the laboratories, and other users on emergency management roles, responsibilities, and authorities. Authorities, in particular, are not well defined. The program and many of the implementing procedures are still in draft form, are of inconsistent quality, or need to be developed. Key emergency responders, some with the initial responsibility for categorization, classification, notification, and protective actions, are not sufficiently trained to carry

out these responsibilities. In addition, the Nevada Operations Office Emergency Operations Center is not fully prepared to perform initial consequence assessment. The time needed to staff the NTS Emergency Management Center at the site during backshifts could delay initial consequence assessment, notifications, and protective action recommendations.

Of greatest concern is that NTS has not recently demonstrated the required integrated capability to respond to an accident through a full-participation exercise. Unclear roles, responsibilities, and authorities, outdated agreements with external support organizations, the recent change in management and operating contractors, coordination problems with site tenants and the Nevada Operations Office, an absence of approved and quality procedures, and training and competency issues emphasize the need for a structured drill and exercise program.

Opportunities for Improvement at NTS

1. Clarify, document, and communicate roles, responsibilities, and authorities for emergency management and preparedness within the Nevada Operations Office, Bechtel Nevada, the national laboratories, and other site users.
 2. Strengthen the integration, coordination, interface, and cooperation for emergency management between the Nevada Operations Office, Bechtel Nevada, the national laboratories, and other site users, and update memoranda of agreement and memoranda of understanding as appropriate. Revise the Consolidated Emergency Management Plan to reflect current practices.
 3. Expedite the development, validation, and implementation of high-quality emergency procedures, including establishing a comprehensive writer's guide, incorporating human factors considerations into procedures, and involving the procedure users in writing and validation.
 4. Assure in the near term the competencies of emergency response organization staff and responders through a job task analysis, structured training, drills, and exercises. Long-term training goals and milestones should also be identified and scheduled, as appropriate.
5. Strengthen the onsite capability during backshift to promptly assess consequences, classify events, and implement initial protective actions. Clarify roles and responsibilities, training, consequence assessment support, and initial response capabilities at the Nevada Operations Office Emergency Operations Center.
 6. Reevaluate and strengthen the role of the occupational medical department in supporting the NTS emergency management program, including the impact of recent staffing and resource reductions, the need to include medical participation in NTS drills and exercises, and development of memoranda of agreement and memoranda of understanding with hospitals and other emergency service providers.
 7. Establish and implement contract performance measures and accountability for maintaining an effective emergency management and preparedness program at NTS.
 8. Conduct a full-participation exercise that includes external organizations to establish a baseline for capabilities and to validate improvements from actions in the Nevada Operations Office's Strategic Plan for Emergency Management.
 9. Utilize the Nevada Operations Office's strategic plan and subtier documents to integrate all initiatives regarding emergency management. Develop plans that contain sufficient detail to support implementation of these initiatives.

NTS Plans to Address Identified Weaknesses

The Nevada Operations Office has recognized the need to strengthen the emergency management program at NTS. Under new leadership, the Nevada Operations Office has completed a number of actions designed to improve their program. In conjunction with the NTS contractors, Nevada has developed the Consolidated Emergency Management Plan and established a Senior Management Committee to define roles, responsibilities, and authorities of decision-makers. They have also established other committees and working groups, such as the Emergency Management Coordination Panel, to monitor

progress and coordinate interfaces among NTS parties responsible for site emergency management. NTS reports that a number of specific actions have been completed, including:

- The 1998 Strategic Plan for the Nevada Operations Office integrates the multiple initiatives regarding emergency management.
- An additional Occupational Medicine physician and two full-time paramedics have been hired.
- The comprehensive drill and exercise program now includes security and medical participation.
- Performance measures and accountability are included in the Bechtel Performance Evaluation Plan.
- Roles, responsibilities, and authorities of U1a Incident Commanders and Local Emergency Directors have been clarified in procedures, and personnel have been trained.
- U1a emergency response and management procedures have been developed and issued, and personnel, including the U1a Incident

Commander and Local Emergency Directors, have been trained.

- U1a plans and procedures have been finalized, issued, and validated by a drill.

NTS also identified other actions they plan to take to further improve their emergency management program:

- To improve the competencies of emergency response organization staff, a job task analysis has been completed, and a structured training program is under development.
- The backshift capability for promptly assessing consequences, classifying, and implementing protective actions for off-normal events is being improved through such measures as the Consequence Assessment Working Group's development of a 24-hour response capability.
- Memoranda of understanding are being negotiated for additional emergency services.
- A full-participation exercise will be conducted in FY 1999.

NTS Positive Attributes and Weaknesses

POSITIVE ATTRIBUTES	WEAKNESSES
<p>The Nevada Operations Office management has recognized the need for and demonstrated a commitment to achieving improvements in emergency management programs.</p> <p>Development, implementation, and continued improvements of the NTS Emergency Management Center provide better integration of emergency response elements.</p> <p>Facilities and equipment required for emergency response and mitigation, monitoring and protection of personnel, and facility support were in good condition and covered by maintenance programs that included routine testing and preventive maintenance.</p> <p>The required security-related elements of the Nevada Operations Office emergency management program are effectively implemented.</p> <p>Combining NTS emergency medical services with NTS fire protection services has increased the efficiency and depth of site emergency medical response.</p>	<p>The Nevada Operations Office has not ensured that Bechtel Nevada and users (national laboratories and the Defense Special Weapons Agency) interface effectively to coordinate and integrate consistent, timely, and effective implementation of the emergency management program.</p> <p>Site and facility procedures and training do not support timely and accurate classification of emergencies at NTS.</p> <p>Site and facility procedures addressing emergency operations are not adequate to support timely emergency response.</p> <p>The training program for emergency management, though evolving, lacks significant elements that would ensure that members of the emergency response organization receive sufficient training to consistently perform emergency response duties.</p> <p>A structured drill and exercise program that tests all required elements of the emergency response organization and emergency response resources is not yet implemented.</p> <p>The Site Occupational Medical Director and his professional staff are not adequately integrated into the planning and development of a comprehensive site emergency plan.</p> <p>Requirements for consequence assessment and identification of predetermined protective actions have not been fully implemented within the NTS emergency management program.</p>

Savannah River Site: February-March 1998

OPERATIONS OFFICE:	Savannah River Operations Office (SR)
PROGRAM OFFICE:	Environmental Management
OPERATING CONTRACTOR:	Westinghouse Savannah River Company (WSRC)
OTHER ORGANIZATIONS:	Wackenhut Services Inc.-Savannah River Site (WSI-SRS)
FACILITIES REVIEWED:	Defense Waste Processing Facility (DWPF)

The primary missions of the Savannah River Site (SRS) include refining tritium and plutonium products for national defense, producing other special nuclear materials, performing environmental restoration, managing waste, and conducting research. The DWPF is designed to immobilize radioactive waste resulting from the production of nuclear materials. One of the main facilities at DWPF is the Vitrification Building, where high-level waste streams are processed into a glass matrix for long-term storage. In addition to evaluating activities at the DWPF, the Oversight team observed the SRS annual emergency exercise. The exercise included participation by the state of South Carolina, DOE Headquarters, Fort Jackson Explosives Ordnance Disposal personnel, and the Federal Bureau of Investigation. The exercise was security-related and involved the simulated capture of spent fuel casks, taking of hostages, and an explosion with the potential for an offsite radiological release.

The programmatic review, in conjunction with evaluation of the exercise and performance testing of sitewide and DWPF emergency response personnel, indicates that SRS has an overall sound and mature emergency management program. SR, WSRC, and WSI-SRS have demonstrated a strong commitment to establishing and sustaining a well-managed and responsive emergency management function, while appropriately balancing and controlling the impact of necessary sitewide funding and staff reductions.

The commitment and program “ownership” of SR and WSRC management

are evident through their investment in state-of-the-art facilities and their attention to the provision and maintenance of essential emergency equipment. In addition, commitment at the facility level was evidenced by a comprehensive training and drill program at DWPF to ensure that operators are capable of responding to emergency situations. The SRS emergency management program also has a strong capability to self-identify deficiencies.

The SRS emergency management system is capable of responding effectively to a wide range of emergencies. For example, the facility-level and site emergency response organizations have been well planned and structured to provide around-the-clock initial response capability. Additionally, emergency preparedness hazards assessments were effective, and communications with state emergency agencies had been improved.

Notwithstanding the overall effectiveness of the emergency management systems, several weaknesses were noted, some of which were highlighted during the SRS annual emergency management exercise. Most importantly, the consequence assessment process did not ensure that decision-makers can clearly understand the projected consequences so that they can implement appropriate protective actions. In addition, the upgraded classification of the emergency, in response to an explosion and potential offsite radiological release, was not conservative or timely because of differences in opinion among emergency response organization managers and an absence of firm site boundary release data. Further,

weaknesses in WSI-SRS command and control of tactical security personnel resulted in the simulated shooting of an adversary after a “hold fire unless deadly force is justified” command was issued.

Overall, the SRS emergency management program is fundamentally sound and includes the essential elements required by DOE orders. Many of the weaknesses identified in this review had been previously identified by SRS line management. The exercise was adequate to test program performance, and the results were thoroughly examined through the emergency management self-assessment process. The identified opportunities for improvement represent, for the most part, improvements that could contribute to the pursuit of excellence.

Noteworthy Practices at SRS

1. The DWPF emergency management training, exercise, and drill program demonstrates a commitment by SRS to maintain a highly capable response organization. DWPF recently initiated a facility-level team training program for shift managers, functional group leaders in the facility emergency response organization, and control room staff to enhance the facility’s emergency response capability. The training has been segmented into four distinct phases—activation, mitigation, stabilization, and recovery—based upon plant management’s analysis of typical emergency response activities. Training for each phase is provided to the control room crew as one unit, and the shift manager’s staff as another unit. On one shift, the operations manager leads a seminar on roles and responsibilities of each response member during each phase. On a subsequent shift, a local exercise is performed by the operations manager, with the support of facilitators experienced in the emergency management system. During the local exercise, individuals talk through their expected response and then perform the response for each phase. Upon completion of this training, an integrated exercise is performed that pulls all phases together. The evaluation team

observed enthusiastic acceptance of this methodology by DWPF staff because of the focus on each emergency response organization member’s role in supporting the team effort. During tabletop drills, shift managers at DWPF were well versed in using facility emergency procedures. Although one problem was noted with classification due to procedure organization, shift managers clearly demonstrated their ability to detect off-normal conditions, protect workers, and notify the appropriate people in a timely manner. In addition to team training, each operator participates in emergency preparedness training during classroom shift training. Emergency management capabilities are also included in performance evaluations to encourage continuous improvement of individual skills. Facility-level emergency response training is integrated into a comprehensive, sitewide program that facilitates consistent implementation of emergency response organization functions.

2. SRS organizations perform a range of self-assessment activities that address the effectiveness of emergency management systems. The WSRC Facility Evaluation Boards perform rigorous reviews of facilities and sitewide services (e.g., construction and central shops facilities) to assure the readiness of emergency plans, procedures, personnel, facilities, and equipment. WSRC Emergency Services Department personnel assigned to facilities continually assess emergency preparedness and response capabilities, and provide feedback and technical assistance to ensure their adequacy. Comprehensive evaluation criteria and assessment checklists have been developed for each emergency response facility as well as for overall emergency management program evaluation. SR Facility Representatives provide an additional level of continual facility self-assessment and have direct access to senior SR management to expedite needed remedial actions. WSRC critiques of exercises and drills are comprehensive, accurate, and prompt, and they provide information essential to assuring

emergency readiness. Corrective actions identified from self-assessments (including critiques of exercises and drills) are maintained in a WSRC tracking system to monitor implementation.

3. **There is a demonstrated commitment to provide excellent emergency management facilities and equipment at SRS.** WSRC has implemented considerable communication and data processing technology in the SRS Operations Center and the emergency operations center using commercially available equipment. The availability of telephone communications among emergency response organization personnel, pertinent analysis and data display capabilities, storage of reference material from onsite facilities, environmental and habitability controls, and recording capability for voice communications are exemplary. The facilities and equipment at SRS have given the emergency response organization very powerful tools to accomplish their functions. The availability of emergency equipment and the emergency communications capabilities from DWPF and the Tactical Operations Center to the SRS Operations Center and the emergency operations center were also noteworthy. Although less technologically oriented, the shift manager's office at DWPF and the facility control room are outfitted to change very rapidly from normal operations to emergency operations. All the facilities evaluated had provisions for alternate locations should conditions necessitate a change of location of command and control.

Opportunities for Improvement at SRS

1. Improve the consequence assessment process to ensure that source term estimation, dispersion modeling, consequence assessment, and formulation of protective actions can be completed in a timely manner. The process

should ensure that any limitations associated with projected consequences can be readily and clearly understood by emergency response organization decision-makers.

2. Provide additional policy, guidance, and training to improve prompt and conservative classification decision-making by responsible emergency response organization personnel. Specifically, the training should address situations in which objective emergency action level thresholds have not been exceeded, and thus management judgment is needed to select a conservative and appropriate discretionary emergency action level.
3. Review the design and implementation of the computer-based status board system to ensure that it supports timely and accurate decision-making by emergency response personnel in the emergency operations center. Provide additional system training to emergency operations center personnel to ensure that they can fully utilize the capabilities of the system. This will allow emergency operations center managers and staff to have better access to essential information, including time lines, maps and locations, meteorological data, and potential site release data.
4. Improve offsite response interfaces. Enhance coordination and communication with stakeholders, mutual aid responders, and support services such as hospitals by means of training, drills, and exercises. Improve public information dissemination by strengthening the processes, timeliness, frequency, and technical accuracy of media briefings and press releases.
5. Improve the implementation of the unified incident command system to include better command and control of the WSI-SRS special response team, field monitoring teams within the incident area, and other support personnel (e.g., firefighters, emergency medical technicians).

SRS Plans to Address Identified Weaknesses

SRS reports that a number of actions have been completed and others are planned to address weaknesses identified during the emergency management exercise. The actions reported by SRS as complete include:

- Retraining in classification procedures and methodology for decision-makers was completed by June 1, 1998.
- Procedure changes and retraining for the public affairs function were completed by June 30, 1998.
- Retraining for the exercise development group to strengthen preparation of the exercise

package was completed in February 1998.

- Retraining of exercise controllers to strengthen performance was completed in February 1998.

Planned actions and scheduled completion dates include:

- Procedure changes and retraining to strengthen command and control and Incident Command procedures (by July 31, 1998)
- Technical review and procedure changes to strengthen the consequence assessment process (by September 30, 1998)
- Retraining for various members of the emergency response organization cadre to improve proficiencies (by December 31, 1998).

SRS Noteworthy Practices, Positive Attributes, and Weaknesses

NOTEWORTHY PRACTICES AND POSITIVE ATTRIBUTES	WEAKNESSES
<p>Noteworthy Practices</p> <p>The DWPF emergency management training, exercise, and drill program demonstrates a commitment by SRS to maintain a highly capable response organization.</p> <p>SRS organizations perform a range of self-assessment activities that address the effectiveness of emergency management systems.</p> <p>There is a demonstrated commitment to provide excellent emergency management facilities and equipment at SRS.</p> <p>Positive Attributes</p> <p>The facility-level and site emergency response organizations have been well planned and structured to provide around-the-clock initial response capability.</p> <p>SRS has established an effective framework for open communications with the states of South Carolina and Georgia in support of continuous improvement in emergency management programs and systems.</p> <p>Emergency preparedness hazards assessments are comprehensive, methodically prepared, and include many of the qualities prescribed by DOE requirements.</p>	<p>During the annual exercise, command and control were not fully demonstrated by some key emergency response organization personnel.</p> <p>The emergency operations center lacks an effective process and mechanisms to perform timely and accurate assessments of emergency event consequences.</p> <p>The exercise and performance testing indicated a need for additional training in and familiarity with site procedures to support timely, accurate, and conservative classification of emergencies.</p> <p>Specific deficiencies noted in the proficiency of emergency response organization members impede their ability to fulfill their emergency-related responsibilities in a timely and effective manner.</p> <p>Weaknesses in the SRS Emergency Management Public Information System hinder dissemination of accurate, timely, and coordinated information to the public during an emergency.</p>

Los Alamos National Laboratory: March-April 1998

OPERATIONS OFFICE:	Albuquerque Operations Office/Los Alamos Area Office (LAAO)
PROGRAM OFFICE:	Defense Programs
OPERATING CONTRACTOR:	University of California
OTHER ORGANIZATIONS:	Johnson Controls Protection Technology Los Alamos
FACILITIES REVIEWED:	Weapons Engineering Tritium Facility, TA-16 Los Alamos Criticality Experiments Facility, TA-18 Plutonium Facility, TA-55

The primary mission of Los Alamos National Laboratory (LANL) is to reduce global nuclear danger, support core competencies, and contribute to defense, civilian, and industrial needs. The current emphasis is on reducing the nuclear threat and improving the reliability of nuclear weapons stockpiles, and supporting new national and international initiatives. LANL is made up of many Technical Areas (TAs), of which 49 are actively in use.

LANL has demonstrated commitment to the emergency management program, as evidenced by corrective actions and improvements since the "Porcupine" exercise in 1994. The LANL Incident Command System is an example of a significant improvement. Under the Incident Command System, fire, medical, and hazardous materials responders clearly understand who is in charge and demonstrate the capability to mount an effective and coordinated response to emergencies. The site emergency response organization has also responded effectively to recent wildfires and a significant site hazard, and utilized the experience to further strengthen relationships and interfaces with other fire support organizations.

While LANL has accomplished needed improvements in emergency management and response capabilities, several remaining weaknesses were identified during this evaluation that warrant management attention. Hazards assessments need to be strengthened, particularly in the control of

chemical hazards and vulnerabilities and the identification of hazards associated with classified "work for others." Emergency response organization procedures and training need to be improved, and backshift duty arrangements need to be evaluated to assure the capability to achieve timely initial classification of emergencies and resulting notifications and protective actions for workers and the public.

LAAO has developed processes to address the response element of emergency management. However, emergency response capabilities need to be further strengthened through clearer definition of planning and preparedness elements for emergency management oversight responsibilities, assurance that responsible DOE managers and staff receive required training, and maintenance of current memoranda of understanding with external support organizations such as hospitals and fire departments.

LANL management has been both aggressive and effective in resolving many of the identified deficiencies in emergency management and response, and achieving a substantially improved overall program. Continuing improvement, including addressing self-identified issues along with the weaknesses documented in this report, should assist LANL in progress toward achieving a fully effective emergency management system within the structure of current DOE requirements.

Noteworthy Practices at LANL

- 1. The LANL Hazardous Materials Response Team (HazMat Team) is well trained, experienced, equipped, and capable of effectively responding to radiological or chemical emergencies on or off site.** Roles, responsibilities, and activities of the HazMat Team and individual members are documented in a series of Hazardous Materials Response Group procedures. HazMat Team members are qualified to levels beyond those required in Occupational Safety and Health Administration regulations and have extensive plant knowledge, and many have prior experience in the LANL industrial hygiene and radiation protection groups. The HazMat Team is well practiced, responding to more than 50 callouts annually, including regional support for spill responses. By also providing health and safety support to offsite DOE emergency response programs, such as the Accident Response Group, the Nuclear Emergency Search Team, and the Radiological Assistance Program, the HazMat Team has been able to purchase and maintain a wide variety of state-of-the-art radiological and chemical equipment. Equipment is calibrated and functionally maintained by the HazMat Team, enabling quick tailoring of equipment inventories to respond to a diversity of emergencies. The HazMat field decontamination trailer is equipped with showers, sinks, and liquid waste holding tanks, and stocked with protective clothing and supplies required for emergency decontamination. Chemical and radiological response vans are outfitted with computerized consequence assessment capabilities and reference data bases to assist field identification and evaluation of hazardous materials, as well as estimating exposures to onsite and offsite populations.
- 2. LANL medical support is effectively integrated into sitewide emergency preparedness, planning, and response activities.** The occupational medical program

has developed a solid working relationship with the emergency response organization and supports the emergency operations center during emergency situations. The program utilized assessments to plan for the mitigation of health effects resulting from identified facility emergency situations. Information for site hazards has been assembled and is available for emergency reference by the medical staff during site emergencies. Professional medical staff participate in emergency drills, annual exercise scenario development, and annual exercise evaluation activities. Medical staff also develop and provide training for a variety of emergency responders and support the local community emergency medical facility in the treatment of contaminated injuries. A recently developed training course to instruct emergency responders on how to rescue contaminated victims with minimal exposures will be piloted at LANL and will soon be offered to the DOE complex. A group of radiation control technicians that make up the Radiation Emergency Medical Support Team has been trained by the medical staff to enhance the support provided to emergency room staff during a contamination incident. The Radiation Emergency Medical Support Team is on call 24 hours a day. LANL professional medical staff have received extensive training in the treatment of contaminated injuries and are prepared to support the Laboratory and the county during a mass casualty incident.

Opportunities for Improvement at LANL

1. Clear programmatic direction and enhanced management commitment are needed to implement a formal and effective hazards assessment process. This must include assurances that those responsible for the LANL hazards assessment document have access to all laboratory hazards information and that facilities are provided information on hazards that may impact their personnel and operations.

2. Analyze hazards assessment scenarios applicable to backshift hours to establish and/or verify that appropriate prompt incident command response time lines, including assessment, classification, protective actions, and notifications required to protect workers and the public, are achieved.
3. Continue development of facility-specific emergency action levels that are consistent with applicable emergency management system orders and guidance. Provide Incident Commanders with formalized procedures and training on the integrated categorization/classification and formulation of protective actions to permit prompt and accurate decision-making during the critical early stages of event response.
4. Revise the Protective Action Guides to address more appropriate protective actions for radioactive material handled at LANL (e.g., airborne plutonium or enriched uranium plume from accidental releases).
5. Identify and incorporate emergency management expectations and activities in the LAAO Operational Plan to include detailed descriptions of key LAAO activities (e.g., processes to manage memoranda of understanding, capture training requirements and status, and define assessment activities, and to review and approve Emergency Readiness Assurance Plan). Resources from the Albuquerque Operations Office and the DOE Office of Defense Programs should be considered to expedite completion and implementation of the plan.
6. Strengthen coordination of site and facility emergency management programs and associated records management to effectively identify and track site and facility emergency response organization personnel initial and retraining requirements.
7. Revise the LANL Emergency Action Plan of Public Information to designate and assign

trained technical spokespersons for the emergency public information staff. Ensure consistency in understanding and documentation of approval and release requirements for emergency information at the event scene.

8. While line management organizations (Office of Defense Programs, Albuquerque Operations Office, and LAAO) have been involved in evaluation of LANL emergency exercises, they have not been subject to an evaluation led by an organization external to DOE line management since the Porcupine exercise in 1994. External evaluation of an annual exercise could help benchmark progress in emergency management and response capabilities, including substantiating improvements, as well as highlighting additional opportunities for improvement.

LANL Plans to Address Identified Weaknesses

LANL reports that a number of actions have been completed and others are planned to address identified weaknesses in the emergency management program. The actions reported by LANL as complete include:

- To improve the quality of public information, technical experts have been designated and provided media training, and coordination training between LANL Incident Commanders and Public Information Officer(s) to clarify policies and procedures has been completed.
- Facility-specific discretionary emergency action levels have been modified and training performed to ensure timely decision-making.
- Protective Action Guides for workers and the public have been revised to address radiological material handled at LANL.

Planned actions and scheduled completion dates include:

- A process is in place to improve hazards assessments performed by groups other than emergency management (December 1998).

- LAAO has developed a plan that links emergency management goals and objectives and defines management expectations (approval expected by August 1998, related training by December 1998) and plans to revise memoranda of understanding incorporating DOE Order 151.1 (by February 1999).

- Site and facility-level training records will be updated and training records included in the assessment schedule (by August 1998).
- A review of how best to incorporate lessons learned into their comprehensive emergency management program will be complete by September 1998.

LANL Noteworthy Practices, Positive Attributes, and Weaknesses

NOTEWORTHY PRACTICES AND POSITIVE ATTRIBUTES	WEAKNESSES
<p>Noteworthy Practices</p> <p>The LANL Hazardous Materials Response Team is well trained, experienced, equipped, and capable of effectively responding to radiological or chemical emergencies on or off site.</p> <p>LANL medical support is effectively integrated into sitewide emergency preparedness, planning, and response activities.</p> <p>Positive Attributes</p> <p>The LANL Incident Command System has significantly improved during the past four years and enhanced the Laboratory's response capability.</p> <p>The TA-55 Emergency Response Team is well trained and capable of providing effective initial response to facility emergencies.</p>	<p>Management systems are not in place to ensure the validity, accuracy, and appropriate use of the LANL hazards assessment.</p> <p>The LANL emergency response organization, procedures, and training do not adequately support accurate and prompt classification decision-making during operational emergencies.</p> <p>The LAAO management systems do not assure consistent and effective implementation of all emergency management responsibilities.</p> <p>Protective Action Guides for the public and workers do not adequately address characteristics of the majority of the radiological material handled at LANL.</p> <p>While considerable emergency management training is being conducted at LANL, LANL emergency management training, drills, and exercises are not being effectively managed to ensure that all members of both facility and site emergency response organizations have received the required training and participated in the required drills and/or annual exercises.</p> <p>LANL's ability to provide quality information to the public during an emergency is impacted by inconsistencies with regard to approval of information to be released, as well as failure to designate trained technical spokespersons to support Media Center operations.</p>

Sandia National Laboratories/New Mexico: March-April 1998

OPERATIONS OFFICE:	Albuquerque Operations Office (AL)/Kirtland Area Office (KAO)
PROGRAM OFFICE:	Defense Programs
OPERATING CONTRACTOR:	Sandia Corporation, a subsidiary of Lockheed Martin Corporation
FACILITIES REVIEWED:	Annual Emergency Preparedness Exercise

Sandia National Laboratories/New Mexico (SNL) is operated for DOE by Sandia Corporation, a wholly owned subsidiary of the Lockheed Martin Corporation. SNL's primary mission is to design, develop, engineer, test, and certify the non-nuclear components and subsystems of nuclear weapons. Sandia also conducts broad-based research and development in environmental technologies, information systems, microelectronics, energy supplies, and advanced military, nonproliferation, and treaty verification technologies.

SNL has recognized the need to improve emergency management systems and processes and has taken a number of actions to improve performance in the past year. Actions include assignment of new management, revision of emergency plans and procedures, and coordination with stakeholders. These efforts are contributing to improvements in the SNL emergency management program. One area of the SNL emergency management program that is considered to be a noteworthy practice useful for benchmarking by other DOE sites is the SNL Family Assistance Center. This is a model program that successfully integrates existing American Red Cross community assets and demonstrates how information and support for families and friends of accident victims can be effectively managed and controlled in a caring, supportive environment.

Several aspects of the annual emergency preparedness exercise observed during this review were performed well. The plume modeler in the secondary emergency operations center did a good job of providing timely information on the chemical released and the size of the plume based on

concentrations "immediately dangerous to life and health." Additionally, emergency response staff in the secondary emergency operations center did a good job of managing and analyzing incoming information to ensure that essential information was clearly and concisely communicated to emergency operations center decision-makers. The SNL Vice President who conducted press briefings maintained good control during the question and answer period while providing clear and unambiguous answers. Overall control of the exercise was handled well by the central control cell, and the flexibility to use real-time meteorological data is commendable.

Several weaknesses observed during the exercise require significant management attention (see text box). Command and control did not provide adequate protection for emergency responders, nor was the proper emphasis placed on rescuing site personnel. The key to improving command and control during emergency response is better coordination and interface with the Kirtland Air Force Base Fire Department, which provides critical support to SNL during emergencies. Increased emphasis on the timely, accurate, and conservative classification of emergencies is required to ensure that adequate protective actions can be determined for personnel in affected areas. Improvements in emergency response organization staffing, procedures, and proficiency are needed to support effective initial and ongoing emergency response. Additionally, emphasis on planning in the emergency public information area is required to ensure that timely and accurate information can be provided to stakeholders.

There are weaknesses in the SNL exercise program associated with the planning, conduct, and evaluation of performance. The exercise plan did not include sufficient detail about controller assignments and responsibilities, exercise rules of engagement, contingency messages, and the actions expected of players; these shortcomings limited the value of the exercise as a tool for objectively evaluating player performance. The exercise was

also not adequately controlled to minimize simulations and make exercise play as realistic as possible. The self-assessment and critique process was weak and did not provide a comprehensive evaluation of strengths and weaknesses of the program. Also, because of the recurrence of many problems noted in past exercises, feedback from such exercises was determined to have had little impact on improving performance.

Problems Observed in the SNL Annual Emergency Exercise

Command and Control

- Initial responders traversed the toxic chemical plume at a time when it was near the highest concentration.
- A staging area and security checkpoint were established downwind of the spill site and in the path of the plume without determining whether the release had stopped.
- Individuals with essential information were not debriefed about the nature or extent of the toxic release.
- Facility personnel were not fully accounted for during reconnaissance entries.
- Priorities were established based on contamination control of depleted uranium and minimization of exposure to the dissipated hydrogen sulfide plume, rather than medical treatment of seriously injured personnel.
- There was open disagreement between the SNL Incident Commander and the Kirtland Air Force Base Fire Chief at the unified incident command post on response priorities during the exercise.

Conservative Decision-Making

- The emergency classification was inappropriately upgraded from a Site Area Emergency to a General Emergency after the hazard requiring the classification had dissipated.
- The decision to upgrade the emergency classification to a General Emergency was reversed a few minutes later based upon an incomplete understanding of the SNL property boundary conditions in the emergency action level tables (i.e., a non-conservative reason to reverse the original decision).

Medical Treatment of Personnel

- Seriously injured personnel were not rescued for more than three hours after the chemical spill.
- Injured victims who had been evacuated were left unattended.
- Decontamination of injured personnel could have aggravated existing injuries (e.g., decontaminating victims with a fire hose before they were stabilized).
- Exposure and contamination information did not accompany victims from the triage area to local hospitals.
- Offsite hospital personnel did not know who to contact at SNL for information related to hazardous material exposures or contamination. This was not internally identified because performance associated with transport and care of injured and exposed victims at offsite medical facilities was not evaluated by SNL personnel.

Public Information Processes

- The Joint Information Center did not have the minimum communications equipment required by procedures. There was a heavy reliance on cellular phones without adequate provisions for recharging/replacing batteries.
- The initial press release was unduly delayed due to processing difficulties in the Media Relations Center.
- Several press releases contained significant errors (e.g., wrong classification, inaccurate count of fatalities).

Planning, Conduct, and Evaluation of the Exercise

- The exercise plan did not include sufficient detail on controller assignments and responsibilities, exercise rules of engagement, contingency messages, and actions expected of players.
- Exercise evaluation criteria were generic and did not contain sufficient direction to evaluators to critically and consistently evaluate the exercise objectives.
- Players were repeatedly observed asking evaluators for information concerning exercise play, and players sometimes made independent decisions regarding the use of simulations without controller input.
- The post-exercise critique lacked formality and rigor. Additionally, the recurring nature of exercise deficiencies indicated that corrective actions from previous exercises had not been fully effective (e.g., delayed rescue of victims, delays in personnel accountability, and inadequate medical followup).

SNL is committed to responding to emergencies at Laboratory facilities in order to protect life, the environment, and Department resources. They have demonstrated this commitment through increased management attention to emergency management, upgrading of emergency processes and procedures, and a commitment to maintain adequate emergency response resources. While improvements have been made, performance during the annual exercise indicated that significant management attention continues to be required to ensure that the range of potential SNL emergencies can be effectively mitigated and that workers and the public are adequately protected. A fundamental weakness in the program is that hazards assessments have not been updated to reflect changing conditions and, as a result, do not provide a firm technical basis for timely and accurate classification of emergencies and determination of adequate protective actions for personnel in affected areas. In addition, SNL organizational processes and mechanisms do not ensure that timely and conservative classification and notification can be accomplished regardless of the type of emergency and time of day.

Noteworthy Practice at SNL

The SNL Family Assistance Center is an innovative and valuable resource for managing information and providing support during a mass casualty event. Personnel who staff this facility are available to provide current and essential information and guidance to families of SNL employees and contractors in the event of a mass casualty incident. The program, established in cooperation with the American Red Cross Disaster Services Program, is managed by the SNL Benefits and Medical Services Center. There are established procedures for obtaining and confirming information on victims and missing persons during major SNL incidents. Assistance is available to all friends and relatives of SNL applicants, employees, visitors, and contractor personnel. The facility includes space for counseling, grieving, nourishment, and waiting in a private, comfortable atmosphere. Volunteers assist with answering phones, tracking patient information, posting new information, and caring for the needs of victims' families and friends. Mental health support teams are obtained from both the community and SNL to assist as needed during and after the crisis. The emergency operations center, Medical Services, and area hospitals

coordinate their efforts to obtain and disseminate information concerning victims; these efforts include establishing communication systems and points of contact to facilitate information exchange. Additionally, Family Assistance Center staff members are dispatched to local hospitals to assist family members at those locations. The SNL Family Assistance Center is a model program that successfully integrates existing American Red Cross community assets and demonstrates how information and support for families and friends of accident victims can be effectively managed and controlled.

Opportunities for Improvement at SNL

1. Clearly define and test roles, responsibilities, and authorities of SNL and Kirtland Air Force Base emergency responders in order to achieve mutual goals for emergency response and rescue. Continuing dialog is required at all levels to work out interface problems, agree on methods for evaluating emergency response performance, and develop mechanisms for resolving conflicts.
2. Perform required hazards surveys for all SNL facilities and activities and, as applicable, develop and maintain updated hazards assessments to provide a sound technical basis for developing a comprehensive emergency management system commensurate with identified hazards, including emergency action levels, emergency notification systems, and protective actions.
3. Review and revise as necessary SNL processes and procedures for classification and notification of operational emergencies to ensure that these functions can be promptly fulfilled in accordance with DOE requirements, regardless of the type of emergency and time of day. Conduct drills to test the system under all credible circumstances to ensure that decision-makers can make classifications and notifications in a timely and conservative manner.

4. Improve public information processes and facilities to support timely and adequate dissemination of information to the public and stakeholders. Locate the Joint Information Center in a permanent facility with adequate communications capability. Streamline and improve news release processes to better control the quality of information being disseminated.
5. Develop exercise and drill scenarios with measurable objectives that test AL, KAO, and SNL expectations for emergency response performance. Postulated exercise scenarios should be commensurate with the actual hazards and operations at SNL facilities, and objectives should be tailored to test expected emergency management, response, and mitigation actions.
6. Routinely conduct drills, tabletop exercises, and training to ensure the proficiency of KAO and SNL emergency response organization members. Provide additional training on prompt and conservative decision-making for emergency response personnel with responsibilities for classification, notification, protective actions, and command and control (including criteria for rescue). Ensure that personnel are held accountable for maintaining their qualifications and level of proficiency.
7. Improve processes to conduct timely notification of personnel in affected and collocated facilities in order to promptly advise them of emergency situations and directed protective actions. For specific emergency action levels, develop a list of contacts in collocated facilities to be notified of required protective actions. After updating SNL hazards assessments, reevaluate the need to install emergency warning systems in specific locations to ensure that appropriate protective actions can be readily issued commensurate with the hazards to potentially affected workers.
8. Use benchmarking from other DOE sites and additional training on DOE emergency management orders to improve exercise self-assessment and critique processes. Develop evaluation criteria to support a comprehensive, self-critical assessment and critique process. Conduct detailed analysis and event reconstruction of exercises to determine the management and programmatic root causes of identified problems. Track corrective actions to completion, and follow up to ensure that improvements are fully implemented and achieve the desired results.

SNL Plans to Address Identified Weaknesses

SNL reports that a number of actions are planned to address weaknesses identified in the emergency management program and exercise. Ongoing and planned actions include:

- A draft Corrective Action Plan has been prepared and is in the approval process.
- Key points of contact at SNL are being identified to improve interfaces among AL, KAO, and SNL.
- A process for developing hazard surveys and hazards assessments that support line organization is being developed.
- A system for obtaining and retaining proficient staff is under consideration.
- SNL is developing a cadre of controllers for each area of emergency management; they will be responsible for identifying, training, and qualifying controller/evaluators in required areas.
- SNL Public Affairs and AL are determining a new Joint Information Center location, and a draft Emergency Public Information Plan is currently being reviewed by AL (December 1998).
- Joint information training for responsible personnel will be performed (August 1998).

SNL Noteworthy Practices, Positive Attributes, and Weaknesses

NOTEWORTHY PRACTICES AND POSITIVE ATTRIBUTES	WEAKNESSES
<p>Noteworthy Practices</p> <p>The SNL Family Assistance Center is an innovative and valuable resource for managing information and providing support during a mass casualty event.</p> <p>Positive Attributes</p> <p>The SNL Medical Services Center is well integrated with SNL emergency management program and can provide effective emergency medical support during small-scale incidents.</p> <p>SNL and Kirtland Air Force Base maintain a large array of emergency response assets available for rapid deployment to a wide range of emergency situations.</p>	<p>During the SNL annual exercise, ineffective command and control significantly delayed emergency rescue. For example, seriously injured personnel were not rescued for more than three hours after the chemical spill; injured victims who had been evacuated were left unattended; initial responders from security traversed the plume at a time when it was near the highest concentration; a staging area and security checkpoint were established downwind of the spill site and in the path of the plume without determining whether the release had stopped.</p> <p>AL, KAO, and SNL coordination and interface with external organizations have not been adequate to ensure effective response to emergencies at SNL facilities.</p> <p>The SNL emergency management system does not promote timely, accurate classification of emergencies and implementation of appropriate protective actions.</p> <p>Emergency response organization staffing, procedures, and proficiency do not support an effective initial and ongoing emergency response.</p> <p>Weaknesses in planning, conducting, and evaluating the SNL annual emergency exercise limited AL, KAO, and SNL's ability to realistically assess their emergency response capabilities.</p> <p>Current processes, plans, and facilities do not ensure that timely, accurate, and essential information can be consistently provided to the public during an emergency.</p>

Idaho National Engineering and Environmental Laboratory: March-April 1998

OPERATIONS OFFICE:	Idaho Operations Office (ID)
PROGRAM OFFICE:	Environmental Management
OPERATING CONTRACTOR:	Lockheed Martin Idaho Technologies Company (LMITCO)
FACILITIES REVIEWED:	Central Facilities Area (CFA) Idaho Chemical Processing Plant (ICPP)

The overall mission of the Idaho National Engineering and Environmental Laboratory (INEEL) is to execute engineering and environmental multiprogram missions and leverage INEEL's expertise with emerging technology to meet national needs. The site emergency management program covers many separate areas, each having different emergency planning requirements. The two areas covered during this review are the CFA, which contains facilities that support engineering, maintenance, laboratory, medical service, transportation, and administrative functions; and the ICPP, which contains the New Waste Calcining Facility (used for solidifying high-level liquid waste) and facilities for wet and dry storage of irradiated and unirradiated nuclear fuel and storage of high-level liquid waste.

Overall, there is an effective emergency management program in place at INEEL. Since taking over the contract in August 1994, the LMITCO Emergency Preparedness Department has significantly improved the integration of emergency response capabilities across the site. There is a demonstrated commitment to perform ongoing, thorough hazards assessments in order to establish a strong technical basis for the emergency management program. Additionally, the Emergency Preparedness Department is undertaking several proactive initiatives associated with rotation of personnel, professional development, and incentive programs to increase the effectiveness of personnel involved with emergency preparedness and response.

LMITCO has established an effective emergency response capability at INEEL and demonstrated a strong commitment to the

emergency management program. Effective performance by the emergency response organization during wildfires at INEEL in 1996, a radiological event at the Test Reactor Area hot cells in 1997, and a uranium fire in a glove box at Argonne National Laboratory-West in 1998 reflects this commitment. There is also an overall good relationship between ID and LMITCO with the State of Idaho, local governments, and stakeholders that has been strengthened over the past few years. However, some open issues with the state regarding coordination during emergency response remain to be resolved.

The investment in emergency response facilities and equipment has resulted in excellent capabilities to support effective emergency response, mitigation, and management at INEEL. There are also sufficient numbers of highly qualified initial responders who can operate this equipment and mitigate a wide range of operational emergencies. Additionally, the structure of the emergency response organization and emergency action levels supports timely classification, notification, and implementation of protective actions during emergency situations. These attributes of the INEEL emergency management program are considered noteworthy.

Several weaknesses in the INEEL emergency management program, many of which have been recognized by ID and LMITCO management, remain to be corrected. Some aspects of emergency preparedness, such as ongoing consequence assessments, classification of transportation events, deployment of initial responders, and coordination of public information releases, are not adequately addressed in emergency

plans, procedures, and training. Additionally, some members of the INEEL emergency response organization did not demonstrate adequate proficiency or depth of knowledge to fully perform their roles and responsibilities. Finally, ID needs to define the roles, responsibilities, and authorities for DOE personnel responding to emergencies and, along with the DOE Office of Environmental Management, to be more engaged in ensuring the effectiveness of the INEEL emergency management program.

For the most part, ID and LMITCO have recognized these weaknesses and taken action to improve performance. The existing INEEL emergency management program attributes and strengths, when combined with ongoing initiatives and resolution of the weaknesses identified herein, will further the program toward excellence.

Noteworthy Practices at INEEL

1. The design of the INEEL emergency response organization and the emergency action levels supports timely classification, notification, and implementation of protective actions during emergency situations. The emergency response organization is designed to provide the capability to make initial classification and notification of operational emergencies in a timely manner for facilities that are always staffed, as well as for facilities that are not staffed during off-normal working hours. Roles and responsibilities of decision-makers are generally well defined and implemented for initial response. For facility or INEEL area emergencies, a facility (area) Emergency Action Manager or Emergency Coordinator classifies the emergency, implements protective actions, activates the local response organization (Emergency Control Center), and notifies the operator in the continuously staffed Warning Communications Center. The Warning Communications Center establishes communications among decision-makers as requested, activates the site emergency response organization, and performs notifications to offsite agencies.

Facility emergency action levels are designed to support timely classification of emergencies and identification of conservative protective actions. Routinely updated hazards assessments, which take into consideration malevolent acts and beyond-design-basis accident analysis, form a strong technical basis for the facility emergency action levels. The emergency action levels are organized in a consistent manner for all facilities at the INEEL to provide a familiar format, thus assisting emergency operations center personnel and other affected facilities in their use. Default protective actions for workers and the public are tabulated with the emergency action level, allowing conservative actions to be taken before refined consequence assessments can be performed. Notification systems, including alarms and public address systems, permit prompt notification of protective actions to workers, while the Warning Communications Center can promptly notify offsite agencies. The evaluation team also noted that an integrated response organization is fostered by assigning emergency management coordinators from the Emergency Preparedness Department to major site areas to assist in implementing the emergency management program at the facility level.

2. INEEL emergency response facilities and equipment provide excellent capabilities for emergency response, mitigation, and management. The Fire Department is extremely well equipped, with two full engine companies stationed at CFA and two other engine companies on site. Additional resources include an extremely large hazardous material response vehicle with an onboard computer, fax capability, a wide variety of monitoring and sampling equipment, and decontamination resources. The computer has a hazardous materials data base that is a significantly expanded version of the Department of Transportation North American Emergency Response Guide.

ICPP maintains two vehicles, one equipped for hazardous material incidents and the other for

radiological events, that are available to provide a quick response to facility-level emergencies and to assist the Fire Department in initial response and rescue efforts. Available equipment includes fire-fighting bunker gear, self-contained breathing apparatus, level-A chemical protective suits, radiation monitoring equipment, anti-contamination clothing, portable electric generators, extension cords, industrial hygiene and health physics air-sampling equipment, fire hoses and nozzles, facility descriptions, maps, and a variety of other tools.

The National Oceanic and Atmospheric Administration, in coordination with LMITCO, maintains an extensive array of monitoring towers that provide real-time meteorological data. Some of these towers are also equipped with high-volume radioactivity air samplers and/or direct-reading radiation monitoring instrumentation. Data from these towers are integrated into a computer system that provides routine updates of monitoring conditions and is readily available at many locations on the INEEL site, including Emergency Control Centers and alarm monitoring stations, for ready reference.

The INEEL paging system is an effective mechanism for readily contacting the personnel needed to respond to an emergency. Many different paging groups are identified, and an index is available to the operator in the Warning Communications Center. The emergency response organization is divided into four teams, plus a team consisting of the full-time Emergency Preparedness Department staff. These teams each have a group page. The paging system has the capability to send alphanumeric messages up to 256 characters that can provide more specific information regarding the type of accident or reporting instructions.

Several tools and systems are available to assist the Emergency Action Manager in the Emergency Control Center. For example, the ICPP Emergency Control Center has access

to the Personnel Accountability System, which directly determines whether personnel have “carded out” of the facility during an evacuation, as well as a capability to record all voice communications (radios and telephones). The Emergency Control Center also has computer terminals tied into several of the facility monitoring systems, thereby providing real-time criticality alarm and radiation monitoring information from the facility. Security cameras can be directed from the ICPP Emergency Control Center to provide visual information from an incident scene. Finally, a three-part carbon message form is used in the Emergency Control Center to supplement verbal communications and to ensure that the Emergency Action Manager has received and acted upon all critical event information during an emergency.

- 3. Sufficient numbers of highly qualified initial response personnel are readily available to respond to operational emergencies at INEEL.** All Fire Department personnel have Incident Command System, Hazardous Material Technician, Advanced Exterior Fire Fighting, and Advanced First Aid training, and are qualified in confined-space and high-angle rescue. Sixteen of approximately 50 personnel are qualified as Advanced Emergency Medical Technicians, and at least one is available each shift. The Medical Department has a nurse on staff 24 hours a day who responds with the Fire Department. The ICPP has a facility-level Incident Response Team that consists of highly trained personnel who can support fire-fighting and rescue efforts. Training includes 40-hour hazardous material response training and advanced external fire-fighting training. Some facility Incident Response Team personnel train with the Fire Department to gain proficiency with Fire Department decontamination equipment. The Incident Response Team complements the Fire Department capability with day-to-day, facility-specific knowledge, promoting an integrated emergency response.

Opportunities for Improvement at INEEL

1. Streamline the ongoing consequence assessment process to provide readily available summaries of preprogrammed data files and simplified processes for converting field monitoring data to dose assessments. Clearly define the expectations for exchange of technical data between LMITCO and the National Oceanic and Atmospheric Administration to support ongoing consequence assessment in the emergency operations center.
2. Improve emergency planning for transportation-related incidents. Conduct hazards assessments of a limited number of potential transportation accidents associated with regular shipments of hazardous chemicals to ensure that such accidents are bounded by existing hazards assessments for fixed facilities. Revise the emergency action levels for transportation events and provide additional guidance and training to emergency managers for implementing them.
3. Develop a mechanism to ensure that changes in facility processes and hazardous material inventories are routinely communicated to emergency planners for screening, and, if applicable, that a hazards assessment is performed. Include a mechanism to ensure that initial emergency responders are kept apprised of such changes in order to ensure timely and effective initial emergency response and event characterization.
4. Increase DOE involvement in the INEEL emergency management program to fulfill requirements in DOE orders. Clearly define the roles and responsibilities of the DOE Emergency Management Duty Officer for security emergencies. Define the DOE approach to satisfying requirements to oversee the LMITCO emergency management program. Assure that assessments of the contractor emergency management program

are performed, and oversee the corrective actions being taken to ensure that known problems are being adequately addressed. DOE line management should also ensure that their interactions with State of Idaho agencies are effective in resolving state concerns about emergency response and preparedness.

5. Increase ID efforts to rectify the incorporation of unapproved exemptions from DOE Order 151.1 into the LMITCO contract, and develop a process to ensure that future requests are handled in accordance with DOE requirements.

INEEL Plans to Address Identified Weaknesses

INEEL reports that they are addressing the issues identified in the Oversight evaluation. Specific actions under way or planned include:

- To address missing elements and deficiencies in emergency preparedness and response plans, procedures, and training, INEEL plans to:
 - Enhance consequence assessment procedures by December 3, 1998.
 - Complete hazards assessments and emergency action levels for transportation accidents.
 - Improve emergency preparedness interfaces with site personnel to identify changing hazards on site.
 - Provide additional training for protective force personnel and the public affairs cadre.
- To improve and demonstrate emergency response organization proficiency, the ID Management Duty Officer will be trained as a Senior Technical Safety Manager, and LMITCO responders will be trained to improve proficiency.
- To increase DOE involvement in emergency management programs, ID has initiated a monthly teleconference with the Office of Environmental Management to improve

coordination, an assessment of Facility Representative roles and responsibilities in emergency management will be performed, program exemptions not approved by Headquarters will be reviewed and changed as needed in the next contract modification, the

Emergency Plan will be revised at the next plan revision cycle to specifically include ID roles and responsibilities as needed, and ID has initiated changes in their relations with state agencies to become more actively engaged at the working level.

INEEL Noteworthy Practices, Positive Attributes, and Weaknesses

NOTEWORTHY PRACTICES AND POSITIVE ATTRIBUTES	WEAKNESSES
<p>Noteworthy Practices</p> <p>The design of the INEEL emergency response organization and the emergency action levels supports timely classification, notification, and implementation of protective actions during emergency situations.</p> <p>INEEL emergency response facilities and equipment provide excellent capabilities for emergency response, mitigation, and management.</p> <p>Sufficient numbers of highly qualified initial response personnel are readily available to respond to operational emergencies at INEEL.</p> <p>Positive Attributes</p> <p>The LMITCO Emergency Preparedness Department is proactive in its initiatives to improve the organizational effectiveness of the INEEL emergency management program.</p> <p>Facility hazards assessments are comprehensive and methodically prepared.</p> <p>In response to the Secretary of Energy’s direction to reassess vulnerabilities at DOE sites, LMITCO conducted a well planned and thorough review of the site’s vulnerability to hazards.</p>	<p>Some critical aspects of emergency preparedness and response are not adequately addressed in emergency plans, procedures, and training.</p> <p>Some members of the INEEL emergency response organization did not demonstrate adequate proficiency or depth of knowledge to fully perform their roles and responsibilities.</p> <p>The Office of Environmental Management and ID have not been sufficiently engaged in the INEEL emergency management program to fulfill their responsibilities in accordance with DOE orders.</p>

Lawrence Livermore National Laboratory: March-April 1998

Operations Office: Oakland Operations Office (OAK)
Program Office: Defense Programs
Operating Contractor: University of California
Facilities Reviewed: Sitewide

The mission of Lawrence Livermore National Laboratory (LLNL) is research, development, and maintenance of nuclear weapons designs, and research and development in other areas, including strategic defense; basic energy sciences; biomedicine; biological, ecological, and atmospheric sciences; and science education.

In September-November 1997, the Office of Oversight conducted an evaluation of the safety management program of OAK and the LLNL. During that evaluation, significant deficiencies were noted in LLNL's emergency management program. Because these deficiencies were identified prior to the complex-wide review of emergency management, as directed by the Secretary of Energy, the Office of Oversight review focused on following up on actions taken by OAK and LLNL to correct the previously identified program deficiencies.

This followup evaluation noted that some program enhancements are needed in regard to the scope and approach of the LLNL program redesign efforts. Hazards assessment processes and analyses need to fully address onsite transportation of hazardous materials, and malevolent acts need to be analyzed and compared with the hazards assessments to ensure that they are bounded by the analysis. The tracking systems for the various corrective actions must be effectively monitored to ensure that the responsible organizations are held accountable for implementation and closure. As implementing procedures are updated and implemented, management needs to reinforce a policy of procedure use and adherence. To sustain such improvements, OAK needs to formally develop and institutionalize a

structured program to monitor and review LLNL emergency management.

In summary, OAK and LLNL have demonstrated a commitment to improving emergency management system effectiveness to address Departmental initiatives and the issues noted during the 1997 evaluation. Interim actions, within the broader redesign of the LLNL emergency management program, have included changes in roles and responsibilities to better ensure prompt notification and classification. Work control processes have been changed to facilitate the development and validation of required facility hazards surveys and assessments. The programmatic redesign process effectively integrates the requirements of DOE Order 151.1, Comprehensive Emergency Management System; corrective actions to address internal and external assessments; and implementation plans for integrated safety management.

Opportunities for Improvement at LLNL

1. OAK and LLNL need to ensure that hazards assessment processes consider all source terms and scenarios, including transportation activities and malevolent acts.
2. OAK and LLNL need to ensure that the actions taken to upgrade the emergency plan implementing procedures and emergency action levels:

- Reflect changes in organizational and individual roles and responsibilities
- Include objective, observable conditions to assist in determining event severity
- Are integrated into performance-based training programs.

Further, the use of these procedures must be reinforced by management direction and accountability processes.

3. LLNL management attention is needed to ensure that all tiers of corrective actions are comprehensively tracked and implemented in a timely manner to meet scheduled programmatic redesign milestones.
4. OAK needs to develop and institutionalize a comprehensive program for line management oversight of LLNL emergency management, including the interface with offsite agencies, that meets Departmental expectations.

LLNL Positive Attributes

The LLNL emergency management program is being comprehensively redesigned in response to Department initiatives and the Office of Oversight safety management evaluation.

The LLNL emergency management system is well integrated with the State of California Standardized Emergency Management system.

Status of Previously Identified Weaknesses at LLNL

PREVIOUS CONDITION	STATUS
Hazards assessments were neither accurately performed nor documented and, therefore, do not provide a firm foundation upon which to base an emergency management system.	LLNL has acknowledged the need and demonstrated a commitment to establish an effective hazards assessment process upon which to base an emergency management system. (A full-time staff member experienced in the conduct of hazards assessments has been hired; a site-specific workshop was conducted, led by external hazards assessment professionals; additional analysis of 26 hazardous material release scenarios of the Emergency Response Guide has been completed; and the Chemical Tracking Group is on schedule to complete validation of sitewide chemical data base by April 1998.)
LLNL Emergency Plan Implementing Procedures do not support accurate assessment, emergency classification, and protective action formulation for operational emergencies.	Interim actions have been taken, through changes in roles and implementing procedures, that reduce the time to classify operational emergencies. Procedures have been written to reflect roles and responsibilities of incident commanders and modifications to emergency action levels based on results of preliminary hazards assessments. Some improvements in emergency action levels were noted; however, additional work is needed.
Laboratory Emergency Duty Officers demonstrated a reliance on their memory instead of using implementing procedures for performing their many tasks, including categorization/classification and formulation of protective actions.	LLNL is addressing this weakness through ongoing training.
The LLNL emergency response organization does not adequately support prompt classification and decision-making during operational emergencies.	Notification responsibilities have been reassigned from the Office of Public Affairs to the Incident Commander during early stages of an emergency response. Incident command vehicles are being better equipped (e.g., cell phones, fax), and command and control for further notifications will then be transferred to the Laboratory Emergency Duty Officer.
Training of Laboratory Emergency Duty Officers is not based on the tasks for which they are responsible during an emergency.	LLNL has taken action to improve training for decision-makers by increasing the number of performance-based activities.
Program assessments are neither timely nor thorough, and they have not resulted in effective implementation of corrective actions.	Management system improvements are needed to ensure that the responsible organizations are held accountable for entering, tracking, and implementing corrective actions.
OAK oversight of the LLNL emergency management system does not employ mechanisms to ensure that hazards assessments are effective or that implementing procedures for classification, notification, and reporting of emergency events are reviewed and approved.	OAK has placed additional resources at the site level, including expertise in emergency management. However, much work still remains to correct this program shortcoming. For example, the process by which OAK will review LLNL hazards assessments has not been defined. OAK emergency management program documentation used for oversight of the LLNL emergency management program, as well as self-assessment programs, is inadequate.

Oak Ridge National Laboratory: April-May 1998

OPERATIONS OFFICE:	Oak Ridge Operations Office
PROGRAM OFFICE:	Energy Research
OPERATING CONTRACTOR:	Lockheed Martin Energy Research
OTHER ORGANIZATIONS:	Defense Programs
	Environmental Management
	Lockheed Martin Energy Systems
FACILITIES REVIEWED:	Oak Ridge Reservation (ORR)
	Oak Ridge National Laboratory (ORNL)
	High Flux Isotope Reactor
	Hazardous Waste Storage Facility
	Molten Salt Reactor Experiment
	Radiochemical Engineering Development Center

ORNL is part of the ORR, which includes two other major complexes: the Oak Ridge Y-12 Plant and the East Tennessee Technology Park (former K-25 Site). The ORNL mission is to support the DOE in six broad areas: energy production and conservation technologies, physical and life sciences, scientific and technological user facilities, environmental protection and waste management, science and technology transfer, and education. This evaluation addressed the ORR and ORNL emergency management programs, as well as emergency management programs and activities at the High Flux Isotope Reactor, the Hazardous Waste Storage Facility, the Molten Salt Reactor Experiment, and the Radiochemical Engineering Development Center.

The evaluation also included an assessment of the "Volunteer Response '98" exercise. This exercise included a simulated loss-of-coolant accident at the High Flux Isotope Reactor that resulted in a radioactive release to the environment, necessitating several protective actions, including sheltering in place and building/area evacuations. Participants included DOE Headquarters, the Oak Ridge Operations Office, Lockheed Martin Energy Research, Lockheed Martin Energy Systems, the state of Tennessee, and local governments.

Management attention to the emergency management program is evident at the ORR level in the identification of the need for change and the development of the Reservation Emergency Plan concept to address current and future program needs. The Reservation Emergency Plan utilizes shared resources and provides a methodology for addressing multiple site operators/users, taking advantage of the Oak Ridge Emergency Operations Center, which was identified as a positive attribute based on equipment, functional, and communication capabilities. These features of the Oak Ridge Emergency Operations Center were demonstrated during the "Volunteer Response '98" exercise. Additional effort is needed to assure that the transition to the Reservation Emergency Plan is adequately defined and funded, and that it has commitment at all levels.

Positive attributes in addition to the Reservation Emergency Plan concept and the Oak Ridge Emergency Operations Center were identified. These included the process for upkeep of security-related memoranda of agreement and the assignment of dedicated personnel to focus on recovery activities and planning throughout the accident response. Areas of good performance also were observed during the "Volunteer Response '98" exercise. These areas included the

command and control exhibited by the OR Emergency Operations Center Crisis Manager and Consequence Assessment Manager, appropriate classification and initial protective action recommendations, and the smooth functioning of the Joint Information Center. The most significant areas for improvement included the impact on the ability of the Laboratory Shift Superintendent to perform command and control responsibilities because of the extensive time required to perform notifications, the time to deploy offsite monitoring teams and communication of data, some technical inaccuracies and use of technical terms in press releases, and initial confusion among offsite agencies regarding whether a release was occurring. In addition, scenario development and simulation difficulties were evident.

Weaknesses in the overall emergency management program included incomplete emergency management hazards assessments, deficiencies in emergency action level processes and documents, inadequate rigor and quality in procedures and procedure usage, the lack of a structured training program or a formal drill and exercise program, and inadequate assurance that the necessary radiological and chemical instrumentation were available to support response actions. Of the programmatic weaknesses identified, completion of hazards assessments and the associated emergency action levels will require significant effort and support from DOE line organizations to assure that adequate resources are available.

During the time between the program review and the exercise evaluation, ORNL management aggressively initiated actions to strengthen procedures and training for Laboratory Shift Superintendents. Further improvement in training can be facilitated by use of ORR resources and training elements. In addition, during the "Volunteer Response '98" exercise, Laboratory Shift Supervisor performance of command and control functions was impacted by notification requirements; this situation requires a similar level of management attention.

Opportunities for Improvement at ORNL

1. Provide clear programmatic direction necessary to implement an effective formal hazards assessment process. Increase

management attention to ensure that Laboratory-wide hazards assessment scenarios and data are adequate and useful as a technical basis for emergency planning.

2. Revise facility emergency action levels to address the full spectrum of emergency events, the nature of hazards, and the consequences of hazards represented in ORNL hazards assessment/consequence assessment documents. Verify that all emergency action levels are directly readable or observable and support timely classification and protective actions. Verify that emergency action levels are reviewed and tested for validity and usability before approval and that appropriate personnel are trained on the use of emergency action level procedures. Develop event-specific onsite protective actions and offsite protective action recommendations.
3. Develop and implement a strong management policy on procedure adherence and use within all organizations, especially those requiring the rigorous procedure use and compliance necessary to effectively and accurately manage accidents. Demonstrate strong commitment, coordination, ownership, and maintenance of procedures at all levels of ORNL management.
4. Implement structured training in detection, classification, notification, consequence assessment, and protective actions for key members of the emergency response organization, particularly the Laboratory Shift Superintendent organization. Implement timely compensatory training measures for Laboratory Shift Superintendents to ensure that an adequate emergency response capability is in place. Utilize emergency management training modules that have been developed in support of the Reservation Emergency Plan where appropriate.
5. Enhance commitment at all levels to overcome organizational and other barriers to implement the Reservation Emergency Plan. Include

establishment and communication of clear program expectations, well defined roles and responsibilities, and revision of the transition plan to include meaningful milestone schedules supported by detailed activity descriptions.

6. Develop and implement a formal drill and exercise program that meets DOE Order 151.1 and ORNL standards/requirements information document requirements. Ensure that the ORNL program is coordinated and integrated with the ORR program. Adopt a standard deficiency-tracking program for ORNL-related drill and exercise deficiencies. The ORNL sitewide drill and exercise program should establish requirements, assign responsibilities, establish sitewide drill scheduling, and promote consistency and compliance among all facilities.
7. Assure adequate assessment of the emergency management program in accordance with existing procedures, and develop and implement a formal procedure to ensure that drill and exercise deficiencies from critiques are corrected, verified, and documented. Management of corrective actions should be implemented for all deficiencies related to the emergency management program. A corrective actions management system is available from the Lockheed Martin Energy Systems Emergency Management Program Organization, which was developed to support the Oak Ridge Reservation Emergency Plan.
8. Involve the industrial hygiene and health physics instrumentation organizations in evaluating the adequacy of instrumentation for emergency response, reviewing hazards assessments and emergency action levels, and developing monitoring and sampling protocols for radiological and chemical measurements that support emergency classification. Verify

that required equipment is specified in emergency plan implementing procedures and is readily available for use by onsite and offsite monitoring teams.

ORNL Plans to Address Identified Weaknesses

ORNL reports that a number of actions have been completed to address weaknesses in the emergency management program, including weaknesses identified during the exercise. Some of the actions reported as complete in May 1998 include:

- The Reservation Emergency Plan was approved and distributed.
- Laboratory Shift Superintendent notification procedures were modified to conform to the Reservation Emergency Plan.
- Operating instructions for the site paging system and public warning system were developed and issued.
- The evaluation criteria for exercise objectives have been modified (implementing procedures will be used instead of generic Reservation Emergency Plan requirements).
- A concept of operations document for the Reservation Field Monitoring Teams was issued, and outdated guidance was canceled.

Some additional improvements that ORNL plans to implement and the scheduled completion dates include:

- Perform a qualitative survey of facility hazards in accordance with DOE Order 151.1 (by November 30, 1998).
- Perform a hazards assessment of applicable facilities (September 30, 1999).
- Formulate site and facility-specific emergency action levels based on hazards assessments (October 30, 1999).

ORNL Positive Attributes and Weaknesses

POSITIVE ATTRIBUTES	WEAKNESSES
<p>The Oak Ridge Reservation Emergency Plan concept supports the development of an integrated emergency management system for all ORR operations and provides a framework for an emergency management program that, when fully implemented, would strengthen the overall response capability.</p> <p>The Oak Ridge Emergency Operations Center located at the East Tennessee Technology Park is well equipped and has excellent functional and communications capability to support reservation-wide emergency response.</p> <p>The Oak Ridge Operations Office safeguards and security protocols for maintaining current memoranda of understanding with Federal, state, and local law enforcement agencies could be used as a model program for other Oak Ridge organizations responsible for the development and maintenance of offsite support agreements.</p> <p>The ORNL emergency response organization includes dedicated recovery management positions designed to focus on recovery activities and planning throughout the accident response.</p>	<p>Hazards assessments do not adequately support analysis of potential accidents and evaluation of potential event consequences for emergency management.</p> <p>Emergency action levels do not adequately support the detection, recognition, and determination of emergency classifications and protective actions.</p> <p>Emergency management procedures are not developed, used, and controlled with sufficient rigor and quality to assure effective and accurate identification, classification, notification, and mitigation of accidents.</p> <p>A structured emergency training program that meets the requirements of the ORNL Integrated Emergency Training System issued in February 1993, and that would ensure that members of the emergency response organization receive sufficient training to consistently perform emergency response duties, is not yet implemented.</p> <p>DOE has not sufficiently defined or funded ORNL's transition to the Reservation emergency management concept, and ORNL has not fully committed to the transition to assure timely and effective implementation of the Reservation Emergency Plan.</p> <p>The ORNL emergency management assessment program is not effectively implemented, and corrective actions are not adequately managed to ensure that the Laboratory meets the requirements of its emergency management system.</p> <p>ORNL has not developed and implemented a formal drill and exercise program to meet DOE Order 151.1 and standards/requirements identification document requirements.</p> <p>Field monitoring measurements of radiological and chemical releases as described in the emergency action level initiating events and supporting hazards analyses cannot be performed in a timely manner to support emergency classification.</p>

Transportation Safeguards Division: May 1998

OPERATIONS OFFICE:	Albuquerque Operations Office
PROGRAM OFFICE:	Defense Programs
OPERATING CONTRACTOR:	N/A
OTHER ORGANIZATIONS:	Ross Aviation
FACILITIES REVIEWED:	Site

The primary mission of the Transportation Safeguards Division (TSD) is to provide for the safe, secure movement of nuclear weapons, special nuclear materials, nuclear test devices, select non-nuclear weapon components, and limited-life components. TSD uses the Transportation Safeguards System to transport these items between DOE nuclear complex facilities and between DOE and Department of Defense facilities within the United States. TSD also provides safe, secure transport for high-value shipments on behalf of other agencies of the United States Government. The Transportation Safeguards System incorporates multiple levels of safeguards and security to guarantee that such shipments are accomplished in a safe and secure manner. Although TSD is authorized to operate via highway or air, nearly all shipments are carried over the highway, using a convoy of tractor-trailer truck combinations accompanied by escort vehicles. To accomplish this mission, TSD has courier sections located at the Albuquerque, Pantex, and Oak Ridge sites.

Through its Aviation Management staff, TSD contracts with Ross Aviation to provide general aviation services. Under the terms of its contract with DOE, Ross maintains and operates a fleet of Federal government-owned aircraft to provide scheduled and on-demand flight services for personnel and to ship by air a variety of hazardous materials, including nuclear weapons limited-life components, between various DOE and Department of Defense facilities. In addition to the onsite emergency management program review, the Office of Oversight

observed an exercise in March 1998 to evaluate the effectiveness of a DOE courier unit in defending a nuclear materials highway shipment against a hostile attack.

Positive attributes observed during this evaluation included maintenance of transportation equipment, the capability of the Security Communications facility, the process for maintaining memoranda of understanding, and training provided by the Albuquerque Operations Office's Office of Public Affairs. The most significant positive attribute was the knowledge and understanding of incident command functions and coordination with local officials demonstrated by the three Convoy Commanders interviewed during the March 1998 exercise.

It was noted that TSD management tended to rely on the experience of individuals, such as Convoy Commanders, rather than developing, maintaining, and utilizing a program based on sound technical principles and DOE order requirements. This lack of rigor was evident in the emergency action levels in the TSD emergency management plan. For example, some of the emergency action levels required radiation readings, even though radiation instruments had been removed from the convoys in September 1996. Additionally, TSD managers explained that they did not use the emergency action levels specified in their emergency management plan.

Emergency management program elements were fragmented. TSD has not developed and implemented an integrated, technically sound emergency management program, as shown by the hazards assessment and TSD emergency management plan. The TSD hazards assessment did not provide an

adequate technical basis for ground transportation emergency planning, preparedness, and response. For example, it did not include or refer to evaluation of radiological hazards. Contrary to TSD management's explanation of the condition of the TSD emergency management plan, the Oversight team found the plan to be out of date and incomplete.

While key individuals, such as Convoy Commanders, demonstrated knowledge and understanding of emergency management functions, the importance of a sound program with an appropriate technical basis remains. Strong management attention is needed in order to attain

a comprehensive, integrated emergency management program at TSD.

The text box below summarizes issues relevant to the TSD emergency management program and plans.

Opportunities for Improvement at TSD

1. Revise hazards assessments for ground and air transportation emergencies to incorporate and reference current hazard analyses and

TSD EMERGENCY MANAGEMENT PROGRAM CHRONOLOGY AND ISSUES

Key elements of the TSD emergency management program and plans cannot be implemented, and others are not followed. The following sequence of events indicates a lack of rigor in program implementation and weaknesses in management attention and feedback and improvement mechanisms.

Chronology

- The hazards assessment, approved on May 4, 1994, did not address radiological hazards, a significant hazard associated with TSD operations.
- The emergency management plan was approved on August 1, 1994. The plan stipulated the use of emergency action levels (EALs) for the graded response to emergencies. Some EALs require radiation readings. The plan also stated that integration between the TSD plan and Ross Aviation's plan for air transport was necessary, and work to accomplish this was in progress.
- In September 1996, TSD management mandated the removal of radiation monitoring instruments from all convoy shipments.
- On November of 1996, a TSD Safe Secure Trailer transporting nuclear weapons slid off a road and rolled over near Valentine, Nebraska. According to a Department of Defense Nuclear Command and Control System Support Staff report, almost four hours elapsed before DOE Headquarters was notified, and it was almost 20 hours before a Radiological Assessment Program team determined that there had been no radiological release. The report recommended equipping convoys with radiological instruments to provide timely warning of potential personnel hazards.
- During 1997 TSD management provided documents to Convoy Commanders for use in providing initial protective action recommendations for the public. The document is not part of the formal emergency management plan or the procedures, nor is it subject to the same review and approval process.
- An August 1997 review of the TSD radiological protection program by the DOE Office of Oversight identified that even though the radiological survey instruments had been removed from convoys, TSD Courier Standard Operating Procedure still required their use. Additionally, no documented technical review had been performed to support removal of the instruments. The TSD review in response to the Secretary of Energy's initiative regarding EALs did not identify these deficiencies.
- The May 1998 evaluation of the TSD emergency management program by the DOE Office of Oversight identified the following issues:
 - ⇒ Some EALs require radiation measurements, but no instruments are available.
 - ⇒ There is a discrepancy between an EAL in the TSD hazards assessment and the emergency management plan. One specifies an alert, while the other specifies a general emergency for the same conditions.
 - ⇒ TSD managers state that they do not use EALs as specified in their plan.
 - ⇒ The documents provided to Convoy Commanders to provide initial protective action recommendations for the public include decision paths that cannot be completed due to lack of observable criteria.
 - ⇒ There is no defined mechanism for integrating TSD response elements with Ross Aviation assets for air transportation emergencies.
 - ⇒ The performance of exercises and drills, as well as the annual reviews of the TSD emergency management program documents, was not effective in identifying and correcting these deficiencies. The hazards assessment and emergency management plan have not been updated since they were issued in 1994.

vulnerability assessments that are specific to TSD transportation operations. Ensure that the TSD hazards assessment provides the basis and scope for TSD emergency planning, preparedness, and response. Reassess emergency planning zones established for worst-case ground and air transportation emergencies. Ensure that emergency planning zones correspond to the maximum distances from postulated release points to Environmental Protection Agency Protective Action Guide limits for radiological exposures and to Emergency Response Planning Guide limits for hazardous chemical exposures.

2. Develop procedures for categorization and classification of both ground and air transportation emergencies involving nuclear materials and devices for which TSD holds transportation responsibility. Procedures should include designation of responsibility for categorization and classification of emergencies, as well as objective, observable, and unambiguous emergency action levels that are specific to transportation operations. Provide training for personnel responsible for categorization and classification to ensure consistency in understanding and decision-making.
3. Review the decision flowcharts provided to the Convoy Commanders for initial protective action recommendations and associated training. Ensure that the technical basis is appropriate, that the document is controlled and subject to the appropriate TSD review and approval process, and that the decision flowcharts can be implemented and result in appropriate protective action recommendations.
4. Develop a matrix reflecting how the current program meets DOE Order 151.1 (or DOE 5500 series) requirements for air and land shipments. Ensure that the next revision of the TSD emergency management plan reflects the results of the matrix. Develop a formal, comprehensive emergency management drill and exercise program consolidating the current fragmented programs.
5. Ensure that the Albuquerque Operations Office's draft Emergency Public Information Plan and draft Accident Response Group Emergency

Public Information Plan are completed. Presently, one Public Affairs staff member is supporting both of these efforts along with other assigned responsibilities. Additional Public Affairs resources should be considered to expedite completion and implementation of both plans.

6. Develop and implement a structured training program for the Situation Room emergency response cadre based on assigned responsibilities. Utilize a tracking system such as that used for the Albuquerque Operations Office Emergency Operations Center to assure that initial and refresher training requirements are completed.
7. Utilize available DOE resources with expertise in emergency management to help develop an integrated emergency management program that includes all of TSD transportation activities.

TSD Plans to Address Identified Weaknesses

TSD reports that a number of actions are planned to address weaknesses identified in the emergency management program and exercise. Ongoing and planned actions include:

- The TSD hazards assessment will be revised (December 1998).
- Emergency action levels will be revised (August 1998).
- Protective action flowcharts will be revised (August 1998).
- The TSD Emergency Management Plan will be revised (December 1998).
- Training for emergency response organization members who staff the TSD Situation Room has been identified, and staff will complete the training (September 1998).
- The Emergency Public Information Plan is currently under review by the Albuquerque Operations Office and will be finalized (December 1998).
- TSD will clarify actions taken in response to Secretary of Energy direction and Albuquerque Operations Office initiatives in the FY 1998 Emergency Readiness Assurance Plan submittal (September 1998).

TSD Positive Attributes and Weaknesses

POSITIVE ATTRIBUTES	WEAKNESSES
<p>Convoy Commanders demonstrated strong knowledge of initial response actions to mitigate the severity of emergencies and protect personnel from hazards present, as well as knowledge of the Incident Command System to manage on-scene emergency response.</p> <p>The Albuquerque Operations Office's Office of Public Affairs has been proactive in supporting the development and implementation of emergency management training for Public Affairs staff as well as TSD, Radiological Assessment Program, and Accident Response Group team members.</p> <p>TSD ground transportation vehicles were well maintained, and the Security Communications Control Center was well equipped.</p> <p>TSD has implemented an effective program for assuring that memoranda of understanding and memoranda of agreement between Federal, state, tribal, and local government agencies remain current; these are depended on for offsite emergency response.</p>	<p>The TSD hazards assessment (May 4, 1994) does not provide an adequate technical basis for ground transportation emergency planning, preparedness, and response. The hazards assessment is a collection of information pertaining mostly to fixed facilities utilized by TSD, and a trinitrotoluene (TNT) hazard associated with release from a Safe Secure Trailer in a TSD convoy. No radiological assumptions, models, methodologies, or evaluations for TSD convoy event hazards are documented or referenced in the TSD hazards assessment. The Ross Aviation hazards assessment for air transport does not provide adequate assessment of an emergency planning zone to ensure public protection in the event of a worst-case accident.</p> <p>The emergency response organizations, procedures, and training for TSD and its contractor, Ross Aviation, do not adequately support accurate and prompt categorization and classification of operational emergencies during transport of nuclear materials or devices.</p> <p>The decision flowcharts provided to Convoy Commanders for use in providing initial recommended protective actions utilizes a decision tree that requires information not directly observable or measurable.</p> <p>TSD emergency management program documents have not been adequately maintained to be consistent with current operations and do not provide the basis for a comprehensive emergency management program.</p> <p>TSD management systems do not assure that members of the emergency response organization who staff the TSD Situation Room receive appropriate emergency management training consistent with their responsibilities.</p> <p>Albuquerque Operations Office emergency public information plans and procedures remain in draft and in some cases do not contain essential program elements.</p> <p>The TSD response to Secretary Pena's memorandum dated August 27, 1997, and the response to specific actions required by the Albuquerque Operations Office Operations Management Division memorandum dated September 17, 1997, did not adequately address all questions, specify what actions were taken, or result in the preparation of specific documents, such as an emergency action level technical basis document, required by the memoranda.</p>

Rocky Flats Environmental Technology Site: May-June 1998

OPERATIONS OFFICE:	Rocky Flats Field Office (RFFO)
PROGRAM OFFICE:	Environmental Management
OPERATING CONTRACTOR:	Kaiser-Hill
OTHER ORGANIZATIONS:	Rocky Mountain Remediation Services Safe Sites of Colorado Wackenhut Services, Inc. DynCorp of Colorado, Inc. Excalibur Associates, Inc.
FACILITIES REVIEWED:	Building 371 Building 664 Building 771

The nuclear production mission of the Rocky Flats Environmental Technology Site (RFETS) was curtailed in 1989. As a legacy from past operations, RFETS has 12.9 metric tons of plutonium in the form of metals, oxides, solutions, scrap, and residue. The current mission of RFETS is special nuclear material management, site cleanup, environmental restoration, deactivation, and preparation for decontamination and decommissioning of facilities. The current site goal is to achieve site closure by 2006.

Kaiser-Hill (a partnership between ICF-Kaiser and CH2M Hill) assumed responsibility as the integrating management contractor for RFETS on July 1, 1995. Kaiser-Hill manages multiple subcontractors at RFETS. Key subcontractors with emergency management roles and responsibilities include Rocky Mountain Remediation Services (waste operations, decontamination and decommissioning, and environmental restoration), Safe Sites of Colorado (building operations, plutonium stabilization, repackaging, consolidation, accountability of special nuclear material, highly enriched uranium shipments, and classified parts management), Wackenhut Services, Inc. (security), DynCorp of Colorado, Inc. (site support services, such as fire and medical), and Excalibur Associates, Inc. (emergency management program support).

Evaluation of emergency management at the facility level focused on Building 371,

which has a limited mission associated with the interim storage of special nuclear material; Building 664, which is about to begin shipping transuranic and other hazardous waste to the Waste Isolation Pilot Project in New Mexico; and Building 771, which has significant legacy hazards and is being prepared for decontamination and decommissioning.

RFFO and Kaiser-Hill have established a good foundation for an effective emergency management program at RFETS, which is based on thorough and well documented hazards assessments. The site has developed an excellent working relationship with the state of Colorado and local stakeholders on emergency preparedness and response issues, which has served to strengthen this foundation. The site has approached the development of hazards assessments as a partnership, resulting in strong support for the RFETS emergency management program. This strong relationship with the state and other external stakeholders is a noteworthy practice.

There are other positive attributes that demonstrate a strong commitment by RFFO and Kaiser-Hill to establish an effective emergency management program at RFETS. For example, the site has taken positive steps to eliminate some hazardous chemicals and increase the control of chemicals being used. Additionally, RFFO's identification of issues

and interfacing with external stakeholders has led to improvements in the RFETS emergency management program. Priority needs to be given to ensure that RFFO staff can maintain this level of involvement. Finally, the structure of the incident command system supports coordination between different operational elements, such as fire and security, and was observed to be effectively implemented.

There are some fundamental weaknesses in the RFETS emergency management program, however, that could result in breakdowns in communications and emergency response capabilities. Line management has not ensured effective coordination and implementation of some critical emergency management program elements at the facility level. Additionally, some critical aspects of emergency preparedness have not been adequately addressed in emergency plans and procedures, such as formulation of protective actions for emergencies outside of fixed facilities, accuracy of hazardous material source terms used in hazards assessments, and processes for chemical consequence assessment. Tabletop walk-throughs with key members of the emergency response organization indicated a need for improvement in their proficiency and depth of knowledge with respect to emergency plans and procedures. Other concerns include the availability and effectiveness of some emergency facilities and equipment, unresolved issues associated with public information processes, and hazard recognition and prioritization of response activities to ensure timely care of contaminated, injured personnel.

Noteworthy Practice at RFETS

RFFO and RFETS contractors have established a strong working relationship with the state of Colorado and local stakeholders on emergency management issues. Based on the experience of working through many difficult issues during the past ten years, RFFO, site contractors, the state of Colorado, and local communities have developed an effective partnership for addressing emergency planning and preparedness concerns. The site sponsors an active Emergency Planning Zone Oversight Committee that includes technical experts from RFFO, site contractors, other Federal agencies, and the state, as well as county and local representatives. This committee has evaluated the technical basis and analytical methodology for the emergency

preparedness hazards assessments, and through this committee, the state has performed an independent evaluation and acceptance of the RFETS consequence assessment modeling program. RFETS emergency management program managers have made several recent presentations to the local Citizens Advisory Board to discuss the results of their work, the technical basis for their analyses, the shortcomings of particular analytical techniques, and the implications for emergency planning and public safety. RFETS personnel also participate in a Joint Planning Team led by the State of Colorado Department of Public Health and Environment. This team meets regularly to discuss and coordinate common emergency planning and response elements. The open partnership and ongoing communication with stakeholders have provided the state and local communities with an opportunity to develop a thorough understanding of the RFETS emergency management program and to participate in, as well have authority to make, important decisions affecting public safety. While there are some emergency management issues that need to be worked out between the site and external stakeholders, effective working relationships and forums for dialog have been established and nurtured to support their resolution.

Opportunities for Improvement at RFETS

1. Improve processes to ensure effective dissemination and coordination of emergency preparedness information and issues among RFFO, Kaiser-Hill, and subcontractors. Establish clear emergency management roles and responsibilities for facility personnel to ensure an appropriate level of accountability and line management involvement in the emergency management program.
2. Improve facility involvement in the development and review of emergency preparedness hazards assessment documents, emergency preparedness plans, and emergency operating procedures. Establish more effective processes to ensure uniform implementation of new facility emergency procedures. Additionally, facility managers should take a more active role in ensuring the

proficiency of facility personnel in using emergency procedures.

3. Develop a method for implementing timely classification and protective actions for non-facility events. Consider using existing hazards assessments and emergency action levels that have already been developed for identical hazardous materials at fixed facility locations, or by using the isolation zones prescribed by the North American Emergency Response Guide.
4. Establish formal mechanisms to ensure that changes in facility hazards and processes are made known to hazards assessors so that changes can be appropriately analyzed. Develop and implement a strategy to improve the accuracy of the hazardous material inventory contained in the Waste and Environmental Management System data base.
5. Routinely evaluate the proficiency and level of knowledge of emergency responders in using site emergency plans and procedures. Develop and implement strategies to improve performance for those individuals who are identified as lacking proficiency and understanding.
6. Evaluate the effectiveness of the Joint Public Information Center (JPIC) organizational structure, equipment, and facilities. Coordinate the resolution of public information issues with the state of Colorado.
7. Evaluate the adequacy of the current alternate emergency operations center to support effective management of emergency response activities during periods when the primary emergency operations center may become uninhabitable. Exercise the alternate emergency operations center to demonstrate this capability.
8. Improve the characterization of building hazards in the fire plans and responders' understanding of hazardous materials risks to support proper prioritization of emergency

medical care and treatment consistent with the need to protect rescue personnel. Improve mechanisms to ensure that appropriate technical support is readily available to assist the fire department in responding to a hazardous materials incident.

9. Ensure that an RFFO staffing plan is implemented that will maintain adequate expertise for oversight of the RFETS emergency management program. Ensure that sufficient personnel are assigned to fulfill all required field office emergency management responsibilities.
10. Implement a formal system within the RFFO to track corrective actions to closure and facilitate the analysis of emergency response issues for systemic trends.

RFETS Plans to Address Identified Weaknesses

RFETS has identified a number of actions necessary to address weaknesses in the emergency management program. RFETS reports that a number of specific actions have been completed, including:

- Additional training on emergency action levels was provided to Shift Superintendents, and tabletop training sessions were established to maintain Shift Superintendent/Incident Commander proficiency.
- A sitewide drill was conducted on July 1, 1998, to test the performance of the Crisis Manager and DOE Manager in classifying events.
- Fire Department pre-fire plans and hazardous materials standing operating procedures were updated.

RFETS also identified other actions they plan to take to further improve their emergency management program:

- Develop a method for implementing timely classification and protective actions, and hazards assessments for transportation and sitewide events, by September 30, 1998.

- Conduct additional training for Fire Department personnel and high-hazard facility management personnel throughout the fiscal year.
- Have RFETS assume responsibilities for JPIC operations, review JPIC equipment for serviceability on a monthly basis, develop a data base to formally track training and qualification for the public information cadre, and identify an alternate JPIC location.
- Confirm the suitability of the alternate emergency operations center facility through drills involving operations from the selected facility.

- Develop an implementation plan for retaining critical skills.
- Continue routine RFFO reviews of Kaiser-Hill Action Tracking System and implement the RFFO Assessment Program, which includes assessment findings tracking.
- Evaluate other initiatives at RFETS, such as a proposal for Kaiser-Hill staff augmentation in high-hazard facilities to administer emergency preparedness program requirements and establishment of a Readiness Council among the prime contractor, principal subcontractors, and Facility Representatives to address emergency management program requirements.

RFETS Noteworthy Practices, Positive Attributes, and Weaknesses

NOTEWORTHY PRACTICES AND POSITIVE ATTRIBUTES	WEAKNESSES
<p>Noteworthy Practices</p> <p>RFFO and RFETS contractors have established a strong working relationship with the state of Colorado and local stakeholders on emergency management issues.</p> <p>Positive Attributes</p> <p>Facility emergency preparedness hazards assessments are comprehensive, methodically prepared, and provide a good technical basis for other emergency management system elements.</p> <p>RFETS has taken positive steps to reduce site vulnerability to chemical incidents and releases.</p> <p>RFFO is actively engaged in oversight of the RFETS emergency management program, which has led to programmatic and facility-level improvements.</p> <p>Operational elements of the incident command system were observed to be well understood and effectively implemented.</p>	<p>Line management has not ensured effective implementation and coordination of some critical emergency management program elements at the facility level.</p> <p>Some fundamental elements of emergency preparedness and response are not adequately addressed in emergency plans, procedures, and training.</p> <p>Some members of the RFETS emergency response organization did not demonstrate adequate proficiency or depth of knowledge to fully perform their roles and responsibilities.</p> <p>RFFO and Kaiser-Hill managers have not ensured that the Joint Public Information Center can function effectively during an emergency.</p> <p>Several concerns were noted with respect to emergency preparedness facilities and equipment.</p> <p>Emergency response plans and procedures do not support timely hazard recognition, effective initial response efforts, and appropriate prioritization of response activities for the care and treatment of injured, contaminated personnel.</p>

Hanford Site: June 1998

OPERATIONS OFFICE:	Richland Operations Office (RL)
OPERATING CONTRACTOR:	Fluor Daniel Hanford (FDH)
OTHER ORGANIZATIONS:	Babcock and Wilcox
	Duke Engineering Services
FACILITIES REVIEWED:	Plutonium Finishing Plant (PFP)
	105 K-East Basin

The Hanford Site's overall mission is environmental cleanup and restoration. Under the purview of RL, FDH is the contractor that integrates a full range of work to support cleanup of the site. In addition, FDH has contracts with other companies to manage projects and perform sitewide services such as security and fire protection. Babcock and Wilcox operates the PFP, and Duke Engineering Services operates the 100 Area, which includes the K-East and K-West Basins. The site emergency management program covers many separate areas, each having different emergency planning requirements.

Evaluation of emergency management at the facility level focused on the PFP and the 105 K-East Basin. The review team also observed the full-participation exercise "Bonneville," which involved simulation of a fire and subsequent release of radioactive material at the 105 K-East Basin. The review also encompassed corrective actions resulting from the investigation of the May 1997 chemical explosion at the Plutonium Reclamation Facility (PRF).

RL and FDH have been aggressive and effective in improving Hanford emergency management and correcting issues identified during the response to the May 1997 chemical explosion at the PRF. The FDH project management approach to corrective actions resulting from the May 1997 event greatly improved the emergency management program at Hanford. Additionally, FDH has brought in an experienced senior emergency

preparedness manager to implement and manage the program. The significant weaknesses identified during the response to the PRF event are being corrected in the two facilities under review. The results of these efforts were demonstrated in the emergency exercise observed during this review, particularly in key areas such as conservative event classification, timely notifications, command and control, and prompt medical treatment for injured or exposed workers.

While the Hanford Site is in the process of implementing a fundamentally sound and effective emergency management program, several weaknesses were observed. Deficiencies in emergency response plans, procedures, and equipment hinder support for some emergency response activities. In addition, emergency preparedness training programs need to be strengthened to ensure that the training provided is appropriately approved and performance-based, and that it meets requirements. The need for training was also evident during the exercise, particularly for emergency responders and exercise controllers. Also during the exercise, it was observed that the decision-making process in the emergency operations center does not support efficient management of emergencies and causes delays in event classification and protective actions, and the Joint Information Center and emergency operations center processes do not adequately support the dissemination of accurate and timely information to the public, the media, and employees.

Opportunities for Improvement at Hanford

1. Strengthen the management of emergencies to support timely decision-making with regard to event classification and protective actions.
2. Collocate the DOE Emergency Manager and the contractor Emergency Director in the emergency operations center.
3. Expedite event classification and protective action decision-making by de-emphasizing consensus building and improving communications.
4. Strengthen the ability of the Unified Dose Assessment Center to support timely verification of classification through training, drills, and exercises.
5. Improve the public information program and the reliability of support equipment, training, staffing, and technical support to ensure the development and communication of accurate, timely emergency information to the public and the media. Require Joint Information Center staff to participate in all Hanford emergency exercises.
6. Improve training related to emergency classification and protective action decision-making to ensure that training is performance-based and supports proficiency. Provide qualified trainers, including controllers and evaluators, to support training needs. Ensure that training is approved and includes lessons learned.
7. Continue to upgrade emergency procedures and plans. These actions will help assure the institutionalization of emergency program upgrades and consistent implementation across the Hanford Site and contractor organizations.

Hanford Site Positive Attributes and Weaknesses

POSITIVE ATTRIBUTES	WEAKNESSES
<p>The PRF incident response project is well managed and supports an aggressive and thorough resolution of corrective actions resulting from the May 1997 event.</p> <p>Facility emergency preparedness hazards assessments are comprehensive and methodically prepared, and they provide a technical basis for other emergency management system elements.</p> <p>The integration of emergency preparedness programs at K-Basins and PFP is effective and should be applied to other facilities at Hanford.</p> <p>Operational elements of the incident command system are effectively implemented.</p> <p>The occupational health subteam of the PRF incident response project has effectively developed a comprehensive approach to correcting the health, safety, and industrial hygiene deficiencies identified during the May 1997 event.</p>	<p>The decision-making process in the emergency operations center does not support efficient management of emergencies and causes delays in event classification, protective actions, and relaying information to the public.</p> <p>Deficiencies in emergency response plans, procedures, and equipment hinder support for some emergency response activities.</p> <p>Emergency preparedness training programs need to be strengthened to ensure that the training provided is approved and performance-based and that it meets requirements. Training needs to be provided to emergency responders and exercise controllers.</p> <p>Joint Information Center and emergency operations center processes do not adequately support the dissemination of accurate, timely information to the public, the media, and employees.</p>

This page intentionally left blank.

Appendix A

Team Composition

The team membership, composition, and responsibilities are as follows:

Deputy Assistant Secretary for Oversight

Glenn Podonsky

Associate Deputy Assistant Secretary for Oversight

Neal Goldenberg (Technical)
David Stadler (Operations)

Office of ES&H Evaluations

Michael Kilpatrick, Director

Team Leaders

Charles Lewis, Team Leader/Project Manager
Tom Staker, Team Leader
Brad Peterson, Team Leader
Richard Lagdon, Team Leader

Evaluation Team Members

Pat Worthington
Kathy McCarty
Marie Dunkle
James Davis
Ed Stafford
Jerry Bennett
Mark Good
Marvin Mielke
Dave Allard
Fred Leverenz
Doug Trout
Jim Lockridge
Dave Berkey
Bob Compton
Dave Schultz
Jerry Martin
Bill Miller
Jeanie Polehn
Brad Davy
Skip Singer

Steering Committee

David Stadler, Chairman
Ray Hardwick
Dean Hickman
Bob Nelson
Sonja Haber

Administrative Support

Tom Davis
Mary Anne Sirk
Shirley Cunningham
Marcia Taylor
Kathy Moore
Yolanda Parker
Leisa Weidner
Tracey Whipp
Perry Webster
Sharon Wilder

This page intentionally left blank.