

KAISER ♦ HILL

Evaluation Assessment Report for the

Rocky Flats Environmental Technology Site

Full-Participation Emergency Response Exercise READY 2000

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Prepared for Kaiser-Hill, L.L.C.
By



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ACRONYMS USED IN THIS REPORT

BEST.....	Building Emergency Support Team
DERS	Digital Emergency Response System
DOE	Department of Energy
EMO.....	Emergency Management Organization
EOC	Emergency Operations Center
ERO.....	Emergency Response Organization
FST.....	Field Sampling Team
FWC.....	Functional Work Center
PPE.....	Personal Protective Equipment
RCT.....	Radiological Control Technician
RFFO.....	Rocky Flats Field Office
SCBA	Self-contained Breathing Apparatus

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EXERCISE REPORT

Executive Summary



All Department of Energy (DOE) sites are required to conduct an annual full participation exercise to test and demonstrate an integrated emergency response capability according to the requirements and guidance provided in DOE Order 151.1 and supporting Emergency Management Guides. To comply with these requirements, the Rocky Flats Environmental Technology Site conducted a radiological exercise entitled READY – 2000, on June 21, 2000. The exercise provided for the joint participation of State and local government agencies to a limited extent, as well as selected offsite emergency response organizations.

READY-2000 was designed primarily to demonstrate and test the capability of the Site to effectively respond and mitigate an operational emergency, requiring liaison and coordination with State and local emergency response authorities and agencies, and the support of offsite emergency response organizations and hospitals. To satisfy these requirements and objectives, the scenario developed for READY-2000 involved:

- A credible radiological emergency event in or near a nuclear facility resulting in a release to the environment and the contamination of a wide area of the Site.
- The injury and/or contamination of workers and first responders inside the facility.
- The potential for offsite impacts.

The scenario event was designed and developed with the assistance and input of onsite and offsite

subject matter experts from all participant organizations and agencies, including the nuclear facility designated as the location for the postulated emergency event.

Scope

READY – 2000 was designed to demonstrate and test the capability of the RFETS to protect the health and safety of workers and the public, and to protect property and the environment. The exercise focused on the ability of the Site to effectively respond, control, mitigate, and limit the consequences of a radiological emergency at a facility located within the security boundaries of the RFETS Protected Area. The scenario allowed for the participation of state and local agencies and emergency response organizations.

The exercise scenario and objectives were designed to emphasize the Site's emergency response capabilities, to include:

- Notification and mobilization of the entire Site ERO;
- Command, control and communications;
- Assessment and classification of the emergency event;
- Emergency public information;
- Triage and treatment of injured and/or contaminated personnel;
- Evacuation and accountability of personnel;
- Coordination and support requirements to State and local authorities and agencies; and
- Recovery planning and reentry strategies.

The participation of the State of Colorado and other offsite authorities and agencies was limited. The exercise scenario event resulted initially in the declaration of an Alert, requiring the determination of sitewide protective actions (PAs) and offsite protective action recommendations (PARs).

The decisions and actions executed in response to the exercise scenario allowed for a comprehensive

evaluation of the current RFETS emergency response capability. The evaluation is based upon the ability to demonstrate the appropriate responses in accordance with standardized emergency plans and implementing procedures.

The State Emergency Operations Center (SEOC) was activated. Exercise participation by State agencies, with the exception of Colorado Department of Public Health and Environment (CDPHE), was limited to a communications drill that was used to train available key personnel and validate the personnel recall lists. The participation by the Office of Emergency Management consisted of providing an operations officer and a limited number of associated Joint Information Center (JIC) support personnel. Offsite participation in READY – 2000 included local ambulance, and health care service providers.

Critiques were conducted for all participants and the exercise Controller/Evaluator organization for the purpose of documenting performance results and potential program enhancements. This allowed for the immediate identification and discussion of the strengths, Weaknesses, and Deficiencies observed during the course of the exercise.

Background

Emergency management exercises are evaluated demonstrations of the integrated capabilities of emergency response resources (personnel, procedures, facilities, and equipment) conducted for the purpose of validating elements of an emergency management program. Exercises should be realistic simulations of emergencies to include command, control, and communication functions and event-scene activities. They may vary significantly in size and complexity to achieve their respective purposes.



Building 374 area of play.

Exercise-specific objectives are used to establish the exercise scope, specify the emergency response functions to be demonstrated, identify the extent of organization/personnel participation, and identify the breadth and depth of exercise activities to be accomplished or simulated. Typically, not all emergency management program elements are demonstrated in each exercise and a systematic approach should be used, with emphasis on participation and coordination among the emergency response organizations, to demonstrate aggregate response capabilities over a period of years (e.g., four to six).

Planning and scheduling an exercise requires the involvement and cooperation of all participating organizations. A well planned, executed, and documented exercise requires the coordination and cooperation of senior management, EROs, and when applicable, offsite response organizations. Coordination with offsite authorities during the planning phase depends on the extent of their participation in the exercise. Their participation may range from the limited staffing of a control cell for the purpose of receiving notifications to the complete staffing and activation of all applicable response facilities and assets. Planning the exercise should allow adequate time for the effective preparation and review of the exercise package. The planning for READY 2000 used the generic exercise planning schedule presented in the Emergency Management Guides, DOE G 151.1-1, Volume VII, as a planning basis.

Planning for exercises must be held in strict confidence to avoid compromise of the exercise materials. Scenario information should be strictly limited to those preparing, controlling, and evaluating the event. All of the exercise packages should be controlled, assigned, and held in strict confidence while under review to ensure accountability during the development and review period. Protection of data and scenario information prior to and during the event is vital to avoid compromise of the scenario. Occasionally, an exercise objective will require that a date and/or time be kept confidential, READY 2000 had no such requirement based upon approved exercise objectives.

DOE Order 151.1, requires that each DOE facility shall exercise its emergency response capability annually and include at least facility-level evaluation and critique. Evaluations of annual facility exercises by Departmental entities (e.g., Field/Operations Office or Headquarters Office of Emergency Management) shall be performed periodically so that each facility has external Departmental evaluation at least every 3 years.

Site-level emergency response organization elements and resources shall participate in a minimum of one exercise annually. This site exercise shall be designed to test and demonstrate the site's integrated emergency response capability. For multiple-facility sites, the basis for the exercise shall be rotated among facilities. Offsite response organizations shall be invited to participate in site-wide exercises at least once every 3 years.

READY 2000 was designed to allow for the annual full-participation evaluation of the site emergency response organization, external evaluation of the site's integrated emergency response capability by the DOE Rocky Flats Field Office, and participation of offsite response organizations.

The READY 2000 exercise had specific objectives and was fully documented (e.g., by scenario packages that include objectives, scope, time lines, injects, controller instructions, and evaluation criteria). READY 2000 was fully evaluated, by both Kaiser-Hill and DOE Rocky Flats Field Office. A critique process, which included gathering and documenting observations of the participants, was established. Corrective action items identified as a result of this critique process shall be incorporated into the emergency management program.



Area preparation.

Results

The conduct and evaluation of READY 2000 resulted in the achievement of all designed exercise objectives by way of each objectives sub-objectives and evaluation criteria. The Rocky Flats Environmental Technology Site demonstrated the capability to protect the health and safety of workers, the public and the environment. This was the READY 2000 Terminal Objective was supported by eleven enabling objectives.

Enabling Objective #1 - Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.

Design Elements

READY 2000 provided a facility-specific initiating event of sufficient scope and detail to allow for the evaluation of integrated facility-level actions and sitewide emergency response. The location, magnitude, and potential consequences of the initiating event and collateral conditions will necessitate a request for mutual aid from offsite emergency response organizations.

Observed Performance

This objective was achieved with some areas needing improvement identified.

Enabling Objective #2 - Given emergency events/conditions, make protective action decisions.

Design Elements

READY 2000 provided for the evaluation of the initial decision-making process by the facility management team, and the initial protective actions directed by the Shift Superintendent. All verifications of protective actions by the Crisis Manager and Hazards Assessment Center was also evaluated.



Relocation of evacuees.

Observed Performance

There were some Weaknesses in the communications between facility management and the initial responders to the exercise event. Contact between the facility management staff and the Incident Commander was delayed, yet did not contribute to any delay in making the correct protective action determinations. The validation of protective actions was done in a rapid accurate manner with a thorough discussion of the event potentials and the need for protecting the site population.

Enabling Objective #3 - Given declaration of an operational emergency, make notifications.

Design Elements

READY 2000 provided for the evaluation of verbal and written notifications of state, local and DOE Headquarters authorities or agencies. Full sitewide Emergency Response Organization recall was required.

Observed Performance

Both verbal and written notifications from the site to external agencies or authorities were completed within the prescribed time limits. All systems for facilitation of these notifications were utilized properly and according to procedure. No significant system difficulties or malfunctions were experienced; however, it was found that the Colorado State Patrol line from the Denver City and County Metropolitan Emergency Telephone System was non-functional. This required the site Fire

Dispatch Center to conduct a manual verbal notification to the Colorado State Patrol Communications Center. This manual notification was still within the required time limits. Notification to and recall of the site's Emergency Response Organization was performed using the designated systems in accordance with current procedures and protocols. This notification and recall occurred within established time limits and contained the required information to inform and protect the responders.

Enabling Objective #4 - Given declaration of an operational emergency, establish command, control, and communications.

Design Elements

READY 2000 contained sufficient activities to evaluate the establishment of access control on scene and at the EOC and integration of mutual aid agencies into the incident command organization.

Observed Performance

Access control at the Incident Command Post was swiftly initiated and aggressively challenged all persons trying to access the Command Post. This rigid control did in fact contribute to the above issue regarding building management reporting to and communicating with the Incident Commander. Most of the building management staff on-duty at the time of exercise initiation did not have the emergency responder designator added to their site security credential which allows emergency responders to move through such security control points. The communications at the event scene were efficient and effective. The Incident Commander initiated frequent Command Post briefings and received active participation from all involved organizations. Communications between the Incident Command Organization and the Emergency Operations Center were proactive and recurred frequently.



Incident Command Post.

Enabling Objective #5 - Given declaration of an operational emergency, establish offsite liaison.

Design Elements

READY 2000 contained sufficient design elements to activate the Offsite Coordination Center (OCC), Joint Information Center (JIC), and selected offsite mutual aid agencies in the required emergency response actions based on the consequences of the postulated scenario.

Observed Performance

Unfortunately one predetermined offsite response agency withdraw their participation the morning of the exercise event. This required a last minute change to the controller organization and documentation to ensure that the offsite support was properly channeled into a simulation control cell. With this adjustment, the non-participation had no impact on the exercise progression or evaluation of objectives. READY 2000 contained an abundance of simulated media, public, and employee inquires. Over five dozen messages were prepared to allow full participation of all components of the Emergency Public Information process. Additionally, the exercise simulation used public information professionals from the National Renewable Energy Laboratory to submit the simulated inquires and evaluate the handling and responses.

Enabling Objective #6 - Given the release of hazardous materials, monitor and control emergency worker exposure.

Design Elements

The READY 2000 design allowed for evaluation of the Incident Command Organization's ability to implement As Low As Reasonably Achievable (ALARA) controls at the scene for first responders and follow-on emergency responders, and the ability of the Emergency Management Organization to monitor the radiation exposures of emergency workers. The need to make an emergency reentry into the affected facility was included to facilitate the evaluation of this decision-making process.

Observed Performance

Many evaluators reported an aggressive and proactive response from the Radiological Operations organization. Containment zones were established and properly maintained to control contamination and limit potential exposures of the emergency responders. Survey teams for determining extent of contamination were quickly deployed.

Enabling Objective #7 - Given multiple casualties, provide emergency medical treatment.

Design Elements

Exercise design provided for the evaluation of the occupational medicine decontamination facility, as well as the support provided by Radiological Protection and Industrial Hygiene. The scenario provided for evaluation of radiological support to offsite hospitals, and the interface between the incident command, occupational medicine and the receiving hospitals. Further participation and evaluation of treatment of contaminated victims and the processing and communicating of victim information by the Human Resources Functional Work Center was included in the READY 2000 design.

Observed Performance

On-scene handling of injured parties was efficient and timely. This enabling object also allowed participation of an offsite response agency to provide mutual aid support in transportation of

victims to offsite medical facilities. Support to offsite medical facilities was adequately demonstrated with the identification of areas that could be improved. Onsite handling of contaminated injured victims at the medical facility received outstanding support from radiological operations. Contamination control procedures were swiftly implemented and technicians provided continuous quality support to the medical staff.

Enabling Objective #8 - Given declaration of an operational emergency, keep the site populace and public informed of emergency response actions.

Design Elements

The READY 2000 scope of play was sufficient to evaluate the ability of the Shift Superintendent, Public Information Manager, and Emergency Public Information Team to make timely and accurate sitewide announcements concerning the emergency response and required employee response.

Observed Performance

Sitewide announcements were made frequently to keep the site population continuously informed as to the status of the emergency event and the necessary actions for their protection. Media releases were properly prepared, but not all responses to external inquires received timely and accurate responses.

Enabling Objective #9 - Given emergency events/conditions, perform consequence assessments.

Design Elements

The exercise provided scripted and credible hazardous material release models to facilitate the assimilation of initial and follow-on field data for the performance of consequence assessments. The Regional Atmospheric Response Center and Hazards Assessment Center (HAC) liaison was evaluated for its role in developing consequence assessment. The use of EALs, EARMs, ALOHA, CAMEO and other assessment tools by the Hazards Assessment Center was evaluated.

Observed Performance

Assessment activities were quickly initiated and continued throughout the emergency response. Communications of the received field data and analysis was communicated in an efficient and effective manner. The Hazards Assessment Center, and it's Manager were focused on proper communication of the actual or potential health and safety issues and appropriate protective actions. All modeling tools and processes were used in the analysis of actual data and even supported a significant number of "what if" models.



Contamination surveys in progress.

Enabling Objective #10 - Given emergency events/conditions, demonstrate recovery.

Design Elements

The performance of the Recovery Manager and team was to be evaluated. Planning for recovery included development of a recovery planning strategy, and approval of the Crisis Manager to proceed.

Observed Performance

This process was not allowed to proceed to conclusion. Recovery planning was begun, but exercise play was terminated prior to completion of the recovery planning strategy. However, even after exercise termination the assigned Recovery Manager completed the recovery planning strategy and briefed it to the Crisis Management Team.

Exercise design, control, conduct and evaluation.

Additionally, the design, control, conduct, and evaluation of the READY 2000 was evaluated. While not included as an exercise enabling objective this area was addressed in the exercise design, evaluation criteria, and is included in this report.

Evaluators assessed the performance of the Emergency Response Organization and the adequacy of equipment, facilities, and resource documents used by the responders. The assessment was made by comparing performance against predetermined and documented evaluation criteria based on requirements, site plans and procedures, and best management practices. Information was gathered and documented by the evaluator team. The information from the evaluation and exercise critique processes also provides feedback for use in identifying training needs and improvements to the site Emergency Management Program.

The following additional sources of information were used to evaluate the READY 2000 exercise.

- Responder self-critique comments/forms.
- Exercise critique comments.
- Exercise evaluation materials completed by controllers.

Formal critiques were conducted after the READY 2000 exercise. Their general purpose was to provide a forum in which the exercise could be addressed and discussed among the participants. This resulted in identification of "lessons learned" for improving the response to an emergency.

Responder "hotwash" critiques were conducted immediately following the exercise to provide an opportunity for the responders to discuss their own perspectives on the day's activities and events. These critiques were conducted "in place" (e.g., incident command post, field teams, EOC) by the respective area controllers and evaluators.

A formal exercise critique meeting was conducted following termination of the READY 2000 exercise and included participation by all assigned controllers and evaluators. This critique provided a forum for discussion and correlation of individual observations, the formulation of exercise findings, determination of objectives demonstrated, and determination of overall exercise performance. Recommendations for corrective and improvement actions were addressed. The product of this critique provided the framework for the senior management exercise de-brief meeting and the exercise report.



Incident Command "Hotwash."

Conclusions



The RFETS demonstrated the capability to protect the health and safety of workers, the public and the environment.

The Emergency Response Organization demonstrated the ability to protect the Rocky Flats Environmental Technology Site population, the surrounding public and the environment. Initial response and mitigation activities prevented the spread of the hazard and prevented any uncontrollable release of hazardous or radiological material. Participation by offsite emergency response organizations did assist the site in their emergency response mission. Issues previously identified as Deficiencies, Weaknesses, or Improvement Items were in fact greatly improved, while some issues linger from the last READY and subsequent Limited-Scope exercises completed earlier this calendar year. Performance compared to READY 1999 was improved and it is apparent that progress is being made in creating a truly efficient and effectively integrated response capability. Site management needs to focus on the remaining and recurrent issues for resolution before they are allowed to become more significant and cause a greater impact on the overall capability.



Fire Department entry team.

ISSUES FOR CORRECTIVE ACTION AND FOLLOW-UP

The following issues were generated and identified during the conduct of the Annual Full-Participation Exercise (READY 2000) conducted on June 21, 2000 at the Rocky Flats Environmental Technology Site. These Deficiencies and Weaknesses require tracking to completion their corrective actions and responsible organization.

DEFICIENCY

No Deficiencies were identified in the evaluation of READY 2000.

WEAKNESS

1. Emergency public information was not efficient or effective in the processing of requests for emergency event information. This included requests from external governmental officials, the media, the public, and employee families.
2. Access to the facility (Building 374) by the initial response team and the emergency reentry team was delayed due to the availability of the proper keys. This is a repeat finding from exercise 00-LS-004.
3. Facility management did not affect a timely transfer of command and event information to fire command and the Shift Superintendent. As designated members of the Building Emergency Response Organization management should have the emergency responder designator on their security badge.

IMPROVEMENT ITEM

4. The fire department responders were in possession of scenario information prior to the initiation of the exercise. This precluded an effective performance evaluation of their response.
5. Evacuation and subsequent relocation of affected building personnel should follow a pre-established protocol to minimize potential exposure to hazardous materials and other health risks.

Deficiency

A deficiency is a finding demonstrating a failure to meet DOE requirements or evaluation criteria resulting in inadequate demonstration of the standard.

Weakness

A weakness is a finding that indicates an inability to meet evaluation criteria that degrades the demonstration of the standard.

Improvement Item

This is an observation or finding citing deviations or concerns regarding a particular criterion.

An improvement item, by itself, does not degrade adequate demonstration of a standard, but the emergency response would be more efficient if recommendation(s) for improvement were implemented.

READY 2000 was designed to allow evaluation of both onsite and offsite response and support agencies. It also allowed for evaluation of the Site by the DOE/RFFO and DOE Headquarters (SO-41).

All Department of Energy (DOE) sites are required to conduct an annual full participation exercise to test and demonstrate an integrated emergency response capability according to the requirements and guidance provided in DOE Order 151.1 and supporting Emergency Management Guides. To comply with these requirements, the Rocky Flats Environmental Technology Site (RFETS) conducted a radiological exercise entitled READY – 2000, on June 21, 2000. The exercise provided for the joint participation of State and local government agencies to a limited extent, as well as selected offsite emergency response organizations.

READY-2000 was designed primarily to demonstrate and test the capability of the Site to effectively respond and mitigate an operational emergency, requiring liaison and coordination with State and local emergency response authorities and agencies, and the support of offsite emergency response organizations and hospitals. To satisfy these requirements and objectives, the scenario developed for READY-2000 involved:

- A credible radiological emergency event in or near a nuclear facility resulting in a release to the environment and the contamination of a wide area of the Site.
- The injury and/or contamination of workers and first responders inside the facility.
- The potential for offsite impacts.

The scenario event was designed and developed with the assistance and input of onsite and offsite subject matter experts from all participant organizations and agencies, including the nuclear

facility designated as the location for the postulated emergency event.

The scenario developed for the exercise emergency event involved a fire in the Drum Storage Area of Building 374, that affects 10 transuranic waste drums containing mixed wastes, one transuranic waste crate, and 2 wooden low-level waste crates which were the source for the propagation of the fire. The event resulted in a radiological release to the environment, and the injury and/or contamination of five employees.



Bldg. 374, Room 3813.

The 374 Facility consists of Building 374 and ancillary structures. These ancillary structures include Buildings 372, 373, and 381, Structure 262, several office buildings (Building 376 and T376A and the Building 371 Trailers), and utilities. These buildings are located within and near the northwest end of the Site's Protected Area. Building 374 is a non-reactor nuclear waste treatment facility designed to remove radioactive and chemical constituents from aqueous wastes received from numerous Site buildings. Approximately 35 employees occupy the 374 facility during the first (day) shift.

Potentially hazardous materials are identified in Building 374. They include transuranic waste, transuranic mixed waste, low-level waste, low-level mixed waste, and chemicals. The radiological

hazards consist of radioactive contaminants in process waste feed and treatment streams, holdup in process vessels, radioactive sources, contamination, and other wastes. The radioactive contaminants of concern include plutonium, americium, and depleted uranium.

On June 21, 2000, at 7:30 a.m., two building maintenance workers were performing welding operations in Room # 3813, located at ground elevation on the East-end of Building 374. Three other building employees were located nearby. Real-time weather conditions were used for the entire exercise. The scenario postulated that recent alterations were made to the Fire Suppression Sprinkler System and a valve line-up was incorrectly performed following the maintenance work. Thus the sprinkler system for room #3813 was inoperable and a fire-watch was in effect.

An electrical short-circuit occurs in the portable welding machine being used. The short-circuit resulted in the near fatal electrocution of Worker # 1 and a fire quickly ignited plywood shipping crates located nearby. Because the Fire Suppression Sprinkler System was inoperable, the fire spreads to other flammable materials stored in the vicinity of Room # 3813. The heat from the burning plywood crates and their contents caused excessive heating of the waste drums in the area and caused their tops to blow off resulting in the release of radioactive materials to the room. A roll-up door at the loading dock to Room # 3813 provided the main release pathway for radioactive materials to the environment.

Worker #3 was passing by Room #3813, detected the fire, and reported the event using a radio. Worker #3 also called the Building 371/374 Configuration Control Authority to report the emergency. Worker #3 then attempted escape, but slipped and injured her head causing temporary unconsciousness. She became the missing employee during the accountability process, requiring an emergency re-entry consideration.



Drums storage in room 3813.

It was anticipated that the Building 371/374 Configuration Control Authority would implement the Building Emergency Response Operations procedure, direct a controlled evacuation of the building, initiate personnel accountability, and establish initial Incident Command. The Configuration Control Authority was expected to contact the Shift Superintendent to provide as much information as possible concerning the event and location.

The RFETS Fire Department would respond to the emergency call and begin initial size-up and setup for fire-fighting operations. (The fire was projected to burn for 25 to 30 minutes until the flammable materials in the plywood crates were depleted.) Entry by firefighters would be conducted to recover the injured and fight the fire. Radiological Control Technicians would provide support concerning contamination issues for victims, the immediate area around Building 374, and emergency reentry teams. The injured workers would be transported to offsite medical facilities.

The Shift Superintendent declared an Operational Emergency based on the Emergency Action Levels for Building 374 contained in the Emergency Classification and Protective Actions procedure. The Shift Superintendent assumed the role of Crisis Manager and directed the Fire Dispatch Center to complete the Emergency Offsite Notification Form, initiate offsite notifications, and activate the DERS pager systems.

The Shift Superintendent would complete an Emergency Onsite Notification Form and faxed it to the Central Alarm Station for dissemination over the Site public address system. Protective actions implemented potentially included the upwind evacuation of personnel in the Building 371/374 Complex, evacuation of all personnel within 100 meters of the building, sheltering onsite, and the isolation of ventilation systems of onsite sheltered facilities. The protective action recommendation provided to the offsite agencies would be to "Take No Action."

Scenario 4-3 of the Building 374 Emergency Management Hazards Assessment evaluates a fire involving six (6) 55-gallon transuranic waste drums and two (2) wooden waste crates. This scenario assumed that the combustible loading requirements were not violated preventing propagation of the fire to other wooden crates. The crates along with combustibles that were accidentally ignited during maintenance activities fueled the fire. The heat from the postulated fire was assumed sufficient to pyrolyze the drum contents and pressurize the drums to the point that the venting of gases containing entrained radioactive materials occurs via leakage past the lid. The crates are evaluated as contributing to the building source term based on an unconfined release.

The environmental release from this assessed event was expected to yield 1 rem TEDE at 100 meters from the facility and 1.8 rem TEDE at the primary assembly area located approximately 30 meters east of the building using most conservative weather conditions. The initial protective action for a "Site Area" operational emergency for building personnel was expected to be evacuation of the building to an upwind location, and the entire population on site instructed to shelter.

To facilitate the real time modeling and calculation of radiological conditions and other response strategies with respect to the postulated release of radioactive materials as a consequence of the scenario event, actual weather conditions at the time of the exercise were used.

The following exercise simulations were authorized for READY 2000. All other simulations (dynamic or situational) required the approval of

the responsible Lead Controller and Exercise Director.

- Workers #1 and #2 were moulaged in order to simulate burns and other injuries sustained from electrocution, and their proximity to waste crate fire. Workers #3, #4 and #5 were moulaged to simulate the physical trauma associated with their injuries.
- The transuranic waste drums were realistically labeled, but also marked and labeled distinctively "FOR TRAINING USE ONLY."
- Smoke generators were used to simulate the smoke from the fire.
- The use of water or Aqueous Film-Forming Foam (AFFF) was prohibited inside the building. Fire hoses were to be laid as necessary but were not to be charged. However, all other actions necessary to mitigate the consequences of the waste crate fire were to be executed within the guidelines for exercise play.
- The isolation of ventilation systems.
- Transportation of injured workers (#2, # 3, #4, and 5) to an offsite hospital was terminated at Occupational Medicine (onsite).
- Actual public notification or other actions affecting the general public.
- A control cell was established and used to simulate non-participating offsite agencies and organizations.



Simulated fire in room 3813?

READY 2000 Planned Exercise Participants

- Incident Command Organization (ICO)
- ICO Support Personnel (Call out at IC discretion)
 - ICO Communicator
 - Utilities
 - Radiation Protection
 - Industrial Hygiene
- Facility/Building(s)
- Emergency Management Organization (EMO)
 - Crisis Management Team (CMT)
 - Crisis Support Staff (CSS)
 - Hazards Assessment Center (HAC)
 - Dose Assessment Cell (DAC)
 - Regional Atmospheric Response Center (RARC)
- Functional Work Centers
 - Tactical Operations Center (TOC)
 - Occupational Medicine
 - Environmental Protection Management
 - Industrial Hygiene & Safety
 - Engineering Cell
 - Facilities Maintenance
 - Criticality Safety
 - Radiation Protection
 - Safeguards and Accountability
 - Human Resources
 - Information Technology
- RFETS Offsite Liaisons
 - Joint Public Information Center (JIC)
 - Off Site Coordination Center (OCC)
 - North Region Incident Management Group (NRIMG)
 - State of Colorado Accident Assessment Group (AAG)
- Local Agencies
 - University Hospital
 - St. Anthony's-North Hospital
 - Broomfield Ambulance Services
 - Coal Creek Volunteer Fire Department
(NOTE: Withdrew participation the morning of June 21, 2000)

READY 2000 Exercise Control And Evaluation Organization

The READY 2000 exercise control and evaluation organization consisted of the Exercise Director, exercise evaluator group, control cell, and controllers. Each has specific assignments and roles.

1. The Exercise Director had primary authority and overall responsibility for the design, development, control, and evaluation of the READY 2000 exercise.
2. The control cell was the focal point for collection and dissemination of all information relating to the control of the exercise.
3. Controllers provided direction and control of the exercise. They monitored the sequence of events as they unfold, and were responsible for exercise safety within their span of control.
4. Lead controllers coordinated the activities of several areas that may have involved a number of response locations and/or emergency response functions through a network of subordinate controllers.
5. Evaluators were functional area experts who documented and evaluated responder performance and the adequacy of facilities and equipment against established evaluation criteria.
6. The senior evaluator was responsible for coordination of all evaluation functions including preparation of this exercise evaluation report that identified findings and issues requiring corrective actions.
7. Lead evaluators coordinated the activities of several evaluators that involved a number of response locations and/or emergency functions.
8. Responders or role players comprised the majority of personnel involved in the exercise. It was their responsibility to demonstrate the actions necessary to mitigate the simulated emergency and the ability to ensure the health and safety of facility personnel, the public, and the environment in accordance with established emergency plans or procedures.
9. Observers were present to observe the exercise for either official or educational purposes. Observers should not have interaction with responders, contributed information or opinions, or interfere with the exercise in any

other way. Observers should have directed all questions or comments related to the exercise to the controller for their area or escort, if appropriate.

Control Cell Operations

The control cell was tasked with collecting and dissemination of all information relating to the exercise. The individuals that staffed the control cell were responsible for ensuring that the exercise remained on track in order to evaluate pre-determined objectives. The control cell may have directed exercise contingency message or actions to speed up or slow down activities to maintain exercise integrity. A timeline coordinator was responsible for ensuring that the exercise remained on schedule, a key factor for proper attainment of the exercise objectives as detailed in the timeline and master scenario events list. The timeline coordinator also received status reports from lead controllers and provided this information to the senior controller and exercise director. Each message used to guide exercise activities or the execution of specific emergency response actions exercise was coordinated with the control cell timeline coordinator. This data was electronically projected within the control to facilitate the communications of timeline status to all members of the control cell.



READY 2000 Control Cell

Actors or role-players were controllers who simulated and acted as injured personnel. They did come in face-to-face contact with the responders. They were also members of a control cell with

telephone communication as media and public inquiries being the only interaction with responders.

The control organization played a crucial role in monitoring the sequence of events, injecting messages, and ensuring the overall safe conduct of the exercise. The safety of everyone involved in the exercise, as well as the facility, public, and the environment, was the highest priority. Controllers knew the limitations and precautions for both safety and security for the exercise and understood how to use this information to ensure that all participants complied. The READY 2000 exercise Safety Plan and Security Plan will provide additional detailed information for the reader.



READY 2000 Control Cell

In the event of an actual emergency, it was the controller's responsibility to suspend all ongoing exercise activities in the immediate area for which he/she was responsible and to contact the Lead Controller. An actual emergency always takes precedence over an exercise. If necessary, the Exercise Director may terminate the exercise so that resources can be devoted to the real emergency. During the course of conducting READY 2000, an actual medical response occurred. The READY 2000 control cell contacted the onsite medical facility and was assured that the available staff could accommodate both the actual event and the exercise play. This resulted in no delay in the actual response and minimized the hold in exercise participation.

**OVERVIEW OF THE ROCKY FLATS
FULL-PARTICIPATION EMERGENCY EXERCISE READY 2000**

Time	Projected Event/Activity
- 00:01	The Exercise Director instructs the Lead Controllers at the scene to initiate the exercise and report the status of the required actions when completed.
- 00:01	All actions required for the simulation of the exercise scenario event and to commence exercise play are initiated and reported to the Control Cell and Exercise Director.
- 00:01	The Exercise Control Organization is notified by an all nets radio announcement or by telephone that the exercise has been initiated and the exact time of initiation.
- 00:01	All other supporting offsite Controllers and/or Participant Organization Coordinators are notified that the exercise has been initiated.
00:00	INITIATE THE EXERCISE (Scheduled: 08:00)
00:01	The Fire Dispatch Center receives a “radio” 2911 call from Role Player/Injured Worker #3 at the scene to report a fire and personnel casualties in Room 3813, Building 374.
00:03	The on duty dispatcher in the Fire Dispatch Center, after confirming the reported details and consequences of the emergency event, immediately dispatches the required Fire Department Units to the scene of the emergency at Building 374. The “tone-out” of the fire barn is also received by the Shift Superintendent, the CAS and the SAS.
00:07	When notified of the emergency event in Room 3813, Facility Management of Building 371/374 assumes Incident Command and initiates the required protective actions and notifications using the Building Emergency Response Organization Procedure developed for the facility. This includes the notification of the Shift Superintendent of any hazardous material involved in the emergency.
00:07	Fire Department Units arrive at the scene and establish an Incident Command Post (ICP) upwind from Building 374, based on prevailing weather conditions at the time.
00:10	Following an initial assessment of the situation by Facility Management, a Building LS/DW announcement is made. The announcement informs workers of the emergency, initiates a controlled evacuation of the facility, and instructs BEST personnel to report to the scene of the emergency event in Room 3813. Other required emergency response actions are then initiated as detailed in established facility emergency response procedures.
00:12	The Fire Department enters Room 3813 and affected areas of Building 374, accompanied by an RCT.
00:13	Upon entering Room 3813 of Building 374, it is discovered that the fire is still burning, with Injured Workers #1 and #2 laying on the floor in close proximity to the burning wooden waste crates. The Initial Entry Team Fire Captain subsequently calls for assistance to suppress and mitigate the fire and quickly recovery the casualties at the scene.
00:13	Shortly after the Fire Department arrives at the scene, Injured Workers #4 and #5 exit from the Southwest door to Room 3813 and Building 374, and make their way towards the ICP now being established by the Fire Department.
00:15	The Shift Superintendent completes an initial assessment of the situation, and initiates the required emergency response actions as detailed in established emergency response procedures and the Site Emergency Plan.
00:15	SPO Units and Lima 2 arrive at the scene and begin efforts to cordon off and control the area immediate to the scene and Building 374.
00:20	The Shift Superintendent declares a “Site Area” operational emergency, the most conservative classification based on available information.
00: 20	A DERS pager message is broadcast from the Fire Dispatch Center to mobilize the response of all RFETS ERO staff and organizations including the staff of the offsite OCC and JIC.
00:20	The Fire Battalion Chief at the scene receives a briefing from Building 371/374 Management (CCA) and the accounts of the emergency events obtained from available witnesses, Injured Workers #4 and #5.
00:20	The Shift Superintendent departs the EOC for the Incident Command Post established by the Fire Department upwind and within a visual distance to Building 374.

**OVERVIEW OF THE ROCKY FLATS
FULL-PARTICIPATION EMERGENCY EXERCISE READY 2000**

Time	Projected Event/Activity
00:25	The Shift Superintendent arrives at the scene, sets up, and receives a briefing on the nature and consequences of the emergency event, as well as ongoing emergency response actions by the Fire Battalion Chief, Facility Management, and available witnesses. Following the briefing the Shift Superintendent assumes Incident Command.
00:25	EOC and Functional Work Center staff begins to arrive at their assigned positions. The OCC and JIC staff departs the Site for their assigned positions at the State EOC, located at Camp George West, Golden, Colorado. The DOE Representative on the staff of the North Region Incident Management Group also departs for his assigned position at the Jefferson County Airport.
00:30	The evacuation and personnel accountability process for the Building 371/374 complex is completed. It is subsequently reported to Facility Management and the Shift Superintendent at the ICP, that five (5) workers are unaccounted for and presumed to still be inside Building 374 in the vicinity of Room 3813.
00:45	The EOC has been staffed and is declared operational. The Crisis Manager assumes overall responsibility for sitewide emergency response operations.
00:45	All required IC Support Staff have arrived on scene at the ICP.
00:50	A Sitewide LS/DW announcement is made to inform personnel of the status of the emergency event at Building 374, and the continuance of required protective actions (sheltering).
00:55	Four (4) of the five (5) missing personnel within Room 3813 and Building 374 have been found, assessed and initially treated medically, and evacuated from the affected area to the medical treatment and radiological "hot line" for further assessment and survey for contamination.
01:00	The OCC, JIC, and the North Region Incident Management Group have been staffed as required and declared operational.
01:00	Based on the information received and validated on the status, conditions, and consequences of the scenario event in Building 374, the Shift Superintendent conducts an ICP Staff briefing.
01:10	Public Information and Media Controllers/Role Players in the Control Cell initiate the placement of telephone calls to the JIC at the State EOC, and the RFETS EOC, to simulate media requests and public inquiries for information concerning the postulated emergency events at Building 374.
01:15	Following the briefing, it is confirmed that one worker (Injured Worker #3) was seen inside Building 374 just before the occurrence of the emergency event, but remains missing and is presumed to be still inside the facility.
01:20	The Emergency Reentry planning to conduct search and rescue operations for the missing worker (Injured Worker #3) is completed and approved by the Crisis Manager.
01:20	The Radiological FST(s) deployed by direction of the HAC Manager, arrive at their assigned survey points and begin conducting surface and airborne radiological surveys.
01:45	The Emergency Reentry Team discovers Worker #3 near the Fire Phone in Room 3809, and informs the Incident Commander, who relays the information to the CM. Radiological surveys of the affected areas in Building 374 indicate high levels of contamination, as noted for Surface and Airborne Contamination Levels in Zones A and B.
02:40	As RCTs and Radiological FSTs complete the survey and demarcation of affected areas outside of Building 374, planning begins for the reentry and recovery of the facility.
02:45	A Recovery Manager is appointed by the Crisis Manager, and a staff is selected to support and facilitate the planning process.
03:15	A Recovery Plan strategy is submitted to the Crisis Manager and CMT for approval.
03:30	Following approval of the Recovery strategy, emergency response operations are suspended and the Site Area operational emergency is terminated.
11:30	When it is determined that all exercise objectives have been satisfied the exercise will be terminated.
11:35	TERMINATE THE EXERCISE

The exercise evaluation results are presented in sections consistent with Department of Energy Emergency Management Guides.

These sections are:

- Emergency response organization
- Offsite response interface
- Categorization and classification
- Notifications and communications
- Consequence assessment
- Protective actions and reentry
- Emergency medical support
- Emergency public information
- Emergency facilities and equipment
- Termination and recovery

An additional section beyond the Emergency Management Guide Program Elements is also included:

- Design, conduct, and evaluation of the exercise

Each section addresses key observations and conclusions.

Emergency Response Organization



Incident Command communications was much improved over past performances.

Applicable Exercise Enabling Objectives:

- EO 1.0 Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.
- EO 3.0 Given declaration of an operational emergency, make notifications.

EO 4.0 Given declaration of an operational emergency, establish command, control, and communications.

A role player posing as a facility employee making a report on the site radio talk-group 2911 initiated READY 2000 response activities at 8:58 a.m. This method was less than ideal since a fire-phone or 2911-telephone report provides specific location information. This reporting method was dictated by an operations termination order imposed upon the facility immediately prior to the conduct of the exercise. The scenario had sufficient flexibility to allow for this change and the controller organization was briefed on the changes.

This initial report contained no specifics for determination of exact location, materials involved, or potential victim information. Fire Dispatch Center began a response of the Fire Department to a large fire in building 374. This information was relayed to the Shift Superintendent who processed the known conditions against the current facility Emergency Action Levels.

The onsite Fire Department responded with the required resources to provide for initial assessment and mitigative response actions. It was noted however, that the Fire Department response provided for handling injured personnel or victims when such information had not yet been reported or discovered. The Fire Department initial entry team carried two collapsible stretchers and a scope stretcher. They additionally responded with a tarpaulin as if in anticipation of covering a breach or spill. At this time the only known information was a large fire in Building 374.

An issue previously identified in LS-004 recurred as the Fire Department attempted to access Building 374. The chosen access point door was locked and initial responders did not have the appropriate keys to open the door. It would have been appropriate for responders to indicate that they would gain entry by force, and the control staff was prepared to grant credit for this decision, but it was never verbalized.

The keys in the possession of the entry team did not allow access through the door. Access was granted through a security responder who arrived and with the appropriate key(s). It was noted by controllers and evaluators that a contractor management observer directly interacted with the responders and directed them to use force to gain access if necessary. This interface is prohibited by exercise rules, but did not actually cause the responders to deviate from their chosen course of action.



Fire Department preparing for initial entry.

As the Fire Department was making initial response, the Shift Superintendent had completed the assessment of the known event information had concluded that the event was an Operational Emergency at the ALERT* level. This deviated from the actual exercise design package in that with more detailed location information the Shift Superintendent would most likely have declared a SITE AREA EMERGENCY. The READY 2000 design and control allowed for this deviation and maximized the responders ability to perform with the information at hand. The Shift Superintendent upon declaring the Operational Emergency directed the following actions to be completed;

1. Offsite Notifications
2. Onsite Notifications of the emergency and protective action
3. Activation and recall of the site Emergency Response Organization

The decision to declare an Operational Emergency was made at 9:03 a.m., communicated to the Fire Dispatch Center at 9:04 a.m., to initiate

Offsite Notifications and onsite Emergency Response Organization recall.

At 9:07 a.m., the Fire Command Officer at Building 374 made a radio request for offsite mutual aid for transport of victims. This request was made prior to the actual discovery of any injured personnel. This premature request may have been unduly influenced by the presence of an offsite ambulance service at the Fire Department prior to exercise initiation. The ambulance service was a designated offsite participant and the decision was made to have them staged onsite prior to the exercise. This was at their request and handled outside the exercise design and preparation.

Building 374 management was engaged in initiating local emergency response action, primarily focused on the protection of the workforce in Buildings 374 and 371. A facility local public address announcement was made directing employees to begin a controlled evacuation of the facility. A controlled evacuation requires that employees in areas requiring radiological surveys prior to exit must complete those surveys. It was noted during the critique process that facility management did not completely agree that moving the workforce outside the facility was the best action. Approved procedures direct an evacuation of personnel. Management must always give consideration to the potential hazards resulting from an actual emergency in and around a facility. In this exercise, it became necessary to relocate evacuated personnel from the primary assembly area to an alternate location due to potential contamination from the event plume. The assessment of habitability for the assembly area was in accordance with procedures and the relocation effort was effective and timely. It was noted during the critique process that a full building evacuation, accountability, and relocation are not normally addressed in facility level drills.

Incident Command

Previous exercises, including LS-004, identified an issue pertaining to the Incident Commander not appointing and properly utilizing a Safety Officer at the scene. A Safety Officer is required in the site Emergency Plan and its implementing procedures. The Safety Officer has responsibility for ensuring

that emergency responder actions are safe and do not put the responders at risk. OSHA regulations also require a Safety Officer at any emergency response to a hazardous materials event. In the previous exercises the scope of activity for the Safety Officer was primarily accountability and control of responders in and around the event scene. Only one individual was assigned without regard for the complexity and multiplicity of responder activities and locations.

In READY 2000 this issue was addressed in force. A Safety Officer was rapidly assigned and given authority to designate additional Safety Officers to support all response activities at the scene. The Safety function was divided into sectors with each official reporting to the Safety Officer. These personnel addressed all issues of responder safety.

In READY-99, item R-99-04-002 – Weakness, reported, “The Incident Commander, ICO, and EMO in general, suffered from a lack of relevant, timely, and accurate information concerning the cause, conditions, and status of personnel at the scene of the postulated emergency events at Building 371.”

The READY-99 exercise evaluation also reported a Deficiency, R-99-04-003, in that, “Overall command and control for these events was ineffective, despite the best efforts of the Shift Superintendent/Incident Commander and other support staff of the ICO. It was apparent that throughout the course of the exercise, the ICO at all levels and EMO never had a clear understanding or appreciation of the cause, conditions, or consequences of these events. It continued with, “Ineffective command and control for these events was due to the fact that individuals responsible for command and control at the scene of the emergency events failed to:

- Effectively or accurately size up or access the conditions and consequences of the event.
- Conduct effective interviews with affected workers or use normal lines of inquiry and investigation to determine the cause and affect of the events.

- Establish a command presence and effectively direct, coordinate, and control emergency response operations.
- Collect and disseminate information critical to the decision making process and emergency operations.
- Effectively manage emergency response assets and deployment.

The READY 2000 Incident Command Organization information exchange was improved from previous evaluated exercises. The Incident Commander had frequent detailed briefings with his command staff. Participation was aggressive and focused. In previous evolutions the Incident Commander found it necessary to almost chase down personnel to hold a briefing. Command issues, objectives and priorities were quickly developed and communicated. These were revisited to maintain a current status of response activities. Communications between the Incident Command Organization and the Emergency Operations Center were equally effective and improved. The Crisis Manager commented positively about the flow of information and response to his inquiries. The Incident Commander did not spend an inordinate amount of time clarifying previous information for the Emergency Operations Center.

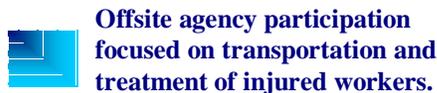


Incident Command operations.

As previously noted the interaction between the Incident Commander and building management was delayed for over 35 minutes. Building management began to report to the Incident Command post, but were delayed due to contamination survey activities

and the lack of proper security badge coding. Rocky Flats uses an EMR RESP designator on the back of the DOE standard security badge to indicate an individual's assignment to the site Emergency Response Organization. Persons possessing this designator are allowed through security control points established around the Incident Command Post and event scene. Lacking this designator personnel must receive authorization from the Incident Commander before access is granted. In READY 2000 the site Protective Force quickly established an aggressive perimeter around the Incident Command Post. This is a continuing improvement item from previous exercises. Access to the Command Post was rigidly controlled and therefore delayed building management's reporting to the Incident Commander.

Offsite Response Interface



Applicable Exercise Enabling Objectives:

EO 5.0 Given declaration of an operational emergency, establish offsite liaison.

READY 2000 design incorporated elements allowing for the participation of Offsite Response and support agencies. The following offsite response components participated in READY 2000.

- Joint Information Center
- Offsite Coordination Center
- North Region Incident Management Group
- State of Colorado Accident Assessment Group
- University Hospital
- St. Anthony's-North Hospital
- Broomfield Ambulance Service

Broomfield Ambulance Service was requested under a mutual aid agreement to support transportation of multiple injured and contaminated personnel. Onsite support to them in handling and

containment of contaminated injured personnel was in accordance with procedures. This support was at a level exceeding that minimally required, with documented interaction between site personnel and the offsite agency personnel. The requested support actually had an ambulance respond to the scene at Building 374 requiring coordination between Fire Command and Security Command.



Broomfield ambulance responds to Building 374.

University Hospital participated as a designated receiver facility for processing and treating contaminated patients suffering severe trauma. The hospital added additional victims and activities outside the designed participation of the exercise to more fully challenge and test their own capabilities. This did contribute to some confusion as the number of victims receiving treatment at University Hospital exceeded the exercise-planning factor. The control staff quickly clarified this discrepancy and the hospital play was allowed to continue with no impact to onsite actions.

Other offsite agencies used the READY 2000 activities as a catalyst to conduct their own specific training through tabletop sessions.

Categorization and Classification



During READY 2000, initial categorization and classification was accomplished swiftly and accurately. This was reviewed continually

Applicable Exercise Enabling Objectives:

EO 1.0 Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.

The READY 2000 exercise was designed to provide for an Operational Emergency that would allow external and offsite agency participation. This design resulted in planned event that would be categorized and classified as a SITE AREA EMERGENCY. As the exercise progressed, the control staff recognized that the detailed event information necessary to cause the Shift Superintendent to categorize and classify as a SITE AREA EMERGENCY was not initially reported. The control staff allowed this to proceed with the resulting initial categorization and classification as an ALERT*. This decision was made in accordance with the site Emergency Plan and procedures.

The initial categorization and classification decision was completed 4 minutes after the initial report of the event was made to the Shift Superintendent. This decision was made using the current approved Emergency Action Levels for the Building 374.

As additional information became available both the Incident Commander in the field and the first responders to the Emergency Operations Center recognized the need to reassess the initial categorization and classification. At 9:18 am., a discussion was underway in the Crisis Support Staff to recommend to the Incident Commander/Crisis

Manager that the classification should be elevated. At 9:21 a.m., the Hazards Assessment Center Manager reported to the Emergency Director that room 3813 was the location of the fire. At 9:24 a.m., the Fire Dispatch Center received radio direction from the Incident Commander to escalate the event classification to SITE AREA EMERGENCY based upon the new information providing specific locational information. This allowed the Incident Commander to specifically determine the hazards potentially involved in the fire. This upgrade was made in accordance with site procedures.

As the event response progressed, the Hazards Assessment Center continued to evaluate new information against the current classification level. This analysis was continually briefed to the Crisis Manager and the Crisis Management Team in the Emergency Operations Center. No subsequent information revealed in the exercise required additional upgrade to the emergency classification.

The timely and accurate categorization and classification of the event then contributed to notification and response activities covered in other sections of this report.

Notifications and Communications



Initial notifications were completed well within the time required. Communications at the Incident Command Post and with the Emergency Operations Center showed continuing improvements.

Applicable Exercise Enabling Objectives:

EO 1.0 Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.

EO 3.0 Given declaration of an operational emergency, make notifications.

EO 4.0 Given declaration of an operational emergency, establish command, control, and communications.

Notification of the decision to categorize the READY 2000 event as an Operational Emergency was first made from the Shift Superintendent to the Fire Dispatch Center. The Shift Superintendent made the initial categorization and classification decision at 9:03 a.m., and communicated this to the Fire Dispatch Center at 9:04 a.m. Additionally, the Shift Superintendent then notified the Central Alarm Station of the emergency declaration at 9:07 a.m.

Building 374 management communicated with the facility personnel through a facility public address announcement. This announcement was made at 9:00 a.m. and directed the facility action of beginning a controlled evacuation. At 9:13 a.m., a Sitewide public address announcement was made announcing the declaration of the emergency and site protective actions.

Offsite notifications of the emergency were also accomplished by the Site's Fire Dispatch Center. The dispatcher used the Special Rocky Flats Zone of the Metropolitan Emergency Telephone System for all state, county and local agencies. This is in essence a conference call allowing all parties to participate simultaneously. A separate telephone call was made to notify DOE Headquarters. All of these initial verbal notifications and the follow-up written notifications were accomplished within the prescribed timeframes. The facsimile transmission of the hardcopy Offsite Notification Form was received in the Control Cell at 9:13 a.m. For READY 2000, a programming change was made in the Fire Dispatch and Emergency Operations Center facsimile broadcast machines. This added a facsimile machine located in the control cell so that all offsite notification could be tracked.

Emergency Response Organization notification and recall in the event of a declaration of an operational emergency is accomplished during normal duty hours by using the Site LS/DW public address system and the Digital Emergency Response System pagers. The DERS is activated for both contractor and DOE personnel by using a secured website off the Fire Dispatcher's computer workstation. Messages are pre-formatted, and divided into actual emergency messages and exercise messages. The messages conform to the

Site graded response approach by providing different messages for ALERT and level events. This directs a smaller cadre of the Emergency Response Organization to report. The first of these pager messages was received at 9:14 a.m. The initial and subsequent messages properly reflected the emergency categorization, classification and safe route of approach. This was an improvement from previous exercises including LS-004.



Communications at Incident Command.

Follow-up verbal and written notifications were made from the Crisis Support Staff in the Emergency Operations Center. This included classification and categorization changes, changes to protective action recommendations, and termination of the emergency (exercise). All of these notifications were made within the prescribed timeframes and according to procedure. These notifications also used the Special Rocky Flats Zone of the Metropolitan Emergency Telephone System for all state, county and local agencies. It was discovered following the exercise that the Colorado State Patrol Communications Center did not have a functioning Metropolitan Emergency Telephone System line. This required both the Fire Dispatch center and the Classification/Notification Coordinator in the Crisis Support Staff to manually notify the State Police. Even with this system problem timeliness was not compromised.



Control Cell - Phone Bank.

During a previous exercise (LS-004), communications between the Incident Command Organization and the Emergency Operations Center were supplemented by way of an informal process. An alternate for the Emergency Director position in the Crisis Support Staff remained in the Emergency Operations Center and began monitoring radio communications of the Fire Department and Protective Force. The communications intercepted provided immediate, although unsubstantiated, data regarding response and mitigation activities. Information from this innovation was then passed to the on-duty Emergency Director for assimilation with other validated information. This informal, unproceduralized process has not been used since and did not present itself during READY 2000.

Information flow and communications at the Incident Command Organization were greatly improved over the performance evaluated in LS-004. Previously, there was a tendency for information not to continue to the appropriate command level to support critical response planning and operations. In READY 2000, this information flowed from bottom to top and vice versa with the only notable issue being the lack of timely communication from building management to the Incident Commander.

Significant improvements were recorded in the communicating of victim status information. This involved the field components, the onsite medical treatment facility, and the Human Resources Functional Work Center.

Consequence Assessment

 With some exceptions, response to the postulated accident was appropriate.

Applicable Exercise Enabling Objectives:

- EO 6.0 Given the release of hazardous materials, monitor and control emergency worker exposure.
- EO 9.0 Given emergency events/conditions, perform consequence assessments.

During READY 2000, evaluators noted a rapid deployment of the radiological Field Sampling Teams in support of the consequence assessment process. The Operational Emergency classification of ALERT* was declared at 9:03 a.m. by the Shift Superintendent. This initial classification was upgraded to SITE AREA EMERGENCY at 9:24 a.m. The first notification to the Emergency Response Organization was at 9:13 a.m. with the pager message following at 9:14 a.m. The first radiological Field Sampling Team report air sampling results at 9:40 a.m. This is an excellent response and deployment time when compared to READY 99. Both Team ALPHA and BRAVO were deployed and provided regular reports to the Field Sampling Team Coordinator in the Hazards Assessment Center. The log indicates recurring reports at approximately 12-minute intervals.



Monitoring responders for contamination.

As the exercise progressed, it was decided to direct radiological Field Sampling Team BRAVO to conduct sampling at offsite locations adjacent to the Rocky Flats Buffer Zone. This was approved and coordinated with Colorado Department of Public Health and Environment officials in the Emergency Operations Center. It was reported during the critique process that the Field Sampling Teams do not have maps with external sampling points marked. Team members and evaluators also reported that the Team was concerned about the public response to radiological workers in personal protective equipment intruding on private property or operating in public view on roads and highways.

With the field sampling results flowing into the Hazards Assessment Center on a regular basis, the Crisis Management Team was given frequent status reports on the extent and levels of possible contamination. This greatly aided in the process for reviewing and confirming onsite protective actions and offsite protective action recommendations to the State of Colorado.

In READY-99, a Deficiency was reported regarding radiological support. The exercise report noted, "RCTs responding to the scene of event scenarios #1 and #2 demonstrated little concern or urgency in the implementation of effective radiological controls to prevent or contain the spread of contamination and diminish the risk of exposure or contamination to personnel. Both RCTs and other first responders were observed violating radiological boundaries and tracking contamination unnecessarily from the scene of these events to adjoining areas inside and outside of Building 371." It further stated, "RCTs in general showed little concern or regard for the use of PPE during or after the initial response to radiological emergency events at Building 371. Many arrived on scene without proper PPE, and showed little concern for the protection of simulated casualties and contaminated personnel in subsequent actions to evacuate these individuals from the affected area in timely manner."

As previously noted in this report, direct support to the Incident Command Organization by the site radiological operations group was exemplary. Resources rapidly reported to the event scene and followed proper procedure for operations under direction of the Incident Command Organization. Personnel wearing the proper level of personal protective equipment and using the proper monitoring instruments and techniques quickly initiated radiological surveys. Response was so quick that some emergency response units encountered survey teams checking the perimeter of the area as they arrived. Controls were quickly established with clear and proper designation of contaminated areas, uncontaminated areas, and monitoring points. The one negative reported was that support, with the Fire Department initial entry team was lacking; however, support in monitoring their exit and support for SCBA bottle changes was excellent.

Resources were plentiful to support the triage area and address the monitoring of contaminated injured workers. Contamination control and monitoring of injured did not interfere with the necessary medical care for severe injuries. Proactive support was also given to the offsite responding ambulance in handling a contaminated patient transport.



Exterior surveys and response equipment surveys.

As the exercise activities began to reach termination, radiological monitoring focused on the responders and their equipment at the scene. Actions were taken to survey vehicles and equipment and determine what decontamination actions would be necessary to release them from the scene.

As demonstrated in the previous exercise, LS-004, radiological support at the onsite medical facility was vastly improved. Monitoring and contamination control issues were quickly addressed and direct proactive support to the medical staff was provided. Similar support was also provided to the participating offsite hospital but on a smaller scale.

Protective Actions and Reentry



Without exception, protective actions and protective action recommendations were proper for the hazards and conditions known.

Applicable Exercise Enabling Objectives:

- EO 2.0 Given emergency events/conditions, make protective action decisions.
- EO 10. Given emergency events/conditions, demonstrate recovery.

As the exercise event was reported, the Shift Superintendent made categorization, classification, and protective action decisions based on reported information and the Emergency Action Levels for Building 374. The Shift Superintendent verbalized his thought process in reviewing the reported information against the procedural requirements. The concern was to ensure that necessary minimum actions were being initiated to protect the health and safety of the onsite population.

The emergency event was reported at 8:58 a.m., with the first determination of necessary protective actions made at 9:03 a.m. The first communication of the onsite protective actions was made at 9:13 a.m. This was in addition to the Building 374 and Building 371 local announcement to evacuate the facility made at 9:00 a.m.

As additional information became available to the emergency management team, protective actions were reanalyzed and reviewed to ensure that they were adequately addressing the real or potential hazards. The quick deployment of Field Sampling Teams and the communicating of their sampling results to the Hazards Assessment Center supported this entire process.



Evacuation and accountability.

The Hazards Assessment Center Manager's actions were notable in the detailed non-technical briefings that he frequently gave to the Crisis Management Team. These briefings clearly stated the known and potential hazards in the event area and surrounding rooms. This was integrated with a discussion of the sampling results and the "canned" scenarios for consequence assessments. The Hazards Assessment Center made use of all

technical resources available to them to determine appropriate protective actions. "What if" scenarios were modeled to ensure that all possibilities were being reviewed.

During Site exercise LS-004, a Deficiency was reported relative to the process of emergency reentry. The Deficiency stated, "Emergency Reentry requirements of 10 CFR 835 as locally implemented through the Emergency Plan and its implementing procedures, has not been incorporated in all components of the Emergency Response Organization."

Emergency reentry is defined as a planned activity to accomplish specific objective(s) set by the Emergency Response Organization, conducted prior to the termination of emergency response, which involves reentering a facility or affected area that has been evacuated or closed to personnel access during the course of the emergency. Reentry activities are time-urgent actions performed during emergency response such as search and rescue, mitigation, damage control, and accident assessment.

The Rocky Flats Emergency Plan (EPLAN-99) states, "Reentry during a declared Operational Emergency is part of response and mitigation efforts and may include search and rescue, radiological and HAZMAT control or other life threatening activities or situations." It continues with, "After a Site building or area has been evacuated, it will not be reentered without reentry team members receiving a briefing from the Incident Commander or designee."

READY 2000 contained a design element that would necessitate an emergency reentry for the purpose of locating missing personnel possibly in medical distress. This was similar to the design element of a missing employee included in the aforementioned LS-004. Performance in this area was notably improved.

Once the determination was made that the unaccounted for employee had been actually seen within Building 374 by another employee, Incident Command focused on beginning the reentry planning process. Objectives were determined and team composition was finalized. All required

aspects of emergency reentry were properly addressed prior to the team being approved for actual return to the emergency area.



Emergency reentry team prepares to make entry.

The Fire Department responders on-scene were prepared and postured for emergency reentry at 9:52 a.m. The Incident Command Post was made aware of the possibility of a person trapped or missing within the building at 10:17 a.m. Incident Command completed the reentry planning process at 10:26 a.m. Evaluators logged the Incident Commander's reentry briefing as occurring at 10:29 a.m. The reentry reentered building at 10:41 a.m., with the missing person recovered at 10:42 a.m. Again the Fire Department experienced a delay of approximately 10 minutes due to locating the proper door keys for access. This was the second time during the course of READY 2000 that Fire Department access was hampered by not possessing or being able to locate the proper door keys. This is a repeat issue from LS-004.

Even though the process of emergency reentry was in accordance with Site requirements it was determined by investigation following the completion of READY 2000 that some emergency response procedures still need revision to ensure compliance with this requirements. Most notable are Fire Department Standard Operating Instructions.

Emergency Medical Support



With some exceptions, response to the postulated accident was appropriate. Patient handling was improved from previous exercises.

Applicable Exercise Enabling Objectives:

EO 7.0 Given multiple casualties, provide emergency medical treatment.

The READY 2000 design provided for multiple victims requiring emergency medical treatment. In addition to various levels of injuries the victims presented various levels of radiological contamination requiring prioritization of medical treatment against contamination control and/or decontamination of personnel.

As previously noted, the Fire Department was prepared to handle injured personnel as the initial entry team was carrying portable stretchers and a scope stretcher. This was in advance of the report or discovery of the exercise victims. With this preparation, the entry team was able to recover and remove the victims to the triage area established adjacent to Building 374. The Fire Department had adequately staffed triage and was able to properly address the victims as presented. Radiological support, as previously noted, was excellent in support patient handling issues.



Initial entry team reaches victim.

READY 2000 presented a sequence of vital signs for each victim. This allowed controllers to improve or degrade a victim's condition based on the adequacy and timeliness of medical care rendered.

In the evaluation report for READY-99, it was noted that, "the Fire Department Initial Entry Team and Forward Fire Command did not effectively control or coordinate the time urgent evacuation and protection of injured and contaminated personnel in the areas immediate to scenario events #1 and #2. This situation unnecessarily exposed personnel to potentially high levels of radiation and loose surface contamination. Nearly 40 minutes elapsed before the injured worker was removed from the contaminated area immediate to the breached residue drums at the scene of event scenario #1. More than an hour elapsed before this worker was transported from the scene of the emergency events at Building 371 for definitive medical care and decontamination."

The READY-99 exercise evaluation reported a Deficiency related to emergency medical support by and stated, "Due to delays in the response to event scenario #3 by fire and medical units, the effective treatment of the casualties resulting from this postulated emergency event were not rendered in an effective and time urgent manner. More than an hour elapsed before paramedics began the treatment and transport of injured personnel. In addition, the patients at the scene of event scenario #3 were not effectively triaged, resulting in the transport of critically injured personnel to the Site Occupational Medicine facility, instead of to an offsite hospital for treatment. The delays experienced in the response and effective management of the casualties associated with event scenario #3 would have posed a significant threat the safety and health of the injured workers."

These issues did not repeat themselves in the performance of READY 2000. Triage was swiftly established and staffed with adequate resources. The onsite medical facility was staffed and prepared for the processing of multiple victims with presentation of various levels of trauma and contamination. Transportation was augmented through the use of mutual-aid offsite response agencies.



Triage for victims at Bldg. 374.

The Fire Department entry team made first victim contact at 9:11 a.m. A hot zone was established and the first victim was removed from the building to an external treatment area at 9:15 a.m. Both victims were extracted from the building and receiving care from Fire Department personnel by 9:15 a.m. The first victim was being transported by Rocky Flats medical transport to University Hospital at 9:32 a.m.

Emergency Public Information

 **Response to inquiries was weak and demonstrated a lack of current information.**

Applicable Exercise Enabling Objectives:

EO 8.0 Given declaration of an operational emergency, keep the Site populace and public informed of emergency response actions.

Emergency Public Information includes the generation of media releases, answers to inquiries from the public and Site employees, and information notices to Site personnel. During READY 2000 this function was evaluated using a telephone simulation to inject numerous inquiries for processing.

It was noted that briefings and responses were generated and Site announcement prepared and made to keep personnel informed. The simulation

cell noted that many simulated external inquiries were not handled in a professional manner. Many answers included, “I don’t know” or “We don’t have that information”, and the processor came across as being flustered by the volume of queries.



Telephone simulation cell.

The members of the telephone simulation cell were public information specialists from the Department of Energy National Renewable Energy Laboratory in Golden, Colorado. READY 2000 contained nearly 100 scripted external inquiries to fully challenge the Site public information teams. These messages simulated the local and national media; employee family members with concerns; members of the local community; and Site employees.

The declaration of an emergency occurred at 9:08 a.m., with the first simulated call for information occurring at 9:38 a.m. At 9:44 a.m., a call to the Emergency Operations Center main telephone number was transferred to a Public Information representative. The caller was simulating a public interest group and asked about information regarding the “nuclear emergency” that occurred “this morning” at Rocky Flats. The caller was informed that a Site Spokesperson was enroute to the Joint Information Center and provided a telephone number for the caller to use. They further stated that there would be a news release and the Joint Information Center will have the information.

At 9:52 a.m., a call simulating a local television news department was made to the Joint Information Center. The caller stated he was asking about the

reports of a “nuclear accident” that occurred this morning. The caller was connected to the Joint Information Center Manager and was told that he had “report status” only and that no valid information was available. The caller was told that the Emergency Operations Center had been activated.

At 10:05 a.m., a call was placed to the Rocky Flats main switchboard (966-7000) simulating a concerned citizen. The caller asked about their safety and possible health effects from the “nuclear explosion” they heard about over the radio. The operator responded by providing a normal office extension and that the caller should try back after 12:00 noon. When pressed by the caller the operator replied, “no one will answer phones because we are in the middle of a drill.” The caller rang the provided extension and was put into voice mail.

At 10:28 a.m., a simulated call was placed simulating an inquiry from a U.S. Senator’s aide. The caller first contacted the Site main switchboard and was again referred by the operator to a regular Site extension. This extension was answered by voice mail. The caller then contacted the Emergency Operations Center and was transferred to Public Information. The caller was referred to the Joint Information Center, as they would have a Spokesperson to handle media inquiries. The caller again identified themselves as a Senator’s aide not a member of the media and was again directed to call the Joint Information Center.

As of 10:28 a.m., the only confirmed information provided to any of the simulation cell inquiries was that the Emergency Operations Center had been activated and the Site was responding to an incident.

At 10:38 a.m., a simulated call from a radio station news department was provided with the following information:

- Emergency Operations Center activated at 9:17 a.m.
- Fire at Building 374, classified as a Site Emergency, personnel are responding.
- A Site Emergency means that environmental releases of hazardous materials are expected to be limited to the Site.

- As a precaution building personnel were evacuated from Building 374 and personnel were being sheltered.
- There were 4 injuries reported and the fire is reported as being extinguished.
- There is no need for the public to be concerned as it is a Site Emergency only.

At 10:38 a.m., a simulation call was made representing a concerned spouse of a Site employee. The caller was transferred several times, then given another number to call. Finally the caller was told that there were 4 injuries-no names, the hospital the injured were taken to was unknown, then corrected this by replying that no one was transported to a hospital, and concluded with a promise to call back. The callback never occurred.

At 10:50 a.m., callers were still being told that a press conference would be forthcoming, but no specific time was provided.

Several instances were logged where callers were connected with public information staff in the Emergency Operations Center, but then told that they had to call the Joint Information Center for information. This included callers acting as members of the local and national media, government officials, employee family members, and concerned members of the public.

At 11:15 a.m., a call simulating a concerned and irate local resident was made. The caller was informed that there was no “nuclear explosion” and told that the news media had been informed and that would be his source of information about the accident.

Emergency Facilities and Equipment



Emergency facilities and equipment supported the response organization. Some problems were noted.

Applicable Exercise Enabling Objectives:

- EO 1.0 Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.
- EO 2.0 Given emergency events/conditions, make protective action decisions.
- EO 3.0 Given declaration of an operational emergency, make notifications.
- EO 4.0 Given declaration of an operational emergency, establish command, control, and communications.
- EO 6.0 Given the release of hazardous materials, monitor and control emergency worker exposure.
- EO 7.0 Given multiple casualties, provide emergency medical treatment.
- EO 8.0 Given declaration of an operational emergency, keep the site populace and public informed of emergency response actions.
- EO 9.0 Given emergency events/conditions, perform consequence assessments.
- EO 10. Given emergency events/conditions demonstrate recovery.

This particular program element touches on almost all the enabling objectives. This results from many of the response actions being dependent upon some facility or system to support those operations.

DOE O 151.1 requires that emergency facilities and equipment be established and maintained for effective emergency response. The Operational Emergency Base Program requirements are driven by worker safety and environmental concerns and result from compliance with other DOE orders, Federal codes and regulations, and local and state regulations. These requirements mandate the ability of the site to properly notify, implement protective

actions for, and maintain accountability of, affected employees in the event of an emergency.



“Hot bottle” change area with RCT support.

Facilities and equipment necessary to support the Operational Emergency Hazardous Material Program build upon those required for the Base Program. Additional requirements include a facility to serve as a command center, an alternate command center in the event the primary is not available, and adequate equipment and supplies to meet the needs determined by the results of the Hazards Assessment. Depending upon these results, additional emergency facilities may be necessary, such as technical support, security, personnel assembly/control, decontamination, medical services, process control, and chemical/radiological analytic laboratories. For either the Base or Hazardous Materials Programs, equipment and facilities throughout each site, which may be under different administrative organizations, should be integrated to provide an overall, sitewide response capability.

Notification/Communication Equipment

During the conduct of READY 2000, equipment necessary for completion of both onsite and offsite notifications were used. Problems were reported in the audibility of the sitewide public address announcement system. In some areas announcements were not clearly understandable and in other facilities nothing at all was heard. This issue surfaced in the Building 371/374 complex. Some personnel inside one of this connected facility reported that they could not clearly understand the initial announcement to conduct a controlled

evacuation. Further reports indicated that areas outside the facility did not have coverage for announcements. As personnel left the facility through diverse exits this caused some to miss follow-on announcements. The exercise control staff reported the announcements were not being heard at buildings 122 and 125 in all locations. The majority of Site facilities did report receiving the announcements, but all areas must be checked for coverage.

Offsite notifications were completed using the Metropolitan Emergency telephone System and standard facsimile machine programmed with broadcast groups. As previously discussed, the line to the Colorado State Patrol Dispatch Center was not functioning. Further investigation revealed that the service provider of the Metropolitan Emergency Telephone System, US West, had no records indicating that this connection had ever been properly installed. The City and County of Denver Office of Emergency Management is the administrator of this system and directed US West to complete the hook-up. Following READY 2000 the system has been tested and all users verified as fully functional. Weekly and monthly tests are now in place to identify future problems in a timely fashion.

Other critical communications systems were heavily utilized during the course of READY 2000. Primary in those was the Site Trunked Radio System. This is the primary means of communications amongst emergency response departments onsite. No failures or degradations were reported. During the critique process following the exercise comments were recorded regarding the lack of delays in establishing radio communications. This system is always heavily loaded during exercise conduct as the exercise control staff makes use of trunked radios for communications. Pre-exercise briefings reemphasized the need for staff to minimize the radio traffic and use short concise messages when necessary.

Standard telephones are used for communications between the Emergency Operations Center and the Functional Work Centers. No problems of any severity were reported in this communication media. A long-standing issue has been a conference

call capability that allows Crisis Management Team members to conduct a teleconference with DOE Headquarters, Colorado Emergency Operations Center, and Crisis Management Team representatives. The Crisis Management Team's DOE/RFFO Offsite Communicator/Coordinator initiated this conference the first time attempted. In past evolutions the completion of this conference call required intervention by the Emergency Operations Center telephone operator to complete.

Accountability Processing

The accountability process used in Building 374 is a sitewide process. Personnel are issued accountability badges that identify them and normally their employer. Prior to entering a facility with an accountability requirement, these badges are hung on an external accountability board in or near facility's assembly area. Some facilities with a significant population have sub-divided these boards to identify contractors or functional work areas. If the facility is evacuated, the boards are brought to the assembly area and each badge is matched with its' owner. Badges remaining unclaimed identify persons potentially remaining within the evacuated facility.



Established control zones at the scene.

During READY 2000, this process was used as an initiator to generate an emergency reentry. The first report of the fire was made by a role-player who then simulated being overcome by smoke and heat. This caused disorientation and the employee wandered into a remote area and collapsed. A second role-player at the assembly area indicated that the missing person, identified by an unclaimed

accountability badge, had been seen in the building immediately before the fire was reported.

Some confusion or difficulty was encountered during the accountability process. The injured employees had properly placed their accountability badges on the board prior to exercise initiation. Since they received injuries and subsequent treatment and transport, they did not appear at the assembly area to claim the badges. This rational process was not considered during initial accountability. In previous exercises, the accountability process was unnecessarily hampered by exercise design. It had been the practice to use fictitious employees or those from other facilities to act as role-players. This eliminated peer familiarity from completion of the accountability process. READY 2000 used employees from Building 374 or Building 371 who were commonly known by peers and management.



Last victim located and receiving medical treatment.

Further compounding the accountability process was the need to relocate personnel from the primary assembly area to an alternate. This decision was made when a change in meteorological conditions indicated that the primary area was potentially in the plume path.

The first public address announcement directing a controlled evacuation was made at 9:00 a.m. Accountability was underway at 9:08 a.m. Relocation from the primary assembly area began at 9:10 a.m. At 9:25 a.m., it was reported that approximately 50 people had traversed an area in the plume path and had been identified as being contaminated at levels up to 1000 dpm. Accountability of evacuated personnel was completed at 9:34 a.m., and those personnel without contamination are to be relocated to Building 771. Completion does not indicate that every person has been contacted, but that the missing are identified. By 10:17 a.m., the accountability process had one person reported as missing, public address announcements were directed to attempt to locate the person.

Emergency Operations Center (EOC)



EOC - Calm before the storm.

The EOC is the primary emergency facility for allowing the Site Emergency Management Organization component of the Emergency Response Organization to fulfill its emergency response functions and responsibilities. Its design and operations did provide for and support an

effective emergency response operation. To be considered habitable, the EOC should remain operational and life supporting for an extended period of time under accident conditions. By default the EOC shifts ventilation systems to recirculation mode at the direction of the Shift Superintendent or the Hazards Assessment Center Manager.

It was self-reported that the Hazards Assessment Manager had not considered the need for a contamination monitoring control point at the EOC. Habitability based on projected releases and plume path was considered, but the transport of physical contamination by responders to the EOC was overlooked.

The EOC design allowed for comfort, noise reduction, lighting, and work-group interfaces within the Emergency Management Organization. During this exercise, as with all full-participation exercises, the personnel reporting to the EOC is increased due to controllers, evaluators, and observers. There were no instances observed of Emergency Management Organization alternates lingering in the EOC once released. Controlled access maintained security, accountability, and order within the EOC. Sufficient space and equipment was provided to permit the Emergency Management Organization to effectively and efficiently perform its functions, especially command and control. The facility and systems did promote the active support of on-scene responders, versus simply providing an incident-tracking capability.



Crisis Support Room prior to activation.

Resources such as current, electronic, and hard-copy reference materials, such as operating procedures, technical safety requirements, emergency plans and procedures, hazard analyses, were available and allowed ready accessibility and use by the Emergency Management Organization.

Emergency Response Job Aids and information displays were current and available to support the command and control functions of the ERO. Status boards, both manual and electronic provided a synopsis of the emergency. Key information was presented on the electronic status display, and contained; environmental monitoring and measurements; consequence assessments; protective actions; notifications; accountability and search and rescue information. These status boards and displays offered information to the Emergency Management Organization at a glance, confirming reports of which response actions had been made and that future actions had been identified. Data from installed instrumentation (e.g., meteorological and source term) critical to command and control (i.e., protective actions, classification, etc.) was available to Emergency Management Organization personnel by way of the Dose Assessment Center in the Hazards Assessment Center.

Termination and Recovery



Exercise termination did not allow a complete assessment of termination and recovery planning.

Applicable Exercise Enabling Objectives:

- EO 1.0 Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.
- EO 10. Given emergency events/conditions, demonstrate recovery.

Termination of an emergency event and response is required for all Operational Emergencies. Termination allows the facility to enter Recovery Operations to return the facility to normal operations. Termination assessment and planning was completed in READY 2000; however, The Recovery Manager had only completed the initial planning phase when the exercise was terminated.

A Recover Manager was appointed at 10:22 a.m. The Recovery Manager reported to the Emergency Operations Center at 10:50 a.m., and began work on the Recovery strategy document for approval by the Crisis Manager and DOE/RFFO Manager in the Crisis Management Team. The Crisis Management Team began planning for termination of the emergency and transition to Recovery Operations at 11:14 a.m.

DOE/RFFO determined that Recovery Operations must include the investigation of a Type “B” accident and recalled their investigation personnel for assignment to the Recover Manager. The Recovery Manager completed the strategy outline and did brief the Crisis Management Team, but this was after the exercise had been formally terminated.

Following the exercise several responders in the Emergency Operations Center expressed the belief that there could be value in developing a Recovery Operations class or briefing. This class could be used to establish a predetermined cadre of Recovery Managers for each facility or project within the contractor organization.



Incident Commander prepares for termination.

Design, Conduct, Control and Evaluation of the Exercise

 Exercise control and evaluation was significantly improved over the last annual full-participation exercise, READY-99.

Applicable Exercise Enabling Objectives:

EO 11 Establish effective control and evaluation of the simulated emergency event.

In READY-99, the last full-participation Rocky Flats exercise several issues related to this performance area were identified. The first identified a need for improvement in that the multi-event scenario developed for READY - 99 was too complex and not realistic in terms of probability or consequence. In addition, the scenario unnecessarily complicated the emergency response required to demonstrate the capability of the Site to respond and mitigate a radiological emergency event categorized at the level of a General Emergency.



READY 2000 Controller with entry team.

The scenario for READY 2000 was derived directly from the hazards analysis for the facility. Actual hazardous material inventories were used to ensure that information was not lost or mishandled due to lack of credibility. The sequence of events and level of consequence were not exaggerated well beyond the normal scope of emergency response exercises to satisfy any external requirements.

Further exercises of the scope and scale of READY-99 are becoming impractical due to significant reductions in the risks and hazards of operations at the Site. The scenario and level of consequence required to satisfy current agreements and programmatic requirements now sometimes exceed the actual scope and potential consequence of radiological emergency events postulated for the Site.

Exercises on a smaller scale with a more realistic level of consequence and emergency response are of more practical value and benefit, and adequately serve to satisfy current programmatic requirements. Exercises of scope and scale similar to READY 2000 better serve the process of maintaining emergency response capabilities in conjunction with offsite emergency response agencies and organizations by increasing the frequency of interaction on any scale. This also focuses “readiness” activities on more realistic and credible operational risks and hazards, and better reflects the actual level of risk and hazard currently posed by the activities at the Site.

A comment recorded at a responder hotwash indicated that the exercise did not seem to present enough challenges. This was not supported by other like comments, but many comments indicated that responders were anticipating “the big event.”

The READY-99 evaluation report also identified that the simulation of emergency events and conditions at the scene of scenario events #1, #2, and #3 lacked the level of accuracy, realism, and visual queues necessary to independently assure the timely recognition and proper response of personnel. This issue was categorized as a Weakness.

READY 2000 was designed to provide a realistic presentation of the emergency conditions. Limitations naturally prohibit using an actual fire within an operational facility, but smoke generators helped give responders the feel of a real fire.



Artificial smoke for realism was used.

Also victims were recruited from the exercise facility and given a significant amount of exercise make-up, or moulage, to represent the wounds and injuries that could be expected.



Moulage was used to better portray injuries.

READY-99 further reported that the lack of visible and tangible evidence that the residue drums involved in scenario events #1 and #2 had been damaged and that a spill or release of radioactive materials had occurred as a result, caused some confusion and delayed the actions taken by responding personnel. This too was identified as a Weakness in design and conduct.

READY 2000 used props derived from their actual counterparts. Physical items such as drums were complete with placarding and documentation when appropriate. The only allowed artifice was the signage indicating that the prop was for exercise purposes. During the design phase of READY 2000 and the preparation for conduct, an Emergency Preparedness staff member built a scale model of the exercise area. This allowed a “virtual” walkdown of the area of play, and familiarized management and control staff with the area boundaries.



Scale model of exercise area.

Several areas of concern regarding exercise control were reported following READY-99. The first Weakness was that exercise controllers allowed and/or approved the partial or total simulation of required emergency response actions or activities. This limited the demonstration or hindered the evaluation of certain aspects of the emergency response.

Prior to READY 2000 a process improvement was implemented in the Controller/Evaluator pre-exercise briefing. The new approach focused on enhancing and reinforcing the basic training that one receives as a controller or evaluator. Additionally, the formal classroom Controller/Evaluator training was completely updated in accordance with current requirements and standards.

The briefings also consisted of a walk-through of the expected sequence of events and all exercise messages, emphasizing who and when contingency messages should be injected. Strong reinforcement was given in the areas of responders earning

information and performance without simulation. Simulations are almost always required, but in READY 2000 were minimized and focused only on those necessary to maintain a safety or regulatory requirement. Also the requirement to obtain Lead Controller and Exercise Director authorization prior to allowing a simulation was emphasized. During the conduct of READY 2000 no unnecessary simulations were allowed or granted.



Fire simulation for initial responders.

There was a control issue during READY 2000 related to simulations that no fire hoses were to be actually charged with water. This limitation was imposed for safety and to prevent the introduction of water into contaminated or adjacent areas. As the Fire Department made initial entry it was reported to the Control Cell by a controller other than that assigned, that fire lines were being charged. The Control Cell initiated swift action in directing multiple controllers to ensure that the charged lines did not enter the facility and were safely discharged, outside. It was later determined that the controller assigned to monitor fire hose deployment had left the area and was out of position allowing the line charging to occur.

READY-99 identified as an Improvement Item the fact that exercise controllers for radiological operations allowed responding RCTs to simulate the control and containment of the radiological spill at the scene of event scenario #1, as well as radiological surveys of the affected area. Radiological operations control staff allowed RCTs responding to the scene of scenario event #2, to simulate the use and wear of proper protective clothing and equipment normally required in an area where potentially high levels of radiation or loose surface contamination are present or suspected.

As previously stated, no unnecessary simulations were allowed or occurred within the purview of the READY 2000 controller organization. This was enforced for areas related to protective equipment, monitoring instruments, etc.



Realistic response with no simulations.

In the LS-004 exercise conducted earlier this year, it was reported that a significant number of the controller/evaluators assigned did not meet the requisite training requirements. This requirement was much more strictly enforced for READY 2000 and actually precluded participation by some members of senior management. This requirement being enforced along with the enhanced briefings prior to READY 2000 were acknowledged as significant improvements in the control process.

The onsite controller staff was augmented by external support for certain areas. Professionals from other DOE facilities were used in controlling and evaluating the fire department and public information operations. This prevented the previously encountered “scavenging” effect whereby the available pool of responders is reduced due to staffing the controller organization.

READY 2000 also included support from the onsite Media Arts department for photographic documentation of the responder’s performance and the exercise preparation and evaluation process. This documentation was focused at the scene of the event, but was acknowledged as being a valuable tool in exercise evaluation and assessment. It was suggested at the management de-brief that thought be given to providing a video tape history of future similar scale exercises. It was felt that being able to actually show responders their performance justified the expense.



Controllers demonstrating positive control of activities.

Control of exercise observers is an area that still needs improvement. It was noted that observers interacted with responders within the Emergency Operations Center on several occasions. Further investigation determined that these were casual contacts not related to responder performance. Interaction between observers and responders is strictly prohibited and requires vigilance on the part of controllers to ensure that inappropriate prompting or coaching is not occurring.

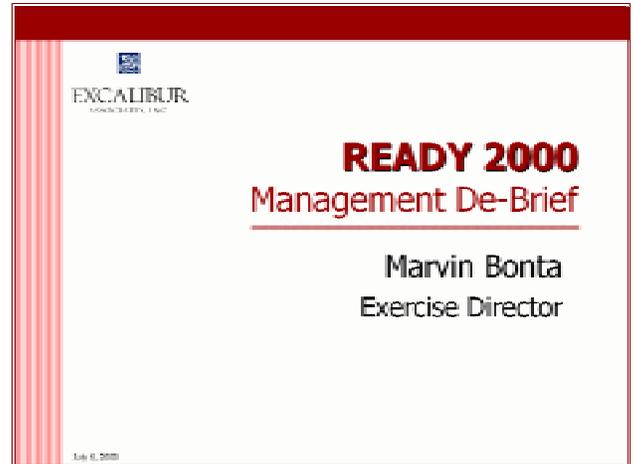
Functional area critiques, or hotwashes, were conducted immediately following exercise termination. These localized discussions were facilitated by the controller organization and documented by the assigned evaluator. The primary focus of these hotwashes was for exercise responders to express their position on the performance of the Emergency Response Organization, their functional area, and exercise design and control.



Functional area evaluator critique.

Following the hotwashes, the exercise critique was held the same day as the exercise. This significantly increased the level of participation and facilitated the collection of evaluation materials.

This final critique was conducted with a formal approach aimed at gathering the facts and evaluation criteria results, rather than re-hashing the timeline progression of the events from differing functional areas perspectives. The scenario timeline was resolved against the actual timeline for exercise performance. This created a consolidated time ordered sequence of responder actions and accomplishments. Next, the evaluators were formed into groups under their Lead Evaluator for consolidation of observations and evaluation assessment criteria resolution. A master matrix of all exercise objectives and their associated evaluation criteria was projected for discussion. Each evaluator cell discussed their observations and findings as the objectives were reviewed.



Management de-brief conducted following critiques.

The exercise evaluation identified several opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible contractor line managers and prioritized and modified as appropriate, in accordance with specific programmatic objectives.

1. The default Protective Action for facility evacuation during an emergency event was questioned following READY 2000. The process of notification of personnel, assembly, evacuation route(s), assembly area determination, accountability, and relocation is not fully covered and implemented through approved procedures.
2. Responders suggested considering the development of a training course for the Recovery Manager position in Operational Emergencies. Management could then pre-designate a cadre of Recovery Manager on a project or facility basis. Training in recovery planning could include a practical exercise.
3. Traditionally, Offsite Response Agencies such as hospitals and fire departments do not participate in limited scope exercises. The participation of these agencies could be scheduled on a rotating basis allowing more participation than just the annual full-participation exercise.
4. Radiological Field Sampling external to the Site was directed during READY 2000. This led to the identification of less than adequate resources and procedures to undertake these operations. The potential for these operations should be included in the existing plans and procedures.
5. The Incident Command Organization Communicator position is still lacking formal assignment of personnel. Beginning in advance of READY 2000, a process of using off-duty Shift Superintendents was informally implemented. This resulted in improved communication and coordination at the Incident Command Post and with the Emergency Operations Center. This new process has not been formalized through procedures.
6. The process of emergency reentry was conducted in accordance with the Emergency Plan; however, investigation revealed that some response agencies procedures were still not compliant with the Emergency Plan.
7. Review of the responder documentation from the Emergency Operations Center revealed that several positions keep event information on note pads rather than in the required logbooks. The proper use of the logbooks as an official event record should be reinforced through briefings.
8. Suggestions were made regarding creating a videotape record of future exercises for responder review. Creative exercise design could provide for this by use of onsite Media arts personnel, or external media or media arts institutes.
9. The scale model used for READY 2000 was a valuable aid in presenting briefings to controllers, evaluators, and management. It also reduced the need for actual facility walkdowns.

Analyzing Radioactive Fire Emergencies (Including Ventilation Systems)	3-FD-SOI-227
Comprehensive Emergency Management System.....	DOE O 151.1
Digital Emergency Response System (DERS).....	4-FD-SOP-932
Emergency Classification and Protective Actions.....	PRO-T56-EP-04.00
Emergency Management Guide – Volume III – Program Elements (1).....	DOE G 151.1-1
Emergency Management Guide – Volume IV – Program Elements (2).....	DOE G 151.1-1
Emergency Management Guide – Volume VII – Exercises	DOE G 151.1-1
Emergency Notifications.....	3-FD-SOP-923
Emergency Notifications.....	PRO-642-EP-05.01
Emergency Operations Center (EOC) Activation and Systems Operations.....	PRO-A46-EP-11.00
Emergency Reentry	1-A26-5500-08.01
Fire Control, Defensive Operations	3-FD-SOI-208
Fire Control, General	3-FD-SOI-207
Fire Control, Offensive Operations	3-FD-SOI-209
Fire Department Incident Management System	NFPA 1561
Fire Department Safety Officer	NFPA 1521
Fireground Safety	3-FD-SOI-704
Glovebox and Pu Firefighting	3-FD-SOI-232
Hazardous Waste Operations and Emergency Response.....	29 CFR 1910.120(q)
Incident Command	ERJA-SS-1
Incident Management System	3-FD-SOI-401
Infection Control	3-FD-SOI-506
Radiological Control Manual	MAN-102-SRCM
Radiological Response.....	3-FD-SOI-238
Recommended Practice for Responding to Hazardous Materials Incidents.....	NFPA 471
Rehabilitation During Emergency Operations	3-FD-SOI-245
RFETS Emergency Plan	EPLAN-99
Sitewide Emergency Response Limited Scope Exercise Package	00-LSE-004
Transport of Radioactively Contaminated Patients	3-FD-SOI-514
Treatment of Radioactively Contaminated Patients	3-FD-SOI-512

Sub-Objectives Objectives And Sub-Objectives		YES	NO	Not Observed	Not Applicable
Exercise Objectives & Evaluation Criteria Matrix					
1.0	Given initial discovery of emergency events/conditions, recognize the consequences and initiate emergency response actions.				
1.1	Identify the emergency event.				
1.1.1	Did building management use the Building Emergency Response Job Aids located in the BERO? (BERO)	X			
1.1.2	Did building management recognize the event conditions as contained in the EALs? (PRO-T56-EP-04.00)	X			
1.1.3	Did building management correctly identify the emergency event? (EPLAN-99)			X	
1.1.4	Did building management notify the Shift Superintendent, Fire Dispatch, and the Central Alarm Station (CAS) of the alarm condition and the specific parameters associated with the alarm conditions? (BERO)		X		
1.1.5	Did building management pass information of known or suspected event parameters to the Shift Superintendent? (PRO-T56-EP-04.00)		X		
1.1.6	Did Shift Superintendent obtain specific event information when advised of incident conditions? (PRO-T56-EP-04.00)	X			
1.1.7	Did Shift Superintendent compare event information to EALs? (PRO-T56-EP-04.00)	X			
1.2	Categorize and classify the emergency event.				
1.2.1	Did building management compare event information to EALs? (PRO-T56-EP-04.00; BERO)	X			
1.2.2	Did building management assist in categorization and classification of the event? (PRO-T56-EP-04.00)		X		
1.2.3	Did the Crisis Manager assess recommendations from the HAC Manager regarding emergency classification? (PRO-T56-EP-04.00, ERJA-CMT-1)	X			
1.2.4	Did the Crisis Manager implement recommended classification? (ERJA-CMT-1; EPLAN-99)	X			
1.2.5	Did the Crisis Manager ensure the accuracy of the event classification? (PRO-T56-EP-04.00)	X			
1.2.6	Did the Crisis Manager approve any upgrades to emergency classification? (PRO-T56-EP-04.00)	X			
1.2.7	Did the Crisis Manager approve termination of emergency event?(PRO-T56-EP-04.00)			X	
1.2.8	Did the DOE/RFFO Manager concur with termination of emergency event? (PRO-T56-EP-04.00)			X	
1.2.9	Did the Emergency Director review and validate the declaration of the emergency? (PRO-T56-EP-04.00)	X			
1.2.10	Did the Emergency Director provide recommendations to the Crisis Manager on classification upgrade? (PRO-T56-EP-04.00)	X			
1.2.11	Did the Emergency Director provide recommendations to the Crisis Manager on event termination? (PRO-T56-EP-04.00)	X			
1.2.12	Did the EOC Manager collect all documentation generated in the classification process? (PRO-T56-EP-04.00)	X			
1.2.13	Did the HAC Manager review and validate the classification of the event (PRO-T56-EP-04.00)	X			
1.2.14	Did the HAC Manager provide recommendations to the Crisis Manager on classification upgrade or termination? (PRO-T56-EP-04.00)	X			
1.2.15	Did the Shift Superintendent determine category and classify the event in accordance with EALs? (EPLAN-99, PRO-T56-EP-04.00)	X			
1.2.16	Did the Shift Superintendent upgrade the classification of the event? (PRO-T56-EP-04.00)	X			
1.3	Evacuate affected facilities.				
1.3.1	Did the IC direct CAS to make initial LS/DW announcements of the situation that included affected areas/buildings, protective actions, ICP location, who should report to the ICP, and access route to the ICP? (EPLAN-99, PRO-642-EP-05.01)	X			
1.3.2	Did LS/DW announcements depict the emergency situation? (95-EPIP-0048, EPLAN-99, PRO-642-EP-05.01)	X			
1.3.3	Did LS/DW announcements include specific actions to be taken by Site Personnel? (EPLAN-99, PRO-642-EP-05.01)	X			
1.3.4	Could the evacuation notification be heard by all building occupants? (1-15200-EPIP-12.24)	X			X
1.3.5	Was time taken to shut down equipment prior to evacuation? (BERO)	X			
1.3.6	Did personnel evacuate the facility? (BERO)	X			
1.3.7	Did all personnel assemble at the primary assembly area? (BERO)	X			
1.3.8	Did RCTs monitor evacuated personnel for radioactive contamination? (RSPs)	X			
1.3.9	Did RCTs monitor the assembly area for radioactive contamination? (RSPs)	X			
1.4	Account for personnel				
1.4.1	Were personnel accountability tag boards available at the primary assembly area or outside of the 12	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
	Exercise Objectives & Evaluation Criteria Matrix				
	Rad boundary? (BERO)				
1.4.2	Was the alternate assembly area checked for building personnel? (BMP)	X			
1.4.3	Was accountability of building personnel completed within 30-45 minutes of building evacuation? (PRO-A44-EP-06.14)	X			
1.4.4	Was a listing of any missing personnel provided to the IC within 30-45 minutes? (PRO-A44-EP-06.14)	X			
1.4.5	Were emergency response personnel accounted for? (ERJA-SS-1)	X			
2.0	Given emergency events/conditions, make protective action decisions.				
2.1	Determine Protective Actions (PAs).				
2.1.1	Did the IC direct initial LS/DW announcements of the situation that included affected areas/buildings, protective actions, ICP location, who should report to the ICP, and access route to the ICP? (EPLAN-99, ERJA-SS-1)	X			
2.1.2	Were initial protective actions based on EALs? (PRO-T56-EP-04.00)	X			
2.1.3	Were LS/DW announcements reviewed for classification prior to release? (PRO-642-EP-05.01)		X		
2.1.4	Did LS/DW announcements communicate the expected protective actions? (EPLAN-99, PRO-642-EP-05.01)	X			
2.1.5	Did LS/DW announcements include specific actions to be taken by Site Personnel? (EPLAN-99, ERJA-SS-1)	X			
2.1.6	Did LS/DW announcements depict the emergency situation? (95-EPIP-0048)	X			
2.1.7	Were follow-up communications provided to the ICO, FWCs, and buffer zone? (EPLAN-99, 1-A34-5500-06.09)	X			
2.1.8	Did the CM assess recommendations from the HAC Manager on Protective Actions? (EPLAN-99, ERJA-CMT-1)	X			
2.1.9	Did the CM implement the HAC Manager's recommended Protective Actions? (ERJA-CMT-1)	X			
2.1.10	Did the HAC Manager initiate habitability monitoring of the EOC? (ERJA-HAC-1)		X		
2.1.11	Did the RARC provide CAPARS and/or ALOHA outputs to support development of onsite PAs? (ERJA-HAC-4)	X			
2.1.12	Did the Crisis Manager ensure the accuracy of on-site Protective Actions? (PRO-T56-EP-04.00)	X			
2.1.13	Did the Crisis Manager approve changes to Protective Actions? (PRO-T56-EP-04.00)	X			
2.1.14	Did the Crisis Manager ensure that on-site Protective Action notifications were accomplished? (PRO-T56-EP-04.00)	X			
2.1.15	Did the HAC Manager review and validate PAs? (PRO-T56-EP-04.00)	X			
2.1.16	Did the Shift Superintendent direct PAs appropriately? (PRO-T56-EP-04.00)	X			
2.1.17	Did the Shift Superintendent determine appropriate PAs? (PRO-T56-EP-04.00)	X			
2.2	Shelter, evacuate, or relocate affected personnel.				
2.2.1	Was personnel monitoring performed? (RSP 7.02)	X			
2.2.2	Were area contamination surveys conducted? (RSP 7.02)	X			
2.2.3	Were dose surveys conducted? (RSP 7.04)	X			
2.3	Determine Protective Action Recommendations (PARs).				
2.3.1	Were initial PARs based on EALs? (PRO-T56-EP-04.00)	X			
2.3.2	Did the Crisis Manager assess recommendations from the HAC Manager on Protective Action Recommendations (PARs)? (EPLAN-99; ERJA-CMT-1)	X			
2.3.3	Did the Crisis Manager implement the HAC Manager's recommended PARs? (ERJA-CMT-1; EPLAN-99)	X			
2.3.4	Did the Crisis Manager approve the downgrade of a PAR with the concurrence of the DOE/RFFO Manager? (ERJA-CMT-1)	X			
2.3.5	Did the RARC provide CAPARS and/or ALOHA outputs to support development of offsite PARs? (ERJA-HAC-4)	X			
2.3.6	Did the Crisis Manager ensure the accuracy of off-site PARs? (PRO-T56-EP-04.00)	X			
2.3.7	Did the Crisis Manager approve any changes to PARs? (PRO-T56-EP-04.00)	X			
2.3.8	Did the HAC Manager review and validate PARs? (PRO-T56-EP-04.00)	X			
2.3.9	Did the Shift Superintendent direct PARs to be given to off-site authorities? (PRO-T56-EP-04.00)	X			
2.3.10	Did the Shift Superintendent determine the appropriate PARs for the event? (PRO-T56-EP-04.00)	X			
2.3.11	Did the Shift Superintendent select the appropriate ERPA to which the PARs apply? (PRO-T56-EP-04.00)				X

Sub-Objectives And Objectives		YES	NO	Not Observed	Not Applicable
Exercise Objectives & Evaluation Criteria Matrix					
3.0	Given declaration of an operational emergency, make notifications.				
3.1	Notify off-site authorities.				
3.1.1	Did the Shift Superintendent provide emergency classification level, PAs, and PARs to the Fire Dispatcher and CAS and direct that appropriate notifications be made? (PRO-T56-EP-04.00)	X			
3.1.2	Did the SS approve initial Operational Emergency notifications? (PRO-642-EP-05.01)	X			
3.1.3	Did the Crisis Manager ensure that off-site notifications were accomplished? (PRO-T56-EP-04.00)	X			
3.1.4	Was notification to off-site authorities accomplished within 15 minutes of emergency declaration or changes to the classification? (PRO-T56-EP-04.00)	X			
3.1.5	Was notification to off-site authorities accomplished within 15 minutes of changes to PARs? (PRO-T56-EP-04.00)	X			
3.2	Assemble RFETS Emergency Response Organization (ERO).				
3.2.1	Did the Shift Superintendent direct that the initial LS/DW announcement of the emergency event be made? (PRO-642-EP-05.01)	X			
3.2.2	Did the Shift Superintendent initiate emergency notification? (EPLAN-99, PRO-642-EP-05.01)	X			
3.2.3	Did the Shift Superintendent direct the Fire Dispatcher to activate the ERO? (PRO-642-EP-05.01)	X			
3.2.4	Did the Fire Dispatcher activate the appropriate notification of ERO components by initiating DERS? (PRO-642-EP-05.01)	X			
3.2.5	Did the CAS receive the initial information? (EPLAN-99, PRO-642-EP-05.01)	X			
3.2.6	Did the CAS contact LIMA-2 with directions to report to the ICP? (WSLLC Procedures)	X			
3.2.7	Did LIMA-2 respond to the ICP? (WSLLC Procedures)	X			
3.2.8	Were hazards considered in establishment of the ICP? (ERJA-SS-1)	X			
3.2.9	Were ICO briefings conducted? (EPLAN-99, ERJA-SS-1)	X			
3.2.10	Were emergency response personnel accounted for? (ERJA-SS-1)	X			
3.2.11	Did the SS request an IC communicator (ECHO-2)? (ERJA-SS-1)	X			
3.2.12	Did the ICO communicate with the EOC? (EPLAN-99, ERJA-SS-1)	X			
3.2.13	Did the IC develop an initial plan of action to minimize and mitigate any adverse impacts to human health or the environment? (ERJA-SS-1)	X			
3.2.14	Did Radiological Control Supervisor/Managers assemble personnel and equipment for emergency response? (EPLAN-99)	X			
3.2.15	Did Rad Ops respond to the ICP? (EPLAN-99, ERJA-SS-1)	X			
3.2.16	Did a Radiological Control Supervisor/Manager report to the IC to establish a Rad Ops Support Center, and provide control and direction to the Rad Ops organization? (EPLAN-99)	X			
3.2.17	Did the WSLLC Security Advisor receive timely notification? (ERJA-CMT-9)	X			
3.2.18	Did the OMD staff up emergency duty stations? (OMD Procedures)	X			
3.2.19	Did OMD initiate a recall of personnel to support the emergency? (OMD Procedures)				X
3.2.20	Did the IC direct initial assessment actions as soon as possible using available people and resources at the scene? (EPLAN-99)	X			
3.2.21	Was fire department order of response correct? (3-FD-SOI-1066, 3-FD-SOI-214)	X			
3.2.22	Were sector assignments implemented based on the incident? (3-FD-SOI-1066)	X			
3.2.23	Was mutual aid requested based on the initial size-up? (3-FD-SOI-206)	X			
3.2.24	Did the fire department consider hazards in establishment of the ICP? (3-FD-SOI-1008)	X			
3.2.25	Was an ICP established at an appropriate distance and upwind of the scene? (EPLAN-99, ERJA-SS-1)	X			
3.2.26	Did the fire department establish control zones (Red, Yellow, and Green)? (3-FD-SOI-1008)	X			
3.2.27	Did IH respond to the ICP? (EPLAN-99, Sec. 2; ERJA-SS-1; IH Procedure)	X			
3.2.28	Did the IC develop an initial plan of action to minimize and mitigate any adverse impacts to human health or the environment? (ERJA-SS-1)	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
	Exercise Objectives & Evaluation Criteria Matrix				
4.0	Given declaration of an operational emergency, establish command, control, and communications.				
4.1	Transfer emergency response command and control functions from the facility manager to the Incident Commander.				
4.1.1	Was there a formal transfer of responsibilities, command and control of site-wide response, categorization and classification, notification, PAs, and PARs between the Facility Manager and the Fire Department? (EPLAN-99)		X		
4.1.2	Was there a formal transfer of responsibilities, command and control of site-wide response, categorization and classification, notification, PAs, and PARs between the Fire Department and Shift Superintendent? (EPLAN-99)	X			
4.1.3	Did the Shift Superintendent receive a briefing by building management or their designee prior to the assumption of incident command responsibilities? (EPLAN-99)	X			
4.2	Transfer overall emergency response command and control functions from the Incident Commander to the Crisis Manager.				
4.2.1	Did the Shift Superintendent (IC) assume the responsibilities of the Crisis Manager until relieved by a designated CM? (PRO-T56-EP-04.00)	X			
4.2.2	Did the Incident Commander or designee brief the Crisis Manager prior to the transfer of responsibilities? (EPLAN-99)	X			
4.2.3	Did the Incident Commander formally transfer the overall responsibility for site-wide emergency response activities to the Crisis Manager? (EPLAN-99)	X			
4.3	Communicate event information within and between emergency response organization components.				
4.3.1	Did the IC direct initial LS/DW announcements of the situation that included affected areas/buildings, protective actions, ICP location, who should report to the ICP, and access route to the ICP? (PRO-642-EP-05.01)	X			
4.3.2	Did the ICO staff share known information with the IC? (ICO-ERJAs)	X			
4.3.3	Were communications established with, and an on-scene status update obtained from the WSLLC Representative? (ERJA-CMT-9)	X			
4.3.4	Did the OCC keep the Site informed of offsite response to the Operational Emergency? (EPLAN-99)				
4.3.5	Did the OCC Manager establish communications with the DOE/RFFO Communicator/Coordinator in the CMT? (3-A13-5500-01.56)	X			
4.3.6	Did the OCC Manager brief the SEOC team on the incident? (3-A13-5500-01.56)				X
4.3.7	Did the DOE/RFFO Offsite Communicator/Coordinator keep the OCC informed of onsite response to the operational emergency? (EPLAN-99; ERJA-CMT-3)	X			
4.3.8	Did the OMD staff communicate patient information and medical conditions to the CSS Communicator? (PRO-A13-EP-01.56)	X			
4.3.9	Did the WSLLC Security Advisor receive notification within 30 minutes of the start of the exercise? (ERJA-CMT-9)	X			
4.3.10	Did LIMA-2 establish access control to the ICP and the accident scene? (EPLAN-99)	X			
4.3.11	Did SPOs acknowledge EMRESP badge designations and facilitate emergency responder access to the Incident Command Post? (EPLAN-99)	X			

Objectives And Sub-Objectives		YES	NO	Not Observed	Not Applicable
Exercise Objectives & Evaluation Criteria Matrix					
5.0	Given declaration of an operational emergency, establish offsite liaison.				
5.1	Establish offsite liaison.				
5.1.1	Was the decision to call for mutual aid support made in a timely manner once all available resources were committed? (3-FD-SOI-225, 3-FD-SOI-217, 3-FD-SOI-401)	X			
5.1.2	Was the request for mutual aid made in a timely manner? (3-FD-SOI-225, 3-FD-SOI-217, 3-FD-SOI-401)	X			
5.1.3	Was confirmation of mutual aid availability provided back to the Incident Commander? (3-FD-SOI-225, 3-FD-SOI-217, 3-FD-SOI-401)	X			
5.1.4	Was a staging area established for the mutual aid agencies? (3-FD-SOI-401)	X			
5.1.5	Did the ICP Representative report to JeffCo ICO? (PRO-A13-EP-01.56)			X	
5.1.6	Did the OCC Manager report to the SEOC? (PRO-A13-EP-01.56)	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
	Exercise Objectives & Evaluation Criteria Matrix				
6.0	Given the release of hazardous materials, monitor and control emergency worker exposure.				
6.1	Manage contaminated and/or exposed personnel.				
6.1.1	Did an RCT report immediately to the OMD upon notification of an emergency involving actual (or potential for) radioactive contamination of the individuals involved?(RSPs)	X			
6.1.2	Did RCTs provide technical advice on contamination control? (RSPs)	X			
6.1.3	Did RCTs post occupational medicine? (RSPs)	X			
6.1.4	Did RCTs monitor evacuated personnel and the assembly area for radioactive contamination? (RSPs)	X			
6.1.5	Were area contamination surveys conducted? (RSPs)	X			
6.1.6	Were dose surveys conducted? (RSPs)	X			
6.1.7	Was the assembly area surveyed for background radiation levels greater than 1 mR/hr prior to starting the personnel surveys? (RSPs)				X
6.1.8	Were personnel with surface contamination or with dosimeter scan readings greater than 1 mR/hr segregated from other personnel? (RSPs)				X
6.1.9	Did emergency responders use proper PPE? (RSPs)	X			
6.1.10	Did Rad Ops determine the level of skin contamination? (RSPs)	X			
6.1.11	Was contamination above established limits and decontamination conducted according to established procedures/protocols? (RSPs)	X			
6.1.12	Were nasal and/or mouth swab samples taken? (RSPs)	X			
6.2	Establish controls to prevent the spread of hazardous materials.				
6.2.1	Did a Radiological Control Supervisor/Manager report to the IC to establish a Rad Ops Support Center, and provide control and direction to the Rad Ops organization? (EPLAN-99)	X			
6.2.2	Did Radiological Control Supervisor/Managers assemble personnel and equipment for emergency response? (EPLAN-99)	X			
6.2.3	Did Radiological Operations properly post radiological protection requirements? (RSPs)	X			
6.2.4	Was personnel monitoring performed? (RSPs)	X			
6.2.5	Were area contamination surveys conducted? (RSPs)	X			
6.2.6	Were dose surveys conducted? (RSPs)	X			
6.2.7	Were nasal/mouth swab samples taken? (RSPs)	X			
6.2.8	Were wounds and skin/hair contamination samples taken? (RSPs)	X			
6.2.9	Was portable low volume air sampling performed? (RSPs, HSPs)	X			
6.2.10	Was contamination above established limits and decontamination conducted according to established procedures/protocols? (RSPs, HSPs)	X			
6.2.11	Were Fire Department personnel checked for contamination and decontaminated before being released from the scene? (RSPs)	X			
6.2.12	Did Fire Department treatment personnel use PPE? (FD SOP; HSPs)	X			
6.2.13	Was equipment decontaminated? (3-FD-SOI-1014)	X			
6.2.14	Were decontamination procedures implemented for contaminated areas and equipment? (RSPs, HSPs)	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
Exercise Objectives & Evaluation Criteria Matrix					
7.0	Given multiple casualties, provide emergency medical treatment.				
7.1	Perform emergency medical care.				
7.1.1	Did the OMD staff communicate patient information and medical conditions to the CSS Communicator? (OMD FWC ERJA)	X			
7.1.2	Were emergency treatment stations established in Building 122? (OMD FWC-ERJA)	X			
7.1.3	Did the OMD staff use proper PPE? (OMD FWC-ERJA)	X			
7.1.4	Did OMD staff emergency care positions? (OMD FWC-ERJA; OMD Procedure)	X			
7.1.5	Did an RCT report immediately to the OMD upon notification of an emergency involving actual (or potential for) radioactive contamination of the individuals involved? (RSPs)	X			
7.1.6	Did RCTs properly prepare the medical decontamination trailer? (RSPs)	X			
7.1.7	Did Rad Ops determine the level of skin contamination? (RSPs)	X			
7.1.8	Did RCTs provide technical advice on contamination control? (RSPs)	X			
7.1.9	Did RCTs post occupational medicine? (RSPs)	X			
7.1.10	Was Rad Ops support provided to the offsite medical facility to coordinate radiological control efforts with the facility? (RSPs)	X			
7.1.11	Did EMTs provide initial emergency response and bring injured employees to OMD for further evaluation and treatment, unless the patient's injuries were of a serious nature or life threatening? (OMD Procedures)	X			
7.1.12	Did EMTs request medical transport services? (OMD Procedures)	X			
7.1.13	Did EMTs evaluate and transport victims with major injuries to offsite locations for definitive care? (OMD Procedures)	X			
7.1.14	Was the on-call physician contacted when offsite treatment was expected? (OMD Procedures)	X			

Objectives And Sub-Objectives		YES	NO	Not Observed	Not Applicable
	Exercise Objectives & Evaluation Criteria Matrix				
8.0	Given declaration of an operational emergency, keep the site populace and public informed of emergency response actions.				
8.1	Communicate Protective Actions (PAs).				
8.1.1	Did LS/DW announcements communicate changes to Protective Actions? (EPLAN-99.; PRO-642-EP-05.01)	X			
8.1.2	Were follow-up communications on changes to Protective Actions provided to the ICO, FWCs, and buffer zone? (EPLAN-99)	X			
8.2	Complete public information activities.				
8.2.1	Did the PI Team prepare media releases? (95-EPIP-0048)	X			
8.2.2	Did the PI Manager approve media releases? (ERJA-CMT-8; 95-EPIP-0048)	X			
8.2.3	Did the JIC Team report to the SEOC? (EPLAN-99, 95-EPIP-0048)	X			
8.2.4	Were Emergency Public Information products provided to Joint Public Information Center? (95-EPIP-0048)	X			
8.2.5	Were media releases reviewed for classification prior to release? (ERJA-CMT-8; 95-EPIP-0048)	X			
8.2.6	Were media releases accurate? (95-EPIP-0048)	X			
8.2.7	Were media releases timely? (95-EPIP-0048)	X			
8.2.8	Did the Crisis Manager receive briefings on public information, media inquires received, and VIP inquiries received? (95-EPIP-0048)	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
Exercise Objectives & Evaluation Criteria Matrix					
9.0	Given emergency events/conditions, perform consequence assessments.				
9.1	Complete consequence assessment activities.				
9.1.1	Did the RARC provide CAPARS and/or ALOHA outputs? (EPLAN-99, ERJA-HAC-4)	X			
9.1.2	Did the RARC provide CAPARS and/or ALOHA outputs to support development of onsite PAs and offsite PARs? (ERJA-HAC-04)	X			
9.1.3	Did RARC provide weather forecasts in support of emergency response operations? (EPLAN-99, ERJA-HAC-4)	X			
9.1.4	Was CAPARS and/or ALOHA used to provide the EMO with data projections for recommending changes in PAs/PARs? (EPLAN-99)	X			
9.1.5	Was input from the IC and RCTs/IH/FSTs on-scene provided to the HAC for analysis and a comparison performed with dose/atmospheric dispersion models? (EPLAN-99; ERJA-HAC-2)	X			
9.1.6	Was CAPARS and/or ALOHA used by the HAC to predict plume path distance and time? (EPLAN-99)	X			
9.1.7	Was CAPARS and/or ALOHA used to provide the EMO with data projections for recommending changes in classification? (EPLAN-99)	X			
9.1.8	Did the HAC Manager review dispersion model runs for validating the classification level, PAs, and PARs? (PRO-T56-EP-04.00)	X			
9.1.9	Did the HAC Manager provide recommendations to the Crisis Manager regarding classification level, PAs, and PARs? (PRO-T56-EP-04.00)	X			
9.1.10	Did the RARC representative respond to provide consequence assessment support? (By contract)	X			
9.2	Perform field monitoring team activities.				
9.2.1	Was the anticipated hazardous material source term considered prior to deployment of field monitoring team(s)? (1-A26-5500-08.01)	X			
9.2.2	Did the Crisis Manager or Incident Commander approve exposures known or anticipated to be greater than DOE Limits? (1-A26-5500-08.01)				X
9.2.3	Did field monitoring team members receive a briefing from the IC or designee before deployment? (1-A26-5500-08.01)	X			
9.2.4	Did the Crisis Manager or Incident Commander approve entries to unknown radiation fields or chemical atmospheres? (1-A26-5500-08.01)				X
9.2.5	Did field monitoring team(s) provide a debriefing to the IC or designee after returning from the field? (1-A26-5500-08.01)	X			
9.2.6	Did the Radiological FST Coordinator in the HAC issue activation instructions to activate the team (2-A15-5500-01.66)	X			
9.2.7	Did FST members report to the FST assembly location on a timely basis? (BMP)	X			
9.2.8	Did FST personnel perform instrument checks prior to departing for the ICP? (2-A15-5500-01.66, Inst. 8)	X			
9.2.9	Did FST personnel accomplish PPE inventory and inspection prior to departing for the ICP? (2-A15-5500-01.66, Inst. 8)	X			
9.2.10	Did the FST report to the ICO prior to entry of the emergency scene? (ERJA-SS-1)				X
9.2.11	Was the FST aware of the location of the 12 Rad line for the facility? (BMP)				X
9.2.12	Did the FST team leader establish radio contact with the FST Coordinator? (2-A15-5500-01.66, Inst. 10)	X			
9.2.13	Did the FST Coordinator provide clear direction for field sampling locations to the FST? (2-A15-5500-01.66, Inst. 11)	X			
9.2.14	Did the FST provide sample results to the FST Coordinator in a clear and understandable manner (2-A15-5500-01.66, Inst. 12)	X			
9.2.15	Did the FST Team Leader log the sample data and complete the appropriate Worksheet? (2-A15-5500-01.66, Inst.11)	X			
9.2.16	Did FST members periodically look at their direct reading dosimeters while sampling inside the emergency? (2-A15-5500-01.66, Inst.13)				X
9.2.17	Was a plume search accomplished using the FST vehicle? (2-A15-5500-01.66, Inst. 13)	X			

Sub-Objectives Objectives And		YES	NO	Not Observed	Not Applicable
	Exercise Objectives & Evaluation Criteria Matrix				
10.0	Given emergency events/conditions, demonstrate recovery.				
10.1	Complete recovery planning.				
10.1.1	Was a Recovery Team designated from required functional areas? (ERJA-CMT-1)	X			
10.1.2	Did the Crisis Manager appoint the Recovery Manager? (EPLAN-99, ERJA-CMT-1)	X			
10.1.3	Did the Emergency Director coordinate development of the recovery plan outline? (ERJA-CSS-1)	X			
10.1.4	Was the recovery plan outline approved by the CM with concurrence by the DOE/RFFO Manager? (ERJA-CMT-10)				X
10.1.5	Did the Crisis Manager approve exposures known or anticipated to be greater than the DOE Radiological Emergency Dose Limit? (ERJA-CMT-1)				X
10.1.6	Did recovery team members receive a briefing from the IC or designee before reentering the affected building or area? (ERJA-CMT-1)				X
10.1.7	Did the Crisis Manager or Incident Commander approve all entries for unknown radiation fields/atmospheres? (ERJA-CMT-1)				X
10.1.8	Did recovery team provide a debriefing to the IC or designee after reentering the affected building or area? (ERJA-CMT-1)				X
10.2	Complete emergency re-entry.				
10.2.1	Did emergency reentry planning consider identification of radiation and/or chemical source term? (1-A26-5500-08.01)	X			
10.2.2	Did emergency reentry planning consider life saving? (1-A26-5500-08.01)	X			
10.2.3	Did the Crisis Manager approve exposures known or anticipated to be greater than the DOE Radiological Emergency Dose Limit? (EPLAN-99, 1-A26-5500-08.01)	X			
10.2.4	Did reentry team members receive a briefing from the IC or designee before reentering the affected building or area? (EPLAN-99, 1-A26-5500-08.01)	X			
10.2.5	Did the Crisis Manager or Incident Commander approve all entries for unknown radiation fields or chemical atmospheres?(EPLAN-99, 1-A26-5500-08.01; ERJA-CMT-1; ERJA-SS-1)	X			
10.2.6	Did reentry team provide a debriefing to the IC or designee after reentering the affected building or area? (ERJA-SS-1; 1-A26-5500-08.01)	X			
10.2.7	Did emergency reentry planning consider identification of radiation/chemical source term? (1-A26-5500-08.01)	X			
10.2.8	Did the HAC Manager verify and confirm adequate levels of individual protective clothing/equipment? (ERJA-HAC-01, 1-A26-500-08.01)	X			
10.2.9	Did Radiological Control Supervisor/Manager identify respiratory protection requirements? (RSPs, 1-A26-5500-08.01)	X			
10.2.10	Did Fire Department treatment personnel use PPE? (1-A26-5500-08.01)	X			
10.2.11	Did emergency workers entering the scene wear PPE? (HSPs, 1-A26-5500-08.01)	X			

Objectives And Sub-Objectives		YES	NO	Not Observed	Not Applicable
11.0	Establish effective control and evaluation of the simulated emergency event.				
11.1.1	Did the controller organization ensure the safe and secure conduct of the participant's actions? (EMG)	X			
11.1.2	Did the controller organization provide timely event information to participants? (EMG)		X		
11.1.3	Did the controller organization prohibit interference by non-participants, evaluators, and observers with participants? (EMG)	X			
11.1.4	Did the role players accurately depict the proper simulation(s) for the participants? (EMG)	X			
11.1.5	Did the control cell staff provide communications with participants that was consistent with the needs presented by the scenario? (EMG)	X			
11.1.6	Did the controller organization provide information as exercise participants earned the information? (EMG)	X			
11.1.7	Did the controller organization use proper radio communications protocol? (EMG)	X			
11.1.8	Was the controller organization adequately staffed and positioned for controlling and conducting the exercise? (EMG)	X			
11.1.9	Did the controller organization conduct the exercise in accordance with the exercise package? (EMG)	X			
11.1.10	Did the controller organization permit exercise participant free-play? (EMG)	X			
11.1.11	Was the evaluator organization adequately staffed and positioned for evaluating the exercise? (EMG)		X		
11.1.12	Did the evaluator organization display an understanding of the boundaries associated with evaluating the exercise against the stated objectives? (EMG)	X			
11.1.13	Was a post-exercise critique conducted to solicit feedback from the exercise participants? (EMG)	X			
11.1.14	Was a formal critique process conducted by the controller and evaluator organizations? (EMG)	X			