

Recommendations to Incorporate Emergency Management Lessons Learned/Best Practices

Into Training



Training
Working
Group

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emi sig
EMERGENCY MANAGEMENT ISSUES
SPECIAL INTEREST GROUP

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Recommendations to Incorporate Emergency Management Lessons Learned/Best Practices into Training

Introduction

DOE O 210.2 Guidance

The Department of Energy (DOE) complex currently collects and disseminates Lessons Learned/Best Practices (LL/BP) under the guidance of *DOE O 210.2: DOE Corporate Operating Experience Program*. In accordance with the order, sites establish and meet certain objectives for LL/BP. Sites can also access applicable LL/BPs for their own EM programs from the DOE Office of Health, Safety, and Security (HSS).

Site representatives currently have distinct LL/BP roles.

Site Representatives	Objective
Emergency Management (EM) program administrators	<ul style="list-style-type: none">• Ensure compliance with the order• Ensure adherence to DOE O 210.2 reporting requirements
Training coordinators	<ul style="list-style-type: none">• Ensure appropriate review of LL/BP• Ensure vetting

LLTG Goals

A Lessons Learned Task Group (LLTG) was formed to work on the Training Working Group's (TWG) Objective #3, "*Develop recommendations for incorporating Emergency Management Lessons Learned/Best Practices into training.*" The goals of the LLTG are to:

- Improve the incorporation and institutionalization of LL/BP into site EM training programs.
 - Recognize the primacy of DOE O 210.2 as it relates to reportable emergencies, accidents, occurrences, other operations-related experiences, exercises, and assessments. The LLTG's efforts to identify effective approaches are not intended to duplicate or replace existing systems or processes within DOE
-

**LLTG Goals
(cont'd.)**

- Identify additional, specifically-focused processes for gathering, disseminating, and institutionalizing LL/BP
 - Contribute to continuous improvement in the area of EM planning and preparedness
-

**LLTG
Objectives**

LLTG objectives include:

- Explore current processes utilized at DOE/National Nuclear Security Administration (NNSA) sites and across the EM community.
 - Analyze the current processes.
 - Make recommendations for improvement.
-

Methodology

Data Collection

The LLTG designed a survey instrument to gather information about what sites are currently doing related to LL/BP. Data were collected from 11 sites, government entities, private industry, and other external sources, including:

- Nuclear Energy Institute (NEI)
 - Department of Homeland Security (DHS)
 - Federal Emergency Management Agency (FEMA)
 - States of Kentucky and Ohio
-

Data Analysis

Data were compared with industry best practices, DOE directives, and DOE guidance to identify common success factors and areas for improvement. This comparison involved the following steps:

Step	Action
1	Review applicable directives and guidance.
2	Identify internal and external sources.
3	Describe how sites document and disseminate information.
4	Describe how sites incorporate information to improve planning and preparedness programs.
5	Provide examples of effective mechanisms to incorporate into site EM training processes.

Identification, Documentation, Dissemination and Integration

Process Overview

DOE-internal and external sites provided information to the LLTG on current practices they use to:

Step	Action
1	Identify or receive LL/BP.
2	Document LL/BP for analysis and consideration of applicability to the site EM program.
3	Disseminate EM LL/BP.
4	Integrate LL/BP into EM program.

Identification of Sources

Most sites actively identify LL/BPs from emergency exercises and drills and seek to improve on these lessons. However, few sites actively look beyond their own sites for applicable LL/BPs. Although sites do utilize Corporate Operating Experience Programs, the information disseminated seldom bears a strong relationship to EM issues.

Survey respondents provided the following sources as examples:

- Emergency exercise and drill critiques and evaluations
 - EM tabletop drill interface discussions
 - Operating experience program reports
 - DOE Office of HSS (hss.infocenter@hq.doe.gov)
 - Department of Homeland Security Lessons Learned Information System
 - EMI SIG meetings, website, and conference calls
 - Federal Emergency Management Agency (FEMA)
 - DOE accident investigation reports
 - Nuclear Energy Institute (NEI) reports
 - Incident reports
 - Internal and external audits of EM (e.g., HS 63)
 - State EM office contacts
-

Documentation for Analysis

Analysis and documentation of examples can be labor intensive. The responsibility to ensure LL/BPs are documented is typically assigned to designated site LL/BP coordinators.

Examples provided of procedures or systems used to document LL/BP varied:

- Required reading LL bulletins related to global issues
EXAMPLE: [LL – Infrastructure Operations](#)
- Exercise/drill After Action Reports (AARs)
- Exercise critique forms
EXAMPLE : [BP – Exercises](#)
- Blue Alert or LL Alert documents
EXAMPLE : [LL – Potential Event Condition](#)
- Corrective Action Reports
EXAMPLE: [LL – Training and Drills, Written Exams](#)
- LL information extracted from internal and external sources
EXAMPLE : [LL – Emergency Facilities and Equipment](#)
- Operating Experience Reports
EXAMPLE : [LL – Operating Experience Program Information System](#)
- DHS LLIS database (the emphasis is on offsite sites)
<https://www.llis.gov/newsletter> (registration required for access)
- Centers for Disease Control and Prevention (CDC) workshops with stakeholder communities
- Fact sheets to share with other communities

Dissemination

It is often hit-or-miss to share information between EM colleagues in the absence of an official mechanism to disseminate LL/BP, yet the importance of promulgating and disseminating LL/BP across the DOE community cannot be stressed enough.

Examples provided of methods used by sites to disseminate information also varied widely.

- LLIS database information disseminated via newsletter and website links to managers and emergency response organization members
EXAMPLE: [BP – Exercises](#)

**Dissemination
(cont'd.)**

- Monthly crisis managers' meetings
EXAMPLE: [LL – Protective Actions and Reentry](#)
- Exercise report dissemination
EXAMPLE: [LL – Fire Department Response, Radiological Risk Mitigation](#)
EXAMPLE: [LL – Liquid Waste Emergency Preparedness Training](#)
- Quality reports from senior managers to EM personnel
EXAMPLE : [LL – Katrina](#)
- Site tracking, analysis, and reporting (STAR) systems
- Emergency Response Site (ERO) requalification sessions, retraining, and supplemental training
EXAMPLE: [BP – EPI and Training](#)
- Quarterly read/sign communiqué systems
EXAMPLE: [LL – Emergency Exercises and Participant Drillmanship](#)
- Tabletop drills
- LL gathered and documented at Centers for Disease Control and Prevention (CDC) Stakeholder Workshops disseminated to participants
- Recruiting and training of field personnel as grassroots conduits to education special interest groups about preparedness and response.
REFERENCE: State of Kentucky Public Health Outreach and Information Network. Contact: BarbaraJFox@ky.gov.
- Nuclear plant summaries of hostile action-based drills collected by a central organization and disseminated to nuclear utilities
EXAMPLE: [LLBP – NEI Program](#)
- Annual emergency planning improvement planning workshops sponsored by the Centers for Disease Control and Prevention (CDC) for States.

**DOE/NNSA
Program
Elements**

Emergency management in DOE/NNSA is organized into 16 program elements.

1. General Requirements
 2. Hazards Survey/Hazards Assessment (Technical Planning Basis)
-

**DOE/NNSA
Program
Elements
(cont'd.)**

-
3. Program Administration
 4. Training and Drills
 5. Exercises
 6. Readiness Assurance
 7. Emergency Response Organization
 8. Offsite Response Interfaces
 9. Emergency Facilities and Equipment
 10. Categorization and Classification
 11. Notifications and Communications
 12. Consequence Assessment
 13. Protective Actions and Reentry
 14. Emergency Medical Support
 15. Emergency Public Information
 16. Termination and Recovery
-

**Integration
with
DOE/NNSA
Program
Elements**

LL/BPs may have primary and secondary relationships with one or more program elements; therefore, it is important to cross reference and associate the LL/BP with all associated elements. Analyzing the LL and linking it with the appropriate EM elements ensures it is disseminated to the right people and applied in the right program areas. For example, one LL/BP may relate to several program elements.

Example	Program Element
Interface between site communicators	8-Offsite Response Interfaces 11-Notifications and Communications
Interface with the ICP <ul style="list-style-type: none"> • EXAMPLE: LL – Protective Actions and Reentry • EXAMPLE: LL – Emergency Facilities and Equipment 	7-Emergency Response Organization 11-Notifications and Communications 16-Termination and Recovery

Integration with the Site's Management System

The directive for DOE/NNSA sites to report and incorporate LL/BPs is stated in the Corporate Operating Experience Program, DOE O 210.2; however, it necessarily does not state how this should be accomplished by each site. It is the site's responsibility to determine whether a LL/BP applies to its operation and how best to integrate it into the site's management system. The site should "institutionalize" any LL/BP that is deemed to be an improvement to its EM and response preparedness program.

Responses from many sites included these examples of institutionalization:

- Incorporate the LL information in response plans, policies, and procedures.
EXAMPLE: [LL – Communication, Radio Room](#)
EXAMPLE: [BP – Exercises](#)
- Upgrade site change management systems to address emergency planning or hazard management issues.
- Supplement Incident Command System (ICS) training modules with LL/BP examples.
EXAMPLE: [Emergency Response Planning](#)
- Adjust documented training plans, methods, specific lessons, and test modules to address changes in qualification and performance of emergency responders.
EXAMPLE: [BP – Training and Drills, ERO Training Enhancement](#)
- Change drill/exercise scenarios and objectives to emphasize LL/BP issues.
EXAMPLE: [BP – Training and Drills, ERO Training Enhancement](#)
- Add or change distribution of human resources.
EXAMPLE: [Emergency Response Planning](#)
- Redesign layout/operation of response facilities.
- Upgrade equipment used for communication and response activities.
- Add performance goals and measures to institute changes suggested by LL or BP.
- Use of Blue Alert to direct organization to integrate a LL
EXAMPLE : [LL – Potential Event Condition](#)
- Use DOE oversight programs and evaluations to verify integration of specific LL/BPs.
EXAMPLE: [LL – Process for Capturing Lessons Learned](#)

Integration through Training Systems

Using Training Systems

Organizations responding to this study shared how emergency management training groups and processes can be effective mechanisms to incorporate and institutionalize LL/BP that pertain to emergency management. Training departments are ideally positioned to disseminate EM LL information throughout the site because of the pivotal role trainers play in overall site planning and preparedness. Their work often goes beyond training and can include development of baseline procedures, checklists, and other job aids.

EXAMPLE: [LL – Protective Actions and Reentry](#)

EXAMPLE: LL – [Annual ERO Refresher Training Evaluation](#)

EXAMPLE: [LL – O151.1C Major Changes](#)

Benefits of Designated EM Training Coordinators

Frequently, various personnel from groups and departments at the sites screen LL/BPs to identify those that pertain to their specific area(s). Having an effective advocate supports effective integration into site emergency plans and ongoing planning and response. Dissemination of the information through designated EM training coordinators is practical because training departments typically:

- Are effective advocates to integrate LL/BPs into existing EM plans;
 - Have a broad overview of the site;
 - Can interface with all departments and not be limited to the specific department involved in screening a particular LL/BP;
 - Have available resources to train ERO personnel;
 - Have access to current trainee rosters and contact information of personnel;
 - Have established procedures to track training compliance and due dates.
-

Responsibilities of EM Training Coordinators

A primary responsibility of EM training coordinators is to screen LL/BP to determine if training is an effective method for integration. This screening process involves analyzing and tracking the data. After analysis, training coordinators determine whether to integrate the data into EM training programs or disseminate it throughout the site.

EXAMPLE: [LL - HILLS Web Application](#)

EXAMPLE: [LL - Process for Capturing Lessons Learned](#)

If...	Then...
Integrating	<ul style="list-style-type: none"> • Incorporate linkage between LL/BP and program element • Ensure LL/BP is adequately addressed through training • Track and document LL/BPs that are relevant to the EM program
Disseminating	<ul style="list-style-type: none"> • Send training bulletins • Develop classroom presentations • Conduct tabletop drills • Send Email updates • Post to internal websites

Integration Using Training

A number of training methodologies can be used when training is determined to be an effective method for integration. Examples provided of training-related methodologies varied.

Training Method	Description or Example
ICS training for support personnel	Develop a training module to address weaknesses in ICS operations and facility interfaces. EXAMPLE: Emergency Response Planning
Formal exercise planning sessions	Ensure involvement of less experienced personnel in the planning process to supplement training with practical interface with experienced planners. EXAMPLE: LL - Observations of Exercise

**Integration
Using Training
(cont'd.)**

Training Method	Description or Example
ERO leadership training	Decision-making under time constraints. EXAMPLE: LL – Protective Actions and Reentry
Supplemental, re-qualification, and refresher training	Supplemental training for select ERO members. EXAMPLE: BP – Training and Drills, ERO Training Enhancement EXAMPLE: LL – O151.1C Major Changes
Drills	EXAMPLE: LL – Emergency Exercises and Participant Drillmanship EXAMPLE: LLBP – NEI Program
Briefings and cross training for offsite organizations	Internal procedural changes developed to correct problems in radio room activities. EXAMPLE: LL – Communication, Radio Room EXAMPLE: LL – Fire Department Response, Radiological Risk Mitigation
New job qualifications	Performance problems of medical support directors during emergency situations addressed by ERO job qualifications. EXAMPLE: BP – Training and Drills, ERO Training Enhancement
Testing	Verification of understanding through testing. EXAMPLE: LL – Annual ERO Refresher Training
Group testing and exam banks	Example: testing developed for ERO decision-makers. EXAMPLE: LL – Training and Drills, Written Exams EXAMPLE: LL – O151.1C Major Changes

Analysis of Trends

Analysis of trends in emergency response performance should be conducted periodically. These may point to additional lessons to be learned about training effectiveness.

EXAMPLE: [Emergency Response Planning](#)

EXAMPLE: [LL – Katrina](#)

EXAMPLE: [LLBP – NEI Program](#)

Additional Recommended Resources

Other sources for emergency management lessons learned external to DOE/NNSA include:

- Department of Homeland Security – LLIS Database
<https://www.llis.gov/newsletter>
 - Nuclear Energy Institute – Hostile Action EP Drills (Nuclear Regulatory Commission)
<http://www.nrc.gov/about-nrc/emerg-preparedness/respond-to-emerg/hostile-action.html>
 - Centers for Disease Control and Prevention
Type “Lessons Learned” in the Search box at the top of the web page for Articles and Information about Lessons Learned on file
<http://www.cdc.gov>
 - Transportation Community Awareness and Emergency Response (TRANSCAER)
TRANSCAER is a voluntary national outreach effort sponsored by chemical manufacturing and transportation industries.
<http://www.transcaer.com/>
 - National Fire Protection Association
Type “Lessons Learned” in the Search box at the top of the web page for Articles and Information about Lessons Learned on file
<http://www.nfpa.org>
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Example List

These Lessons Learned and Best Practices are provided as examples throughout this document.

1. [BP – EPI and Training](#)
 2. [BP – Exercises](#)
 3. [BP – Training and Drills, ERO Training Enhancement](#)
 4. [Emergency Response Planning](#)
 5. [LL – Annual ERO Refresher Training Evaluation](#)
-

**Example List
(cont'd.)**

6. [LL – Infrastructure Operations Emergency Management Lessons Learned Bulletin](#)
 7. [LL – Communication, Radio Room](#)
 8. [LL – Emergency Exercises and Participant Drillmanship](#)
 9. [LL – Emergency Facilities and Equipment](#)
 10. [LL – Fire Department Response, Radiological Risk Mitigation](#)
 11. [LL – HILLS Web Application](#)
 12. [LL – Katrina](#)
 13. [LL – Liquid Waste Emergency Preparedness Training](#)
 14. [LL – O151.1C Major Changes](#)
 15. [LL – Observations of Exercise](#)
 16. [LL – Operating Experience Program Information System](#)
 17. [LL – Potential Event Condition](#)
 18. [LL – Process for Capturing Lessons Learned](#)
 19. [LL – Protective Actions and Reentry](#)
 20. [LL – Training and Drills, Written Exams](#)
 21. [LLBP – NEI Program](#)
-

Example 1: BP – EPI and Training

Category: Emergency Public Information and Training

Type: Best Practice or Lesson Learned

Source: Sandia National Laboratory, New Mexico

Summary: Annual refresher training is provided for emergency spokespersons and technical briefers (contractor and DOE/NNSA personnel) and there are new lessons learned segments included by the instructor in each year's training. Lessons learned are from site exercise experience/performance, industry EPI experience and best practices gathered from annual EMI SIG EPI sessions.

Additional Details: Topics included in refresher training have included: Nuclear industry EPI issues and lessons learned experienced from hostile action exercises; impact of Social Media on emergency communications with the public and media; performance issues involving interface with offsite agencies in JIC activations.

Contact for additional information: Bob Berger, Sandia National Laboratory

Phone: 505-284-9950

Example 2: BP – Exercises

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Exercises

Title: Exercise Critique Form Allows for Extensive Participant Feedback

LL/BP Date: July 20XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: XXXX's Emergency Planning and Preparedness Group utilizes an innovative exercise critique form. This form is split in two parts: the first section asks for recommendations and the action steps needed for improvements, which allows the exercise participant to inject his or her own knowledge and experience to offer a resolution to the issue; the second section requests feedback on exercise design and conduct, which allows for the exercise participant to suggest changes to future preparedness activities. XXXX forwards Part I feedback to the EOC Section Chiefs or filed elements, as applicable. XXXX compiles the assessment factor ratings (Part II) and reports these values in the associated After Action Report.

Genesis for LL – provide:

Root Cause(s):

Effects:

Recommendations/Corrective Actions:

Genesis for BP – explain how it was recognized and promulgated:

Recognized via LASO Assessment of the XXXX Exercise Program.

Hazard (if applicable): N/A

Reference: Attachment of Critique form

Description of method used to communicate LL and BP: Submittal to DHS llis.gov website on 9/16/20XX

Description of process used to incorporate LL and BP into EM training: N/A

Example 3: BP – Training and Drills, ERO Training Enhancement

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Training and Drills

Title: ERO Training Enhancement

LL/BP Date: 7-22-XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: Prepare ERO training and qual program for Medical Support Directors

Genesis for LL – provide:

Root Cause(s):

Effects:

Recommendations/Corrective Actions:

Genesis for BP – explain how it was recognized and promulgated: An assessment of the Emergency Management Program for XXXX revealed an opportunity for improvement in the ERO training process for Medical Support Directors. While personnel assigned to the function were provided training, there was no established Job Code with recognized qualifications for the position of Medical Support Director which could result in inconsistency in execution of duties. A potential issue report was entered in the corrective action system to transmit the information to the responsible director for screening, categorization, classification, cause analysis and assignment of the appropriate manager for investigation, correction dissemination and follow-up.

Hazard (if applicable):

Reference:

Description of method used to communicate LL and BP: Information disseminated and corrective action assignments developed by the responsible manager. Issue and corrective actions documented and tracked to completion in the corrective action system. Automated follow up notifications

Description of process used to incorporate LL and BP into EM training: A Job Code for Medical Support Director was developed with the following qualification requirements:

Initial Training – 6 hours

EP340000 Emergency Management Orientation for Support Personnel

EP030000 ERO Logkeeping

EP300000 ERO Information Management

NIMS 100 Incident Command

Initial Drill

Annual Requal Training – 5 hours

Requal Drill

EP360000 ERO Annual Requalification Class

Example 4: Emergency Response Planning

Title: Emergency Response Planning Must Consider Radiological Hazards

Date: April 3, 200XX

Identifier: 2002-RL-HNF-0018

Lessons Learned Statement: To ensure adequate preparation and readiness to implement the Incident Command System during an emergency, facilities with radiological hazards must include radiological planning in selection, inventory, and surveillance of emergency equipment; development of procedures; and facility emergency response organization training.

Discussion of Activities: Emergency Preparedness assessments performed at radiological facilities at Waste Management and Analytical Services Projects identified radiological planning weaknesses that could negatively impact response to a facility radiological emergency. Weaknesses were identified related to management of emergency equipment, emergency response kits, required surveillances, personnel training, and accuracy of Building Emergency Plans.

Analysis: Involvement of multiple organizations (e.g., Emergency Preparedness, Operations, Radiological Control, and Environmental) in managing the emergency management program was considered a major factor in the inconsistencies identified - including overlapping and unclear roles and responsibilities.

Emergency Program requirements clearly identify comprehensive emergency response program requirements, including selection and management of emergency equipment and materials. Those requirements prescribe that emergency planning and preparation will evaluate postulated and credible facility emergencies considering all hazards, including chemical and radiological, and that those emergencies will be documented in the Facility Hazards Assessment. Program requirements prescribe that facilities shall select emergency response equipment and supplies based on the results of the Hazards Assessment and that the required equipment will be listed in the Building Emergency Plan (BEP). Facilities are then required to develop routine surveillances, including inventories, of the equipment and materials listed in the BEP. Facilities are also required to provide annual training to ERO personnel (including HPTs) germane to their associated emergency response duties. Training should include facility specific details.

Weaknesses identified during assessments included:

- Radiological emergency kit inventories did not adequately consider the Facility Hazards Assessment and postulated facility emergencies.
- Some facilities relied on another facility for emergency response resources, yet clear understanding between the facilities was not formalized.

- Building Emergency Plans were inaccurate and inconsistent in listing Emergency Response Kits.
- Personnel interviews at the facility indicated many types of response kits are maintained, and although personnel interviewed clearly understood which kits they are responsible for during an emergency, they could not clearly communicate which kits were designated "emergency response equipment" (i.e., required by the Hazards Assessment and listed in the BEP).
- Facilities did not use appropriate rationale to determine when an emergency response kit is needed, and at times, too many emergency response kits were developed and maintained.
- Maintaining kits is resource intensive and facilities commonly keep redundant sets both inside and outside the facility. The number, location, and contents of kits needs to consider the two basic types of emergency scenarios - take cover, and evacuation. Typically, a take cover response co-locates response personnel (HPTs) with their routine-use equipment and materials, and therefore a kit may not be necessary in those areas. Another set of emergency kit(s) are commonly located away from the event scene where personnel would gather/report during evacuation emergency. Contents of those kits may rely upon routine-use equipment without considering the potential inability to re-enter the facility during an emergency.
- Surveillance programs did not clearly and consistently establish kit inventories or prescribe exchanging critical items with shelf-lives.
- ERO personnel (including HPTs) are required to receive annual training germane to their associated emergency response duties [DOE/RL 94-02, 12.2.2.1.3]. HPTs interviewed were not always aware of emergency kit locations or kit contents associated with emergency response. Some HPT's were not aware of facility boundaries defined by emergency response documents, facility specific Emergency Action Levels, or expected actions required to establish habitability of staging areas or other areas.
- Training for Emergency Response Organization - Support Personnel targets general employees and the operation of the Incident Command System. It includes only some of the information essential for HPTs. Facility Orientation, Facility Emergency Hazards Information Checklist (FEHIC) training, and newly developed facility specific ERO training did not contain HPT specific information essential or germane to facility specific HPT duties and emergency response.

Recommended Actions: Sections 6.0 Consequence Assessment, 11.2 Emergency Equipment, and 12.0 Training and Drills of DOE/RL 94-02 should be reviewed to ensure that they are specific enough about expected radiological emergency planning to ensure that the roles and responsibilities of multiple organizations with overlapping roles are clearly defined.

DOE facilities with radiological hazards and Facility Emergency Response Organizations should assess compliance with the following emergency response objectives:

- A. Emergency equipment and supplies, including kits, are required to be developed as a result of postulated and credible emergencies in the Facility

Hazards Assessment:

- Should be minimized
- Should be strategically located in case response personnel are isolated from routine use equipment. Locations should consider expected routes of travel and destinations
- Must be clearly labeled
- Contents must consider both decontamination of personnel and general emergency response surveys and monitoring needs
- Contents must consider radiological equipment identified by DOE/RL-94-02, 11.2
- Must be listed in the Building Emergency Plan (use caution in the level of detail included to avoid setting an audit trap should equipment be moved without updating the plan).
- Must be included in a surveillance program where inventories are listed and routinely inspected for readiness

B. Facility Specific Emergency Response Organization Training must:

- Involve Health Physics Technicians
- Define facility specific Emergency Action Levels and radiological factors
- Identify facility specific boundaries and criteria to escalate emergency classifications
- Identify radiological kit locations and contents
- Identify special considerations for equipment locations, such as respirators or backup equipment or instrumentation not stored in kits
- Identify assistance or resources available from other facilities or support groups
- Identify primary and backup decontamination resources and stations
- Identify expected radiological monitoring to ensure habitability of the Incident Command Post, Event Scene, and Staging Areas.

C. Where one facility relies on another facility or group for emergency equipment/resource needs, Memoranda of Understanding should be developed to ensure all involved organizations clearly communicate and understand those relationships.

Estimated Savings/Cost Avoidance: N/A

Priority Descriptor: BLUE/Information

Work/Function: Emergency Management; Radiation Protection

XXXX-Defined Category: N/A

Hazard(s): Personal Exposure - Radiation/Contamination

ISM Core Function(s): Feedback and Improvement

Originator: XXXX

Contact: XXXX

Authorized Derivative Classifier: Not required

Reviewing Official: John Bickford

Keywords: emergency, response, planning, building emergency plan, radiological protection,

References: WMP01-RC-WA-RP-187, WMP Radiological Control Emergency Response DOE O 151, Comprehensive Emergency Management System DOE/RL 94-02, Hanford Emergency Response Plan HNF-RD-7647, Emergency Preparedness Program Requirements

Example 5: LL – Annual ERO Refresher Training Evaluation

DRAFT DRAFT DRAFT

The 20XX Annual ERO Refresher Training has two different groups. Group I covers the XXXX Concept of Operations for those that have not been formally refreshed in this areas since 20XX. The concept of operations presentation has been revised to incorporate changes since 20XX.

Group II covers lessons learned that have application to XXX. These latter items are the timeliness and effectiveness of emergency notifications and actions (based on the Virginia Tech shootings) and continuing Headquarters concerns on real-time inventory knowledge.

Those listed in Group I (see the attachment) need to review the Concept of Operations and the Lessons Learned. If you are not listed in Group I in the attachment, you are to do only the Group II Lessons Learned refresher.

Group I Refresher

Emergency Management Program Concept of Operations

- The current version (posted on the EMT training page) has been updated with changes from the earlier version of several years ago.
- The test is appended to the pdf file attached to the refresher transmittal email.
- Pay attention to pages 4, 7, 8, 10-12, 21-23, 26, and 30-31.

Group II Refresher (Test Located in Attachment 2)

Lessons Learned from Operational Emergencies

- Virginia Tech – VT Management assumed the first action was an isolated event and did not consider further protective actions.
- Numerous reports from DOE sites involving lack of cognizance of or control of hazards.

Once you have answered the questions on the respective tests, return your completed evaluation to your site Emergency Management Training point-of-contact as follows:

<u>Site</u>	<u>Training Point-of-Contact</u>
XXXX	XXXX

Lessons Learned:

1. Virginia Tech (Security)

Event Summary - The Virginia Tech massacre was a school shooting that unfolded as two attacks about two hours apart on April 16, 2007, on the Virginia Tech campus in Blacksburg, Virginia, United States. Seung-Hui Cho killed 32 people and wounded many more before committing suicide, making it the deadliest shooting in modern U.S. history.

Two people were killed in a separate incident at a dormitory on the campus about two hours before the more significant Norris Hall incident, at around 7:15 a.m. At the time of the later shootings at Norris Hall, police were investigating a "person of interest" in the dormitory shootings. But the man -- a non-student who knew one of the victims -- was later determined to have no link to Cho. 30 more people were killed by Cho 2 hours later at the Norris Hall classroom facility.

Cho, a South Korean who had moved to the U.S. at age 8, was a senior majoring in English at Virginia Tech. In 2005, he had been accused of stalking two female students and was declared mentally ill by a Virginia special justice. At least one professor had asked him to seek counseling.

Lessons Learned:

- Pay attention to obvious significant changes in behavior from co-workers or long term changes that might imply irrational conduct. Provide awareness training.
- When a violent incident occurs, assure all employees are notified and that personnel and security maintain a higher alert status until situation has been fully resolved.
- Develop protocols to deal with insider adverse actions.

2. Importance of Good Communication Habits (DOE Lessons Learned Webpage - ID: 2007-RL-HNF-0022)

Developing and maintaining good habits in the use of 3-way communication and repeat back communication is vital to ensuring the message that is provided has been clearly understood and acknowledged. Without this assurance, breakdowns in communications will occur. Refer to the MSRE fluorine release with the amount of hazardous material miscommunicated.

3. Unlisted Chemical Hazards

Event Summaries – Incidents at ORNL (Building 4500-S) and events at other DOE sites involve radiological or explosive/shock sensitive materials or other chemicals being found that were not tracked by inventory management systems had the potential for resulting in serious safety hazards.

Lessons Learned:

- Federal personnel should assure that the contractor response complies with accepted safety practices.
- Federal personnel should review the USQ or USQ-like processes after the event to determine why the process failed.

References:

1. Independent Oversight Inspection of Emergency Management at the Los Alamos Site Office and Los Alamos National Laboratory, February 2007
2. Independent Oversight Emergency Management Inspection of the Sandia National Laboratories, July 2006
3. Independent Oversight Inspection of Emergency Management at the Savannah River Site, February 2006
4. Inspection of Environment, Safety, and Health Programs at the Stanford Linear Accelerator Center, January 2007
5. Independent Oversight Environment, Safety, and Health Inspection of the Environmental Management Program at the Oak Ridge National Laboratory, June 2006 (FWENC/TWPC Finding)
6. BLUE - Discovery & HAZMAT deactivation of potentially explosive aged Tollens Reagent (2007-X10UTB-0008) - 4/16/2007
7. Hazmat Inventory Greater than Analyzed Causes PISA (B-2004-OR-BJCBOP-0402) - 4/29/2004
8. Potential for Glovebox Deflagration from Volatile Organic Compounds Inadequately Documented in Safety Analysis (SRS) (2006-SR-WSRC-0040) - 9/12/2006
9. Reevaluate Hazards When the Scope of Work Changes (LL-2005-LLNL-02) - 3/30/2005
10. Sodium Reaction Results in Tarp Fire (Y-2006-OR-BJCEPC-0201) - 2/16/2006
11. Unexpected Chemical Reaction During Waste Management Activities (B-2005-OR-X10UTB-0301) - 3/10/2004

ATTACHMENT 1
GROUP I LISTING
CONCEPT OF OPERATIONS REFRESHER TRAINING

Names listed here.

ATTACHMENT 2
GROUP II LESSONS LEARNED TEST

Name:

Date:

Badge No.:

Site/Location:

1. In the event of encountering or observing a possible deranged individual or seeing a suspicious armed individual, whom does your site/location procedure require you to notify first?
Response:
2. In the event of a security response to your location, do you initiate personal contact with the security team or you wait for them?
3. If you ever hear what sounds like weapons being fired or some other major security activity, should you: circle the best answer
 - a. Move away from the area
 - b. Look to see what is happening
 - c. Go to see if you can assist security
4. What is your best response after discovering a previously unidentified or unlisted hazard in a facility during an inspection or during an operation or other activity? (Whom does your site/location procedure require you to notify first?)
Response:
5. After discovering an unlisted hazard, you should immediately: Circle the correct answer(s).
 - a. Slowly and carefully move a safe distance away, say 50 feet and await the response team.
 - b. Pick up the container and carry it to the nearest outside dumpster.
 - c. Stay at the door to the room/facility to prevent anyone from entering.
6. In general where are the facility listings of the hazardous inventories located at your site as required by your procedures?
Response:

Example 6: LL – Infrastructure Operations Emergency Management Lessons Learned Bulletin

LL No.: XXXX-EM-08-I70-002

Applicability: EOC Cadre

Date: Reference: July 7, 20XX PR-PTS-08-00IIO

Title: X-I 020 EOC Controlled Documents of Condition:

During the most recent MBWA of X-I020 EOC controlled documents, a controlled copy of a procedure was missing from a controlled copy procedure manual.

Lessons Learned: Procedures are periodically found to be missing after the EOC has been activated for an exercise or an emergency. This normally occurs when an EOC cadre member needs to use a controlled copy procedure and removes it from the controlled copy procedure notebook. In order to prevent this situation from recurring, the controlled procedure needs to be copied and placed back in the procedure notebook. The copy needs to be identified as Information Use. Another option is to leave the controlled copy procedure in the procedure notebook while it is being used.

This Lessons Learned bulletin serves to remind EOC cadre members that controlled documents need to be maintained in accordance with plant procedures.

Example 7: LL – Communication, Radio Room

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: 151.1C, Communication

Title: Radio Room

LL/BP Date: Nov. 20XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: Radio Room Procedures for basic activities, basic positions (radio console operator, logger, etc.) did not have procedures and training. People who were less familiar with the positions participated during an exercise and took the most conservative actions. Checklists and procedures were not available. They are now!

Genesis for LL – provide:

Root Cause(s): Untrained personnel without procedures

Effects: Inaccurate documentation & information sharing

Recommendations/Corrective Actions: Procedures, training and exercises

Genesis for BP – explain how it was recognized and promulgated: Audit

Hazard (if applicable): Overly conservative protective actions stopped work unnecessarily

Reference: HS 63 Independent Oversight Inspection of Emergency management at LASO & LANL, Volume III

Description of method used to communicate LL and BP: audit report

Description of process used to incorporate LL and BP into EM training: Procedures written, OJT, briefing, cross training.

Example 8: LL – Emergency Exercises and Participant Drillmanship

The following is a Complex Lessons Learned. Managers should review this alert for generic implications and share this information with employees and subcontractors who perform similar work.

Title: Emergency Exercises and Participant Drillmanship

Identifier: L-2004-

Date: 06/15/20XX

Lesson Learned: Good drillmanship is an essential part in demonstrating the emergency preparedness of the XXXX.

Discussion: During a recent emergency preparedness exercise, a lack of drillmanship by the responders had a negative impact on the evaluation of the exercise. In issue 1, it was perceived that the Incident Commander and other first responders did not demonstrate a sense of urgency associated with the emergency medical treatment of a simulated injured employee located within the immediate isolation zone. The sense of urgency demonstrated by the responders was directly influenced by the lack of appropriate information. Neither the visual clues provided by the simulated injured employee nor the verbal input from the event scene controller indicated that a time-urgent response was required. The Incident Commander also added to the perceived lack of urgency by taking very deliberate actions as a result of being observed/evaluated. Issue 2 involved source term information being reported by the participants that was inconsistent with the exercise design package and was acted upon by the Emergency Response Organization. The exercise was designed to involve a catastrophic release of HF liquid resulting in a complete discharge of the cylinder prior to any mitigative actions by responders. During the exercise, information was reported by responders that resulted in a different understanding of the event.

Analysis: Exercise participants should respond to the scenario as if it were an actual event - not to their perception of what criteria the evaluator is grading. Drillmanship is defined as the responders verbalizing their thought process for evaluation purposes and reacting to simulations or event information as if it were an actual event. Proper drillmanship has a direct impact on individual performance as well as the overall success of the activity.

Recommended Actions: When participating in emergency response drills or exercises, responders should comply with the following drillmanship guidelines:

- Safety, respond as if simulated conditions are real.

- When appropriate, verbalize your actions for the evaluator and controllers. Recognize that a controller or evaluator is not a mind reader and that you will only be given credit for actions for which the evaluator is aware.
- Do not simulate response actions that are not identified in the exercise limitation statement. If in doubt about what to demonstrate, ask a controller.
- Do not pre-stage at your emergency response location.
- If an exercise scenario seems incredible, do not complain. Recognize that the exercise is based on objectives.
- Follow all controller instructions. If you do not agree with what the controller is telling you, do not argue. Complete the required actions and make a note to discuss your disagreement at the end of the exercise during the participant's critique.
- Do not engage in casual conversation with the controllers or evaluators. If you are asked a question, give a short, concise answer. If you are busy and cannot immediately respond, indicate that, but provide an answer at the earliest possible time.
- If possible, maintain a log of your actions. Many times this will be the only documentation of activities that may have been missed by a controller or evaluator.

Originator:

Validator:

Contact:

Name of Authorized Derivative Classifier:

Name of Reviewing Official:

References: DOE Order 151.1B, Comprehensive Emergency Management System

Example 9: LL – Emergency Facilities and Equipment

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Emergency Facilities and Equipment

Title: Radio Frequency Interference Triggers Nuclear Plant Shutdown

LL/BP Date: 8/4/XX

Source:

- Internal, specify (e.g., exercise, incident, assessment, other)
- External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: Signals from a worker's digital camera caused an emergency shutdown of the reactor at the XXXX Power Plant. When the camera was turned on too close to a control panel, RFI interfered with a boiler pump that provided water to four steam generators, causing the water levels to drop, this resulting in an emergency shutdown. With so many wireless electronic devices (cell phones, wireless phones, digital cameras, blackberries, global positioning systems, etc.) in use today, RFI is a concern that must be addressed particularly in areas where safety equipment may be affected.

Genesis for LL – provide:

Root Cause(s): Failure to consider the potential effect of RFI interference on advanced analog and microprocessor based instrument and control systems

Effects: Emergency shutdown of the reactor at the XXXX Power Plant

Recommendations/Corrective Actions: If items such as digital cameras, cell phones, blackberries, and other wireless electronic devices are permitted in areas where safety systems are installed (e.g., control rooms), it is essential that adequate shielding is in place to suppress random emissions. Consideration should be given to banning wireless items in areas where critical safety equipment is installed, if possible.

Genesis for BP – explain how it was recognized and promulgated:

Hazard (if applicable):

Reference:

Description of method used to communicate LL and BP: Internal and External Operating Experience Information (OEI) is used to capture and share noteworthy practices or innovative approaches to promote repeat application, or adverse work

practices or experiences to avoid recurrence. OEI provided by DOE was received, screened for applicability and disseminated through the company LL process.

Description of process used to incorporate LL and BP into EM training:

Applicable LL is reviewed by our Training Coordinator for integration into the training process which includes initial and requalification training for all Emergency Response Organization (ERO) members. Supplemental training is also provided as appropriate to capture LL to avoid recurrence of undesirable work practices and promote implementation of more effective methods of operation.

Example 10: LL – Fire Department Response, Radiological Risk Mitigation

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Fire Department Response

Title: Radiological risk mitigation

LL/BP Date: June 20XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: Mitigation of the radiological risk at the scene was excellent by SRSFD. Each of three fallen B-25 Boxes was covered with a tarp, and all easily identified radiological waste was retrieved and placed in the open B-25 prior to being covered by a tarp. The IC asked his personnel to multi task by aiding the victims and attempting to identify the containers and stabilize the waste. The radiological waste was put back into the B-25 Box by using a "Pike Pole" in order not to come in direct contact with the waste.

Genesis for LL – provide:

Root Cause(s): Inadequate radiological control

Effects:

Recommendations/Corrective Actions:

Genesis for BP – explain how it was recognized and promulgated:

Hazard (if applicable):

Reference:

Description of method used to communicate LL and BP:

Description of process used to incorporate LL and BP into EM training:

Example 11: LL – HILLS Web Application

Hanford Information Lessons Learned Sharing (HILLS) Web Application

Presented by Gerry Whitney
Fluor Hanford Inc.

Screen shot of HILLS Homepage

Hanford

HILLS/OPEX

Welcome to:

Hanford Information Lessons Learned Sharing (HILLS)

This web site contains Hanford related operating experience articles including: Lessons Learned, Safety Bulletins, Recalls, and other types of information. The information can be used for preventing recurrence of events and sharing good work practices.

Search

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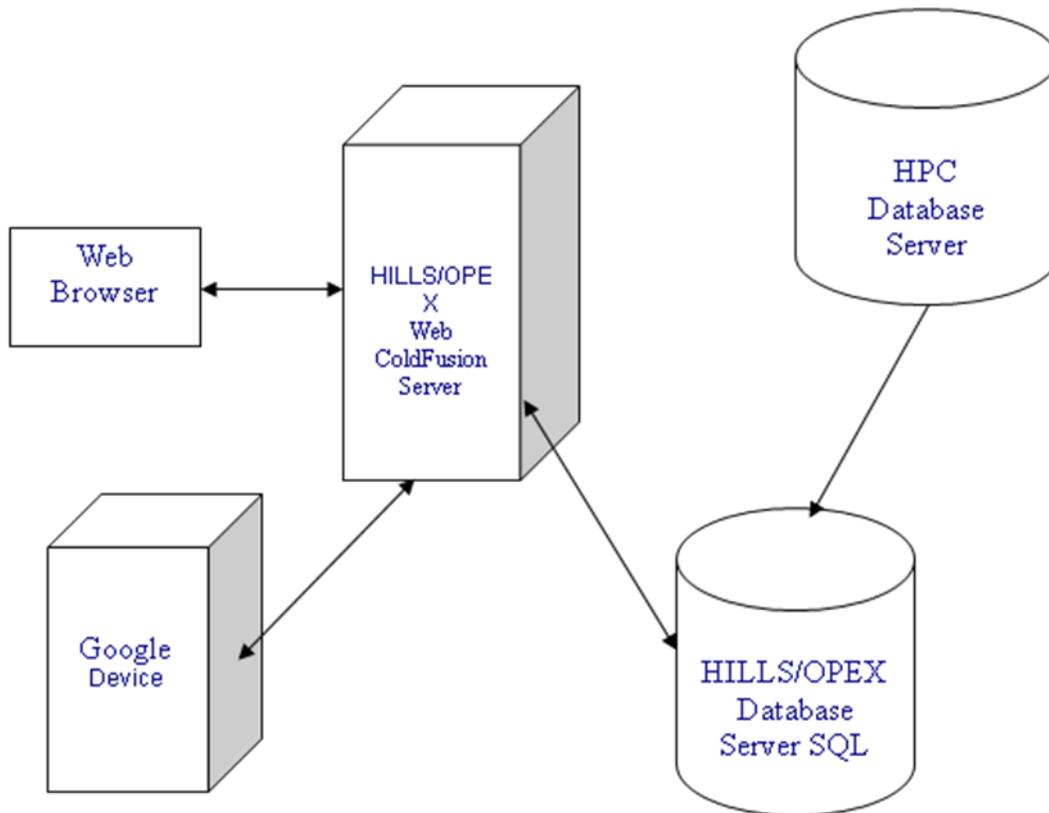
General Software Description:

- HILLS runs on the Hanford Local Area (Secure) Network
- ASP Application with a MS-SQL Database backend
- Database used to capture Meta Data for each Article
- Interconnects Users Info to HLAN system
- Outputs to E-mail System for Distribution
- Searchable Adobe© PDF File Type used for Articles
- Google© Application used for the Main Search
- Secondary Searches through the Meta Data
- Feedback System Connects to MS Excel©
- ODBC Connection to MS Access©

This is an ASP application with a MS-SQL database backend. The current OPEX/HILLS application is an extensively modified version of this original code. Modifications to allow the application to be deployed on the HLAN (Hanford Local Area network) as well as customer requirements were performed as directed by the FH (Fluor Hanford) customer.

Microsoft SQL Server is a relational database management system (RDBMS) produced by Microsoft. Its primary query language is Transact-SQL, an implementation of the ANSI/ISO standard Structured Query Language (SQL) used by both Microsoft and Sybase.

Machine and Database Interface:



Main Functions:

- OPEX Repository
- Retrieval System
- User Interactive Functions
- Subscription Service
- Distribution System
- Feedback System
- Administrator Function

Example 12: LL – Katrina

Chapter Five: Lessons Learned

This government will learn the lessons of Hurricane Katrina. We are going to review every action and make necessary changes so that we are better prepared for any challenge of nature, or act of evil men, that could threaten our people.

President George W. Bush, September 15, 2005¹

The preceding chapters described the dynamics of the response to Hurricane Katrina. While there were numerous stories of great professionalism, courage, and compassion by Americans from all walks of life, our task here is to identify the critical challenges that undermined and prevented a more efficient and effective Federal response. In short, what were the key failures during the Federal response to Hurricane Katrina?

We ask this question not to affix blame. Rather, we endeavor to find the answers in order to identify systemic gaps and improve our preparedness for the next disaster — natural or man-made. We must move promptly to understand precisely what went wrong and determine how we are going to fix it.

After reviewing and analyzing the response to Hurricane Katrina, we identified seventeen specific lessons the Federal government has learned. These lessons, which flow from the critical challenges we encountered, are depicted in the accompanying text box.

Fourteen of these critical challenges were highlighted in the preceding Week of Crisis section and range from high-level policy and planning issues (e.g., the Integrated Use of Military Capabilities) to operational matters (e.g., Search and Rescue).² Three other challenges — Training, Exercises, and Lessons Learned; Homeland Security Professional Development and Education; and Citizen and Community Preparedness — are interconnected to the others but reflect measures and institutions that improve our preparedness more broadly.

These three will be discussed in the Report's last chapter, Transforming National Preparedness.

Some of these seventeen critical challenges affected all aspects of the Federal response. Others had an impact on a specific, discrete operational capability. Yet each, particularly when taken in aggregate, directly affected the overall efficiency and effectiveness of our efforts. This chapter summarizes the challenges that ultimately led to the lessons we have learned. Over one hundred recommendations for corrective action flow from these lessons and are outlined in detail in Appendix A of the Report.

Critical Challenge: National Preparedness

Our current system for homeland security does not provide the necessary framework to manage the challenges posed by 21st Century catastrophic threats. But to be clear, it is unrealistic to think that even the strongest framework can perfectly anticipate and overcome all challenges in a crisis. While we have built a response system that ably handles the demands of a typical hurricane season, wildfires, and other limited natural and man-made disasters, the system clearly has structural flaws for addressing catastrophic events. During the Federal response to Katrina³, four critical flaws in our national preparedness became evident: Our processes for unified management of the national response; command and control structures within the Federal government; knowledge of our preparedness plans; and regional planning and coordination. A discussion of each follows below.

Unified Management of the National Response Effective incident management of catastrophic events requires coordination of a wide range of organizations and activities, public and private. Under the current response framework, the Federal government merely coordinates resources to meet the needs of local and State governments based upon their requests for assistance. Pursuant to the National Incident Management System (NIMS) and the National Response Plan (NRP), Federal and State agencies build their command and coordination structures to support the local command and coordination structures during an emergency. Yet this framework does not address the conditions of a catastrophic event with large scale competing needs, insufficient resources, and the absence of functioning local governments. These limitations proved to be major inhibitors to the effective marshalling of Federal, State, and local resources to respond to Katrina.

Soon after Katrina made landfall, State and local authorities understood the devastation was serious but, due to the destruction of infrastructure and response capabilities, lacked the ability to communicate with each other and coordinate a response. Federal officials struggled to perform responsibilities generally conducted by State and local authorities, such as the rescue of citizens stranded by the rising floodwaters, provision of law enforcement, and evacuation of the remaining population of New Orleans, all without the benefit of prior planning or a functioning State/local incident command structure to guide their efforts.

The Federal government cannot and should not be the Nation's first responder. State and local governments are best positioned to address incidents in their jurisdictions and will always play a large role in disaster response. But Americans have the right to expect that the Federal government will effectively respond to a catastrophic incident.

When local and State governments are overwhelmed or incapacitated by an event that has reached catastrophic proportions, only the Federal government has the resources and capabilities to respond. The Federal government must therefore plan, train, and equip to meet the requirements for responding to a catastrophic event.

Command and Control

Within the Federal Government In terms of the management of the Federal response, our architecture of command and control mechanisms as well as our existing structure of plans did not serve us well. Command centers in the Department of Homeland Security (DHS) and elsewhere in the Federal government had unclear, and often overlapping, roles and responsibilities that were exposed as flawed during this disaster. The Secretary of Homeland Security, is the President's principal Federal official for domestic incident management, but he had difficulty coordinating the disparate activities of Federal departments and agencies. The Secretary lacked real-time, accurate situational awareness of both the facts from the disaster area as well as the on-going response activities of the Federal, State, and local players.

The National Response Plan's Mission Assignment process proved to be far too bureaucratic to support the response to a catastrophe. Melvin Holden, Mayor President of Baton Rouge, Louisiana, noted that, requirements for paper work and form completions hindered immediate action and deployment of people and materials to assist in rescue and recovery efforts.ö4 Far too often, the process required numerous time consuming approval signatures and data processing steps prior to any action, delaying the response. As a result, many agencies took action under their own independent authorities while also responding to mission assignments from the Federal Emergency Management Agency (FEMA), creating further process confusion and potential duplication of efforts.

This lack of coordination at the Federal headquarters level reflected confusing organizational structures in the field.

As noted in the Week of Crisis chapter, because the Principal Federal Official (PFO) has coordination authority but lacks statutory authority over the Federal Coordinating Officer (FCO), inefficiencies resulted when the second PFO was appointed. The first PFO appointed for Katrina did not have this problem because, as the Director of FEMA, he was able to directly oversee the FCOs because they fell under his supervisory authority.5 Future plans should ensure that the PFO has the authority required to execute these responsibilities.

Moreover, DHS did not establish its NRP-specified disaster site multi-agency coordination center, the Joint Field Office (JFO)until after the height of the crisis.6 Further, without subordinate JFO structures to coordinate Federal response actions near the major incident sites, Federal response efforts in New Orleans were not initially well coordinated.

Lastly, the Emergency Support Functions (ESFs) did not function as envisioned in the NRP. First, since the ESFs do not easily integrate into the NIMS Incident Command System (ICS) structure, competing systems were implemented in the field û one based on the ESF structure and a second based on the ICS. Compounding the coordination problem, the agencies assigned ESF responsibilities did not respect the role of the PFO. As VADM Thad Allen stated, the ESF structure

currently prevents us from coordinating effectively because if agencies responsible for their respective ESFs do not like the instructions they are receiving from the PFO at the field level, they go to their headquarters in Washington to get decisions reversed. This is convoluted, inefficient, and inappropriate during emergency conditions. Time equals lives saved

Knowledge and Practice in the Plans

At the most fundamental level, part of the explanation for why the response to Katrina did not go as planned is that key decision makers at all levels simply were not familiar with the plans. The NRP was relatively new to many at the Federal, State, and local levels before the events of Hurricane Katrina.⁸ This lack of understanding of the national plan not surprisingly resulted in ineffective coordination of the Federal, State, and local response.

Additionally, the NRP itself provides only the base plan outlining the overall elements of a response: Federal departments and agencies were required to develop supporting operational plans and standard operating procedures (SOPs) to integrate their activities into the national response.⁹ In almost all cases, the integrating SOPs were either non-existent or still under development when Hurricane Katrina hit. Consequently, some of the specific procedures and processes of the NRP were not properly implemented, and Federal partners had to operate without any prescribed guidelines or chains of command.

Furthermore, the JFO staff and other deployed Federal personnel often lacked a working knowledge of NIMS or even a basic understanding of ICS principles. As a result, valuable time and resources were diverted to provide other job ICS training to Federal personnel assigned to the JFO. This inability to place trained personnel in the JFO had a detrimental effect on operations, as there were not enough qualified persons to staff all of the required positions. We must require all incident management personnel to have a working knowledge of NIMS and ICS principles.

Insufficient Regional Planning and Coordination

The final structural flaw in our current system for national preparedness is the weakness of our regional planning and coordination structures. Guidance to governments at all levels is essential to ensure adequate preparedness for major disasters across the Nation. To this end, the Interim National Preparedness Goal (NPG) and Target Capabilities List (TCL) can assist Federal, State, and local governments to: identify and define required capabilities and what levels of those capabilities are needed; establish priorities within a resource constrained environment; clarify and understand roles and responsibilities in the national network of homeland security capabilities; and develop mutual aid agreements.

Since incorporating FEMA in March 2003, DHS has spread FEMA's planning and coordination capabilities and responsibilities among DHS/Es other offices and bureaus. DHS also did not maintain the personnel and resources of FEMA's regional offices.¹⁰ FEMA's ten regional offices are responsible for assisting multiple States

and planning for disasters, developing mitigation programs, and meeting their needs when major disasters occur. During Katrina, eight out of the ten FEMA Regional Directors were serving in an acting capacity and four of the six FEMA headquarters operational division directors were serving in an acting capacity. While qualified acting directors filled in, it placed extra burdens on a staff that was already stretched to meet the needs left by the vacancies.

Additionally, many FEMA programs that were operated out of the FEMA regions, such as the State and local liaison program and all grant programs, have moved to DHS headquarters in Washington. When programs operate out of regional offices, closer relationships are developed among all levels of government, providing for stronger relationships at all levels. By the same token, regional personnel must remember that they represent the interests of the Federal government and must be cautioned against losing objectivity or becoming mere advocates of State and local interests. However, these relationships are critical when a crisis situation develops, because individuals who have worked and trained together daily will work together more effectively during a crisis.

Critical Challenge: Integrated Use of Military Capabilities

The Federal response to Hurricane Katrina demonstrates that the Department of Defense (DOD) has the capability to play a critical role in the Nation's response to catastrophic events. During the Katrina response, DOD's both National Guard and active duty forces demonstrated that along with the Coast Guard it was one of the only Federal departments that possessed real operational capabilities to translate Presidential decisions into prompt, effective action on the ground. In addition to possessing operational personnel in large numbers that have been trained and equipped for their missions, DOD brought robust communications infrastructure, logistics, and planning capabilities.

Since DOD, first and foremost, has its critical overseas mission, the solution to improving the Federal response to future catastrophes cannot simply be to let the Department of Defense do it. Yet DOD capabilities must be better identified and integrated into the Nation's response plans.

The Federal response to Hurricane Katrina highlighted various challenges in the use of military capabilities during domestic incidents. For instance, limitations under Federal law and DOD policy caused the active duty military to be dependent on requests for assistance. These limitations resulted in a slowed application of DOD resources during the initial response. Further, active duty military and National Guard operations were not coordinated and served two different bosses, one the President and the other the Governor.

Limitations to Department of Defense Response Authority

For Federal domestic disaster relief operations, DOD currently uses a "pull" system that provides support to civil authorities based upon specific requests from local, State, or Federal authorities.¹¹ This process can be slow and bureaucratic.

Assigning active duty military forces or capabilities to support disaster relief efforts usually requires a request from FEMA,¹² an assessment by DOD on whether the request can be supported, approval by the Secretary of Defense or his designated representative, and a mission assignment for the military forces or capabilities to provide the requested support. From the time a request is initiated until the military force or capability is delivered to the disaster site requires a 21-step process.¹³ While this overly bureaucratic approach has been adequate for most disasters, in a catastrophic event like Hurricane Katrina the delays inherent in this “pull” system of responding to requests resulted in critical needs not being met.¹⁴ One could imagine a situation in which a catastrophic event is of such a magnitude that it would require an even greater role for the Department of Defense. For these reasons, we should both expedite the mission assignment request and the approval process, but also define the circumstances under which we will push resources to State and local governments absent a request.

LESSON LEARNED: The Federal government should work with its homeland security partners in revising existing plans, ensuring a functional operational structure including within regions and establishing a clear, accountable process for all National preparedness efforts. In doing so, the Federal government must:

- Ensure that Executive Branch agencies are organized, trained, and equipped to perform their response roles.
- Finalize and implement the National Preparedness Goal.

Unity of Effort among Active Duty Forces and the National Guard

In the overall response to Hurricane Katrina, separate command structures for active duty military and the National Guard hindered their unity of effort. U.S. Northern Command (USNORTHCOM) commanded active duty forces, while each State government commanded its National Guard forces. For the first two days of Katrina response operations, USNORTHCOM did not have situational awareness of what forces the National Guard had on the ground. Joint Task Force Katrina (JTF-Katrina) simply could not operate at full efficiency when it lacked visibility of over half the military forces in the disaster area.¹⁵ Neither the Louisiana National Guard nor JTF-Katrina had a good sense for where each other’s forces were located or what they were doing. For example, the JTF-Katrina Engineering Directorate had not been able to coordinate with National Guard forces in the New Orleans area. As a result, some units were not immediately assigned missions matched to on-the-ground requirements. Further, FEMA requested assistance from DOD without knowing what State National Guard forces had already deployed to fill the same needs.¹⁶

Also, the Commanding General of JTF-Katrina and the Adjutant Generals (TAGs) of Louisiana and Mississippi had only a coordinating relationship, with no formal command relationship established. This resulted in confusion over roles and responsibilities between National Guard and Federal forces and highlights the need for a more unified command structure.¹⁷

Structure and Resources of the National Guard As demonstrated during the Hurricane Katrina response, the National Guard Bureau (NGB) is a significant joint force provider for homeland security missions. Throughout the response, the NGB provided continuous and integrated reporting of all National Guard assets deployed in both a Federal and nonfederal status to USNORTHCOM, Joint Forces Command, Pacific Command, and the Assistant Secretary of Defense for Homeland Defense. This is an important step toward achieving unity of effort. However, NGB's role in homeland security is not yet clearly defined. The Chief of the NGB has made a recommendation to the Secretary of Defense that NGB be chartered as a joint activity of the DOD.¹⁸ Achieving these efforts will serve as the foundation for National Guard transformation and provide a total joint force capability for homeland security missions.¹⁹

Critical Challenge: Communications

Hurricane Katrina destroyed an unprecedented portion of the core communications infrastructure throughout the Gulf Coast region. As described earlier in the Report, the storm debilitated 911 emergency call centers, disrupting local emergency services.²⁰ Nearly three million customers lost telephone service. Broadcast communications, including 50 percent of area radio stations and 44 percent of area television stations, similarly were affected.²¹ More than 50,000 utility poles were toppled in Mississippi alone, meaning that even if telephone call centers and electricity generation capabilities were functioning, the connections to the customers were broken.²² Accordingly, the communications challenges across the Gulf Coast region in Hurricane Katrina's wake were more a problem of basic operability,²³ than one of equipment or system interoperability.²⁴ The complete devastation of the communications infrastructure left emergency responders and citizens without a reliable network across which they could coordinate.²⁵

Although Federal, State, and local agencies had communications plans and assets in place, these plans and assets were neither sufficient nor adequately integrated to respond effectively to the disaster.²⁶ Many available communications assets were not utilized fully because there was no national, State-wide, or regional communications plan to incorporate them. For example, despite their contributions to the response effort, the U.S. Department of Agriculture (USDA) Forest Service's radio cache, the largest civilian cache of radios in the United States had additional radios available that were not utilized.²⁷

LESSON LEARNED: The Departments of Homeland Security and Defense should jointly plan for the Department of Defense's support of Federal response activities as well as those extraordinary circumstances when it is appropriate for the Department of Defense to lead the Federal response. In addition, the Department of Defense should ensure the transformation of the National Guard is focused on increased integration with active duty forces for homeland security plans and activities.

Federal, State, and local governments have not yet completed a comprehensive strategy to improve operability and interoperability to meet the needs of emergency

responders.²⁸ This inability to connect multiple communications plans and architectures clearly impeded coordination and communication at the Federal, State, and local levels. A comprehensive, national emergency communications strategy is needed to confront the challenges of incorporating existing equipment and practices into a constantly changing technological and cultural environment.²⁹

Critical Challenge: Logistics and Evacuation

The scope of Hurricane Katrina's devastation, the effects on critical infrastructure in the region, and the debilitation of State and local response capabilities combined to produce a massive requirement for Federal resources. The existing planning and operational structure for delivering critical resources and humanitarian aid clearly proved to be inadequate to the task. The highly bureaucratic supply processes of the Federal government were not sufficiently flexible and efficient, and failed to leverage the private sector and 21st Century advances in supply chain management.

Throughout the response, Federal resource managers had great difficulty determining what resources were needed, what resources were available, and where those resources were at any given point in time. Even when Federal resource managers had a clear understanding of what was needed, they often could not readily determine whether the Federal government had that asset, or what alternative sources might be able to provide it. As discussed in the Week of Crisis chapter, even when an agency came directly to FEMA with a list of available resources that would be useful during the response, there was no effective mechanism for efficiently integrating and deploying these resources. Nor was there an easy way to find out whether an alternative source, such as the private sector or a charity, might be able to better fill the need. Finally, FEMA's lack of a real-time asset tracking system — a necessity for successful 21st Century businesses left Federal managers in the dark regarding the status of resources once they were shipped.³⁰

Our logistics system for the 21st Century should be a fully transparent, four tiered system. First, we must encourage and ultimately require State and local governments to pre-contract for resources and commodities that will be critical for responding to all hazards. Second, if these arrangements fail, affected State governments should ask for additional resources from other States through the Emergency Management Assistance Compact (EMAC) process. Third, if such interstate mutual aid proves insufficient, the Federal government, having the benefit of full transparency, must be able to assist State and local governments to move commodities regionally. But in the end, FEMA must be able to supplement and, in catastrophic incidents, supplant State and local systems with a fully modern approach to commodity management.

With respect to evacuation, fundamentally a State and local responsibility, the Hurricane Katrina experience demonstrates that the Federal government must be prepared to fulfill the mission if State and local efforts fail.

Unfortunately, a lack of prior planning combined with poor operational coordination generated a weak Federal performance in supporting the evacuation of those most vulnerable in New Orleans and throughout the Gulf Coast following Katrina's landfall. The Federal effort lacked critical elements of prior planning, such as evacuation routes, communications, transportation assets, evacuee processing, and coordination with State, local, and nongovernmental officials receiving and sheltering the evacuees. Because of poor situational awareness and LESSON LEARNED:

The Department of Homeland Security, in coordination with State and local governments and the private sector, should develop a modern, flexible, and transparent logistics system. This system should be based on established contracts for stockpiling commodities at the local level for emergencies and the provision of goods and services during emergencies. The Federal government must develop the capacity to conduct large-scale logistical operations that supplement and, if necessary, replace State and local logistical systems by leveraging resources within both the public sector and the private sector.

LESSON LEARNED: The Department of Homeland Security should review our current laws, policies, plans, and strategies relevant to communications. Upon the conclusion of this review, the Homeland Security Council, with support from the Office of Science and Technology Policy, should develop a National Emergency Communications Strategy that supports communications operability and interoperability.

Communications throughout the evacuation operation, FEMA had difficulty providing buses through ESF-1, Transportation, (with the Department of Transportation as the coordinating agency).³¹ FEMA also had difficulty delivering food, water, and other critical commodities to people waiting to be evacuated, most significantly at the Superdome.³²

Critical Challenge: Search and Rescue

After Hurricane Katrina made landfall, rising floodwaters stranded thousands in New Orleans on rooftops, requiring a massive civil search and rescue operation. The Coast Guard, FEMA Urban Search and Rescue (US&R) Task Forces,³³ and DOD forces,³⁴ in concert with State and local emergency responders from across the country, courageously combined to rescue tens of thousands of people. With extraordinary ingenuity and tenacity, Federal, State, and local emergency responders plucked people from rooftops while avoiding urban hazards not normally encountered during waterborne rescue.³⁵

Yet many of these courageous lifesavers were put at unnecessary risk by a structure that failed to support them effectively. The overall search and rescue effort demonstrated the need for greater coordination between US&R, the Coast Guard, and military responders who, because of their very different missions, train and operate in very different ways. For example, Urban Search and Rescue (US&R) teams had a particularly challenging situation since they are neither trained nor

equipped to perform water rescue. Thus they could not immediately rescue people trapped by the flood waters.³⁶

Furthermore, lacking an integrated search and rescue incident command, the various agencies were unable to effectively coordinate their operations.³⁷ This meant that multiple rescue teams were sent to the same areas, while leaving others uncovered.³⁸ When successful rescues were made, there was no formal direction on where to take those rescued.³⁹ Too often rescuers had to leave victims at drop-off points and landing zones that had insufficient logistics, medical, and communications resources, such as atop the I-10 cloverleaf near the Superdome.⁴⁰

Critical Challenge: Public Safety and Security

State and local governments have a fundamental responsibility to provide for the public safety and security of their residents. During disasters, the Federal government provides law enforcement assistance only when those resources are overwhelmed or depleted.⁴¹ Almost immediately following Hurricane Katrina's landfall, law and order began to deteriorate in New Orleans. The city's overwhelmed police force, 70 percent of which were themselves victims of the disaster did not have the capacity to arrest every person witnessed committing a crime, and many more crimes were undoubtedly neither observed by police nor reported. The resulting lawlessness in New Orleans significantly impeded and in some cases temporarily halted relief efforts and delayed restoration of essential private sector services such as power, water, and telecommunications.⁴²

The Federal law enforcement response to Hurricane Katrina was a crucial enabler to the reconstitution of the New Orleans Police Department's command structure as well as the larger criminal justice system. Joint leadership from the Department of Justice and the Department of Homeland Security integrated the available Federal assets into the remaining local police structure and divided the Federal law enforcement agencies into corresponding New Orleans Police Department districts.

While the deployment of Federal law enforcement capability to New Orleans in a dangerous and chaotic environment significantly contributed to the restoration of law and order, pre-event collaborative planning between LESSON LEARNED: The Department of Transportation, in coordination with other appropriate departments of the Executive Branch, must also be prepared to conduct mass evacuation operations when disasters overwhelm or incapacitate State and local governments.

LESSON LEARNED: The Department of Homeland Security should lead an interagency review of current policies and procedures to ensure effective integration of all Federal search and rescue assets during disaster response.

Federal, State, and local officials would have improved the response. Indeed, Federal, State, and local law enforcement officials performed admirably in spite of a system that should have better supported them. Local, State, and Federal law enforcement were ill prepared and ill positioned to respond efficiently and effectively to the crisis.

In the end, it was clear that Federal law enforcement support to State and local officials required greater coordination, unity of command, collaborative planning and training with State and local law enforcement, as well as detailed implementation guidance. For example, the Federal law enforcement response effort did not take advantage of all law enforcement assets embedded across Federal departments and agencies. Several departments promptly offered their assistance, but their law enforcement assets were incorporated only after weeks had passed, or not at all.⁴³

Coordination challenges arose even after Federal law enforcement personnel arrived in New Orleans. For example, several departments and agencies reported that the procedures for becoming deputized to enforce State law were cumbersome and inefficient. In Louisiana, a State Police attorney had to physically be present to swear in Federal agents. Many Federal law enforcement agencies also had to complete a cumbersome Federal deputization process.⁴⁴

New Orleans was then confronted with a rapid influx of law enforcement officers from a multitude of States and jurisdictions each with their own policies and procedures, uniforms, and rules on the use of force which created the need for a command structure to coordinate their efforts.⁴⁵

Hurricane Katrina also crippled the region's criminal justice system. Problems such as a significant loss of accountability of many persons under law enforcement supervision,⁴⁶ closure of the court systems in the disaster,⁴⁷ and hasty evacuation of prisoners⁴⁸ were largely attributable to the absence of contingency plans at all levels of government.

Critical Challenge: Public Health and Medical Support

Hurricane Katrina created enormous public health and medical challenges, especially in Louisiana and Mississippi States with public health infrastructures that ranked 49th and 50th in the Nation, respectively.⁴⁹ But it was the subsequent flooding of New Orleans that imposed catastrophic public health conditions on the people of southern Louisiana and forced an unprecedented mobilization of Federal public health and medical assets. Tens of thousands of people required medical care. Over 200,000 people with chronic medical conditions, displaced by the storm and isolated by the flooding, found themselves without access to their usual medications and sources of medical care. Several large hospitals were totally destroyed and many others were rendered inoperable. Nearly all smaller health care facilities were shut down. Although public health and medical support efforts restored the capabilities of many of these facilities, the region's health care infrastructure sustained extraordinary damage.⁵⁰

Most local and State public health and medical assets were overwhelmed by these conditions, placing even greater responsibility on federally deployed personnel. Immediate challenges included the identification, triage and treatment of acutely sick and injured patients; the management of chronic medical conditions in large

numbers of evacuees with special health care needs; the assessment, communication and mitigation of public health risk; and the provision of assistance to State and local health officials to quickly reestablish health care delivery systems and public health infrastructures.⁵¹

Despite the success of Federal, State, and local personnel in meeting this enormous challenge, obstacles at all levels reduced the reach and efficiency of public health and medical support efforts. In addition, the coordination of Federal assets within and across agencies was poor. The cumbersome process for the authorization of reimbursement for medical and public health services provided by Federal agencies created substantial delays and frustration among health care providers, patients and the general public.⁵² In some cases, significant delays slowed the arrival of Federal assets to critical locations.⁵³ In other cases, large numbers of Federal assets were deployed, only to be grossly underutilized.⁵⁴ Thousands of medical volunteers were sought by the Department of Health and LESSON LEARNED: The Department of Justice, in coordination with the Department of Homeland Security, should examine Federal responsibilities for support to State and local law enforcement and criminal justice systems during emergencies and then build operational plans, procedures, and policies to ensure an effective Federal law enforcement response.

Human Services (HHS), and though they were informed that they would likely not be needed unless notified otherwise, many volunteers reported that they received no message to that effect.⁵⁵ These inefficiencies were the products of a fragmented command structure for medical response; inadequate evacuation of patients; weak State and local public health infrastructures;⁵⁶ insufficient pre-storm risk communication to the public;⁵⁷ and the absence of a uniform electronic health record system.

Critical Challenge: Human Services

Disasters, especially those of catastrophic proportions, produce many victims whose needs exceed the capacity of State and local resources. These victims who depend on the Federal government for assistance fit into one of two categories: (1) those who need Federal disaster-related assistance, and (2) those who need continuation of government assistance they were receiving before the disaster, plus additional disaster-related assistance. Hurricane Katrina produced many thousands of both categories of victims.⁵⁸

The Federal government maintains a wide array of human service programs to provide assistance to special-needs populations, including disaster victims.⁵⁹ Collectively, these programs provide a safety net to particularly vulnerable populations.

The Emergency Support Function 6 (ESF-6) Annex to the NRP assigns responsibility for the emergency delivery of human services to FEMA. While FEMA is the coordinator of ESF-6, it shares primary agency responsibility with the American Red Cross.⁶⁰ The Red Cross focuses on mass care (e.g. care for people in shelters), and

FEMA continues the human services components for ESF-6 as the mass care effort transitions from the response to the recovery phase.⁶¹ The human services provided under ESF-6 include: counseling; special-needs population support; immediate and short-term assistance for individuals, households, and groups dealing with the aftermath of a disaster; and expedited processing of applications for Federal benefits.⁶² The NRP calls for reducing duplication of effort and benefits, to the extent possible to include streamlining assistance as appropriate.⁶³ Prior to Katrina's landfall along the Gulf Coast and during the subsequent several weeks, Federal preparation for distributing individual assistance proved frustrating and inadequate. Because the NRP did not mandate a single Federal point of contact for all assistance and required FEMA to merely coordinate assistance delivery, disaster victims confronted an enormously bureaucratic, inefficient, and frustrating process that failed to effectively meet their needs. The Federal government's system for distribution of human services was not sufficiently responsive to the circumstances of a large number of victims many of whom were particularly vulnerable who were forced to navigate a series of complex processes to obtain critical services in a time of extreme duress. As mentioned in the preceding chapter, the Disaster Recovery Centers (DRCs) did not provide victims single point access to apply for the wide array of Federal assistance programs.

Critical Challenge: Mass Care and Housing

Hurricane Katrina resulted in the largest national housing crisis since the Dust Bowl of the 1930s. The impact of this massive displacement was felt throughout the country, with Gulf residents relocating to all fifty States and the LESSON LEARNED: In coordination with the Department of Homeland Security and other homeland security partners, the Department of Health and Human Services should strengthen the Federal government's capability to provide public health and medical support during a crisis. This will require the improvement of command and control of public health resources, the development of deliberate plans, an additional investment in deployable operational resources, and an acceleration of the initiative to foster the widespread use of interoperable electronic health records systems.

LESSON LEARNED: The Department of Health and Human Services should coordinate with other departments of the Executive Branch, as well as State governments and non-governmental organizations, to develop a robust, comprehensive, and integrated system to deliver human services during disasters so that victims are able to receive Federal and State assistance in a simple and seamless manner. In particular, this system should be designed to provide victims a consumer oriented, simple, effective, and single encounter from which they can receive assistance.

District of Columbia.⁶⁴ Prior to the storm's landfall, an exodus of people fled its projected path, creating an urgent need for suitable shelters. Those with the willingness and ability to evacuate generally found temporary shelter or housing. However, the thousands of people in New Orleans who were either unable to move due to health reasons or lack of transportation, or who simply did not choose to

comply with the mandatory evacuation order, had significant difficulty finding suitable shelter after the hurricane had devastated the city.⁶⁵

Overall, Federal, State, and local plans were inadequate for a catastrophe that had been anticipated for years. Despite the vast shortcomings of the Superdome and other shelters, State and local officials had no choice but to direct thousands of individuals to such sites immediately after the hurricane struck. Furthermore, the Federal government's capability to provide housing solutions to the displaced Gulf Coast population has proved to be far too slow, bureaucratic, and inefficient.

The Federal shortfall resulted from a lack of interagency coordination to relocate and house people. FEMA's actions often were inconsistent with evacuee's needs and preferences. Despite offers from the Departments of Veterans Affairs (VA), Housing and Urban Development (HUD) and Agriculture (USDA) as well as the private sector to provide thousands of housing units nationwide, FEMA focused its housing efforts on cruise ships and trailers, which were expensive and perceived by some to be a means to force evacuees to return to New Orleans.⁶⁶

HUD, with extensive expertise and perspective on large-scale housing challenges and its nation-wide relationships with State public housing authorities, was not substantially engaged by FEMA in the housing process until late in the effort. ⁶⁷ FEMA's temporary and long-term housing efforts also suffered from the failure to pre-identify workable sites and available land and the inability to take advantage of housing units available with other Federal agencies.

Critical Challenge: Public Communications

The Federal government's dissemination of essential public information prior to Hurricane Katrina's Gulf landfall is one of the positive lessons learned. The many professionals at the National Oceanic and Atmospheric Administration (NOAA) and the National Hurricane Center worked with diligence and determination in disseminating weather reports and hurricane track predictions as described in the Pre-landfall chapter. This includes disseminating warnings and forecasts via NOAA Radio and the internet, which operates in conjunction with the Emergency Alert System (EAS).⁶⁸ we can be certain that their efforts saved lives. However, more could have been done by officials at all levels of government. For example, the EAS, a mechanism for Federal, State and local officials to communicate disaster information and instructions was not utilized by State and local officials in Louisiana, Mississippi or Alabama prior to Katrina's landfall.⁶⁹

Further, without timely, accurate information or the ability to communicate, public affairs officers at all levels could not provide updates to the media and to the public. It took several weeks before public affairs structures, such as the Joint Information Centers, were adequately resourced and operating at full capacity. In the meantime, Federal, State, and local officials gave contradictory messages to the public, creating confusion and feeding the perception that government sources lacked credibility. On September 1, conflicting views of New Orleans emerged with positive statements by some Federal officials that contradicted a more desperate

picture painted by reporters in the streets. 70 The media, operating 24/7, gathered and aired uncorroborated information which interfered with ongoing emergency response efforts.71 The Federal public communications and public affairs response proved inadequate and ineffective.

LESSON LEARNED: Using established Federal core competencies and all available resources, the Department of Housing and Urban Development, in coordination with other departments of the Executive Branch with housing stock, should develop integrated plans and bolstered capabilities for the temporary and long-term housing of evacuees. The American Red Cross and the Department of Homeland Security should retain responsibility and improve the process of mass care and sheltering during disasters.

LESSON LEARNED: The Department of Homeland Security should develop an integrated public communications plan to better inform, guide, and reassure the American public before, during, and after a catastrophe. The Department of Homeland Security should enable this plan with operational capabilities to deploy coordinated public affairs teams during a crisis.

Critical Challenge: Critical Infrastructure and Impact Assessment

Hurricane Katrina had a significant impact on many sectors of the region's critical infrastructure especially the energy sector.72 The Hurricane temporarily caused the shutdown of most crude oil and natural gas production in the Gulf of Mexico as well as much of the refining capacity in Louisiana, Mississippi, and Alabama. [M]ore than ten percent of the Nation's imported crude oil enters through the Louisiana Offshore Oil Port⁷³ adding to the impact on the energy sector. Additionally, eleven petroleum refineries, or one-sixth of the Nation's refining capacity, were shut down.74 Across the region more than 2.5 million customers suffered power outages across Louisiana, Mississippi, and Alabama.75

While there were successes, the Federal government's ability to protect and restore the operation of priority national critical infrastructure was hindered by four interconnected problems. First, the NRP-guided response did not account for the need to coordinate critical infrastructure protection and restoration efforts across the Emergency Support Functions (ESFs). The NRP designates the protection and restoration of critical infrastructure as essential objectives of five ESFs: Transportation; Communications; Public Works and Engineering; Agriculture; and Energy.76

Although these critical infrastructures are necessary to assist in all other response and restoration efforts, there are seventeen critical infrastructure and key resource sectors whose needs must be coordinated across virtually every ESF during response and recovery.77 Second, the Federal government did not adequately coordinate its actions with State and local protection and restoration efforts. In fact, the Federal government created confusion by responding to individualized requests in an inconsistent manner.78 Third, Federal, State, and local officials responded to Hurricane Katrina without a comprehensive understanding of the interdependencies of the critical infrastructure sectors in each geographic area and the potential

national impact of their decisions. For example, an energy company arranged to have generators shipped to facilities where they were needed to restore the flow of oil to the entire mid-Atlantic United States. However, FEMA regional representatives diverted these generators to hospitals.

While lifesaving efforts are always the first priority, there was no overall awareness of the competing important needs of the two requests. Fourth, the Federal government lacked the timely, accurate, and relevant ground-truth information necessary to evaluate which critical infrastructures were damaged, inoperative, or both. The FEMA teams that were deployed to assess damage to the regions did not focus on critical infrastructure and did not have the expertise necessary to evaluate protection and restoration needs.⁷⁹

The Interim National Infrastructure Protection Plan (NIPP) provides strategic level guidance for all Federal, State, and local entities to use in prioritizing infrastructure for protection.⁸⁰ However, there is no supporting implementation plan to execute these actions during a natural disaster. Federal, State, and local officials need an implementation plan for critical infrastructure protection and restoration that can be shared across the Federal government, State and local governments, and with the private sector, to provide them with the necessary background to make informed preparedness decisions with limited resources.

Critical Challenge: Environmental Hazards and Debris Removal

The Federal clean-up effort for Hurricane Katrina was an immense undertaking. The storm impact caused the spill of over seven million gallons of oil into Gulf Coast waterways. Additionally, it flooded three Superfund⁸¹ sites in the New Orleans area, and destroyed or compromised numerous drinking water facilities and wastewater treatment plants along the Gulf Coast.⁸² The storm's collective environmental damage, while not creating the toxic soup portrayed in the media, nonetheless did create a potentially hazardous environment for emergency responders and the general public.⁸³ In response, the Environmental Protection Agency (EPA) and the Coast Guard jointly led an interagency environmental assessment and recovery effort, cleaning up the seven million gallons of oil and resolving over 2,300 reported cases of pollution.⁸⁴

LESSON LEARNED: The Department of Homeland Security, working collaboratively with the private sector, should revise the National Response Plan and finalize the Interim National Infrastructure Protection Plan to be able to rapidly assess the impact of a disaster on critical infrastructure. We must use this knowledge to inform Federal response and prioritization decisions and to support infrastructure restoration in order to save lives and mitigate the impact of the disaster on the Nation.

While this response effort was commendable, Federal officials could have improved the identification of environmental hazards and communication of appropriate warnings to emergency responders and the public. For example, the relatively small number of personnel available during the critical week after landfall were unable to

conduct a rapid and comprehensive environmental assessment of the approximately 80 square miles flooded in New Orleans, let alone the nearly 93,000 square miles affected by the hurricane.⁸⁵

Competing priorities hampered efforts to assess the environment. Moreover, although the process used to identify environmental hazards provides accurate results, these results are not prompt enough to provide meaningful information to responders. Furthermore, there must be a comprehensive plan to accurately and quickly communicate this critical information to the emergency responders and area residents who need it. ⁸⁶ Had such a plan existed, the mixed messages from Federal, State, and local officials on the reentry into New Orleans could have been avoided.

Debris Removal

State and local governments are normally responsible for debris removal. However, in the event of a disaster in which State and local governments are overwhelmed and request assistance, the Federal government can provide two forms of assistance: debris removal by the U.S. Army Corps of Engineers (USACE) or other Federal agencies, or reimbursement for locally contracted debris removal.⁸⁷ Hurricane Katrina created an estimated 118 million cubic yards of debris. In just five months, 71 million cubic yards of debris have been removed from Louisiana, Mississippi, and Alabama. In comparison, it took six months to remove the estimated 20 million cubic yards of debris created by Hurricane Andrew.⁸⁸

However, the unnecessarily complicated rules for removing debris from private property hampered the response.⁸⁹

In addition, greater collaboration among Federal, State, and local officials as well as an enhanced public communication program could have improved the effectiveness of the Federal response.

Critical Challenge: Managing Offers of Foreign Assistance and Inquiries Regarding Affected Foreign Nationals

Our experience with the tragedies of September 11th and Hurricane Katrina underscored that our domestic crises have international implications. Soon after the extent of Hurricane Katrina's damage became known, the United States became the beneficiary of an incredible international outpouring of assistance. One hundred fifty-one (151) nations and international organizations offered financial or material assistance to support relief efforts.⁹⁰ Also, we found that among the victims were foreign nationals who were in the country on business, vacation, or as residents.

Not surprisingly, foreign governments sought information regarding the safety of their citizens.

We were not prepared to make the best use of foreign support. Some foreign governments sought to contribute aid that the United States could not accept or did

not require. In other cases, needed resources were tied up by bureaucratic red tape.⁹¹ But more broadly, we lacked the capability to prioritize and integrate such a large quantity of foreign assistance into the ongoing response. Absent an implementation plan for the prioritization and integration of foreign material assistance, valuable resources went unused, and many donor countries became frustrated.⁹²

While we ultimately overcame these obstacles amidst the crisis, our experience underscores the need for pre-crisis planning.

LESSON LEARNED: The Department of Homeland Security, in coordination with the Environmental Protection Agency, should oversee efforts to improve the Federal government's capability to quickly gather environmental data and to provide the public and emergency responders the most accurate information available, to determine whether it is safe to operate in a disaster environment or to return after evacuation. In addition, the Department of Homeland Security should work with its State and local homeland security partners to plan and to coordinate an integrated approach to debris removal during and after a disaster.

Nor did we have the mechanisms in place to provide foreign governments with whatever knowledge we had regarding the status of their nationals. Despite the fact that many victims of the September 11, 2001, tragedy were foreign nationals, the NRP does not take into account foreign populations (e.g. long-term residents, students, businessmen, tourists, and foreign government officials) affected by a domestic catastrophe. In addition, Federal, State, and local emergency response officials have not included assistance to foreign nationals in their response planning.

Many foreign governments, as well as the family and friends of foreign nationals, looked to the Department of State for information regarding the safety and location of their citizens after Hurricane Katrina. The absence of a central system to manage and promptly respond to inquires about affected foreign nationals led to confusion.⁹³

Critical Challenge: Non-governmental Aid

Over the course of the Hurricane Katrina response, a significant capability for response resided in organizations outside of the government. Non-governmental and faith-based organizations, as well as the private sector all made substantial contributions. Unfortunately, the Nation did not always make effective use of these contributions because we had not effectively planned for integrating them into the overall response effort.

Even in the best of circumstances, government alone cannot deliver all disaster relief. Often, non-governmental organizations (NGOs) are the quickest means of providing local relief, but perhaps most importantly, they provide a compassionate, human face to relief efforts. We must recognize that NGOs play a fundamental role in response and recovery efforts and will contribute in ways that are, in many

cases, more efficient and effective than the Federal government's response. We must plan for their participation and treat them as valued and necessary partners.

The number of volunteer, nonprofit, faith-based, and private sector entities that aided in the Hurricane Katrina relief effort was truly extraordinary. Nearly every national, regional, and local charitable organization in the United States, and many from abroad, contributed aid to the victims of the storm. Trained volunteers from member organizations of the National Volunteer Organizations Active in Disaster (NVOAD), the American Red Cross, Medical Reserve Corps (MRC), Community Emergency Response Team (CERT), as well as untrained volunteers from across the United States, deployed to Louisiana, Mississippi, and Alabama.

Government sponsored volunteer organizations also played a critical role in providing relief and assistance. For example, the USA Freedom Corps persuaded numerous non-profit organizations and the Governor's State Service Commissions to list their hurricane relief volunteer opportunities in the USA Freedom Corps volunteer search engine. The USA Freedom Corps also worked with the Corporation for National and Community Service, which helped to create a new, people driven Katrina Resource Center to help volunteers connect their resources with needs on the ground.⁹⁴ In addition, 14,000 Citizen Corps volunteers supported response and recovery efforts around the country.⁹⁵ This achievement demonstrates that seamless coordination among government agencies and volunteer organizations is possible when they build cooperative relationships and conduct joint planning and exercises before an incident occurs.⁹⁶

Faith-based organizations also provided extraordinary services. For example, more than 9,000 Southern Baptist Convention of the North American Mission Board volunteers from forty-one states served in Texas, Louisiana, Mississippi, Alabama, and Georgia. These volunteers ran mobile kitchens and recovery sites.⁹⁷ Many smaller, faith-based organizations, such as the Set Free Indeed Ministry in Baton Rouge, Louisiana, brought comfort and offered shelter to the survivors. They used their facilities and volunteers to distribute donated supplies to displaced persons and to meet their immediate needs.⁹⁸ Local churches independently established hundreds of pop-up shelters to house storm victims.⁹⁹

LESSON LEARNED: The Department of State, in coordination with the Department of Homeland Security, should review and revise policies, plans, and procedures for the management of foreign disaster assistance. In addition, this review should clarify responsibilities and procedures for handling inquiries regarding affected foreign nationals.

More often than not, NGOs successfully contributed to the relief effort in spite of government obstacles and with almost no government support or direction. Time and again, government agencies did not effectively coordinate relief operations with NGOs. Often, government agencies failed to match relief needs with NGO and private sector capabilities. Even when agencies matched non-governmental aid with an identified need, there were problems moving goods, equipment, and people into the disaster area. For example, the government relief effort was unprepared to

meet the fundamental food, housing, and operational needs of the surge volunteer force.

LESSON LEARNED: The Federal response should better integrate the contributions of volunteers and nongovernmental organizations into the broader national effort. This integration would be best achieved at the State and local levels, prior to future incidents. In particular, State and local governments must engage NGOs in the planning process, credential their personnel, and provide them the necessary resource support for their involvement in a joint response.

Example 13: LL – Liquid Waste Emergency Preparedness Training

Type: Lesson Learned X or Best Practice

DOE/NNSA EM Program Element: Liquid Waste Emergency Preparedness Training

Title: Improved Drill Props

LL/BP Date: May 20XX

Source: Internal – Emergency Exercise (Drill)

Description: Organizations that simulate an emergency event should consider using drill props that most resemble the actual equipment used.

Discussion and Analysis: In May of this year LWO began the practice of using a punctured 55 gal. drum filled with water to simulate a material handling accident.

Drill Scenario: Material leaking from a 55 gallon drum was identified in the drill scenario as oxalic acid. Clean water was used to simulate the chemical. The drill event simulated the puncture of the drum by a fork lift. The contents of the drum began to spill onto the pavement and splashed a near by operator. The operator then proceeded to the nearest safety shower and began a simulated 15 minute flush/wash-down. (The safety shower was activated but the operator did not get underneath the water). As the operator continued to flush the simulated chemical from his person, the operator noticed the spill from the punctured drum advancing down the pavement in his direction. The operator then abandoned the safety shower and proceeded uphill of the spill path. The operator located another safety shower and again began a 15 minute flush. As the operator exited the scene he noted that the simulated oxalic acid was mixing with the water from the safety shower. This in turn increased the size of the spill.

Recommended Actions: This exercise demonstrated the uncertainty in determining the grade of the land. The safety shower that was set up for this unloading area was set up at what appeared to be level to, or above grade, of this unloading area. It is recommended that when setting up a safety shower for an unloading area, conduct a water flow test or have the area surveyed to determine runoff direction.

Corrective Actions: The safety shower for this unloading area was moved. Grade level determinations were conducted for other unloading areas.

Communications: The lessons learned for this event was communicated through the written drill report for this exercise and shared with applicable personnel for consideration in future

Example 14: LL – O151.1C Major Changes

O 151.1C, Comprehensive Emergency Management
Major changes from O 151.1B
ERO Refresher Training

1. 15 minutes to categorize and notify DOE of an Operational Emergency (OE).
2. Recommends coordination with LEPC for facilities that can have large on-site and off-site impacts
3. Recommends adding protective actions for commercial hazards that regularly pass by DOE sites on trucks or trains and that may impact doe sites.
4. EPHA Changes:
 - If radioactive material quantities (RQs) are less than the Category 3 thresholds listed in DOE STD-1027, no EPHA analysis need be done
 - Any chemical with V.P. of 1 mm or less can be excluded
 - Any chemical of NFPA code 3 or 4 must have an EPHA analysis
 - Any chemical of code 3 based solely on cryogenic hazard is excluded from EPHA analysis
 - Lab scale quantity 5 gal for liquid or 40# for solids or 10# for gases. Less than lab scale is excluded from EPHA analysis. Some exceptions exist, see pg 15, Appendix A, Vol. II.
 - Concurrent chemical releases from malevolent acts or catastrophic events (e.g., chemical mixtures that form as a result of the event) need not be analyzed as a mixture. Consider only the single chemicals or pre-event chemical mixtures. Quantitative analysis of below lab-scale multiple source releases are not warranted.
5. If a release to water or ground based-pathways can have a time-urgent impact, then they should be included in the EPHA.
6. All analyses must contain all necessary information to permit an auditor to understand and independently reproduce the consequence results.
7. After potential consequences have been determined, Protective Actions must be developed consistent with the time available to implement the proposed actions.
8. Off-site status –if the public can gain unescorted access to an area, that area should be considered an “off-site” location for purposes of emergency class definition unless it can be assured they can be controlled and evacuated within 1 hour of an emergency declaration, App C, pg 84. Any non-DOE activity or facility on a DOE site is considered as “off-site” for purposes of emergency class definition unless it can be assured they can be controlled and evacuated within 1 hour of an emergency declaration.
9. Non-radiological material (chemical, biological, etc.) protective action thresholds have the following hierarchy - AEGLs will be used before ERPG and ERPGs before TEELs or IDLHs.

O 151.1C, Comprehensive Emergency Management
Major changes from O 151.1B

Test Questions for ERO Refresher Training

1. What radioactive materials and chemical can be excluded from EPHA analysis? List 3.
2. What is the reporting time for OEs with no material release? Do major water pipe breaks need to be evaluated?
3. What is the threshold hierarchy for non-radiological (chemical, biological, etc.) materials?
4. Should EPHA analyses contain all necessary information for an auditor to reproduce the consequence results?

Example 15: LL – Observations of Exercise

Source: External: Observations on numerous exercises

Subject: Importance of proper MSEL development for a multi-jurisdictional response exercise.

Root cause: A few XXXX federal agencies and local exercise planners do not fully understand the exercise planning process, and/or could not make the commitment for their entity's response. Experience level of exercise planners differs from site to site and within other agencies/locals. Identification and documentation of lessons learned in exercise planning is difficult to identify since most exercise planners will not concede that they need to learn more. *More senior XXXX exercise planners should include planners less seasoned to participate in their multi-agency, offsite exercise planning sessions to cross train and enhance their capabilities in exercise planning.*

Discussion: The exercise MSEL should have detailed descriptions that tie into the Objectives selected for the exercise and include identified times that are developed from best practices.

- The MSEL should include detailed response actions over the period of the exercise (i.e., if exercise is 2-5 days, then MSEL should identify detailed expected response for each of the days, and include other agencies and local response actions within.
- Centralized control cell. If another federal agency requests a control cell by virtue of their Federal plans, identification of their role and responsibilities should be completely coordinated and agreed to by lead exercise planners prior to the exercise. All communication and delivery of injects should be coordinated through the Master Control Cell. The Master Control Cell should have a complete script of the proposed injects. No control cell should be independent from the Master Control Cell.

Too much simulation versus real response actions

- Some sites provide only real initial notification to offsite entities, everything following is simulated.
- Onsite field response, equipment and use of equipment are normally simulated. Real emergency response should not be the first time equipment, offsite agencies response is actually deployed.

Consequences: The insufficient MSEL, the observer felt:

- Impeded response across many units
- Commitments from other agencies managers withheld
- Lessened enthusiasm
- Necessitated too many simulations that did not adequately test mastery of procedures.

Note: Detailed root cause on the MSEL development not written up in the AAR. Many exercise planners do not want a written record of known problem areas due to correlation to their performance.

Example 16: LL – Operating Experience Program Information System

Title: FY 20XX XXXX Annual Evaluated Emergency Preparedness Exercise Lessons Learned - XXXX Process Vessel Vent Explosion (Submitted by XXXX Emergency Management)

Identifier: 2008-LL-0004 (Special Information Notice)

Date: 1/10/20XX

Lesson Learned Statement: The FY 20XX XXXX Annual Evaluated Emergency Preparedness Exercise was conducted on XXXX. There are many strengths and weaknesses that resulted from this exercise, many listed in this Operating Experience Report.

Discussion: A XXXX Emergency Response Organization (ERO) site exercise was conducted on XXXX. The exercise tested XXXX's ability to respond to a simulated operational emergency.

Participating were Site ERO personnel from XXXX. Also participating were members of the XXXX, XXXX, and XXXX. The Counties of XXXX and XXXX participated with partial activation of their county Emergency Operations Centers (EOC). The XXXX and XXXX State Warning Points and the XXXX County Warning Points participated with communications links only as well. The XXXX Regional Medical Center participated as the receiving hospital for two injured, contaminated patients from XXXX. Approximately 500 players, controllers, and evaluators participated.

Analysis: Fourteen (14) objectives were selected for demonstration during the exercise. From the perspective of the XXXX controller/evaluator organization, nine (9) were graded as Effective Performance (Green), three (3) were graded as Needs Improvement (Yellow), one (1) was not observed, and one (1) was graded as Significant Weakness (Red).

The 3 Needs Improvement items were Mitigation, Medical, and Exercise Conduct. The 1 Not Observed was Recovery.

The 1 Significant Weakness was Radiological Control.

Of the thirteen objectives evaluated, the Safety, Protective Actions, Mitigation, Classification/Categorization, and the Notification Objectives are weighted and have a greater impact on the health and welfare of site employees, the public, and the environment.

Player performance at the XXXX facility was graded as Red because of inadequate facility command and control and poor radiological control operations.

The XXXXOC, Site EOC, and ERO Players were graded Green. Therefore, the overall XXXX controller evaluation concluded that player performance in the drill was Needs Improvement.

Most Significant Issues Uncovered During the Exercise

- XXXX Facility did not establish effective command and control at the incident scene and did not provide facility representatives to the XXXX Fire Department Incident Command Post (XXXXFD ICP).
- The ISC and the first arriving RCO FLM positioned themselves too close to the incident scene, became contaminated, and did not establish effective communication with the XXXXFD ICP.
- Radiological command and control at the facility level was inadequate. Accountability of facility responders was not established.
- Contamination control demonstrated by RCIs, XXXXFD personnel, and RCO FLM was inadequate.
- Facility personnel were not proactive in making sure all personnel responding to the incident scene area had the appropriate personal protective equipment necessary to conduct operations on the XXXX, 2nd level (i.e., safety glasses and hard hats as necessary).
- Facility personnel did not adequately demonstrate appropriate use of personal protective equipment (respirators, gloves, shoe covers, etc.) and ignored an alarming Constant Air Monitor (CAM) indicating an airborne radiological release in the incident scene area.
- An RCO FLM failed to provide adequate radiological data or conditions or inform an XXXXFD entry team to don PPE for entry into the XXXX, 2nd level, knowing that there was a contaminated victim and an alarming CAM.
- Air sampling was not initiated at the North Dock area once contamination levels were known.
- EMS personnel and RCI personnel in the ambulance did not wear appropriate respiratory protection.
- Accountability of contaminated facility and XXXX FD personnel was not effectively controlled or communicated.
- The XXXX FD ICP did not verify a safe route with the XXXXOC or with the XXXX representative in the ICP for EMS units departing from the facility to the offsite medical facility, which caused the EMS units to potentially traverse the radiological plume.
- Chelation of the personnel exposed inside the XXXX 2nd Level Contamination Area was not effectively discussed at Site Level within the EOC or with the XXXX FD Battalion Chief.
- The Site DOE-HQ Communicator did not transmit the DOE-SR Staff Worksheet or the DOE-HQ's SITREP to the DOE-HQ's Watch Team as required by published procedures.

Recommendations:

Specific Recommendations: Organization/Project Operating Experience Program Coordinators should share this information with their Project Area Personnel as appropriate, including:

- Management
- Supervision
- Emergency Preparedness personnel
- Emergency Response personnel
- Fire Department
- Radiological Control personnel
- Others as Applicable

Specific to the XXXX Operating Experience Program: Actions pertaining to the XXXX Operating Experience Program and Organization/Project Operating Experience Program Coordinators for this lesson learned will be tracked via Site Tracking, Analysis, and Reporting (STAR) 2008-CTS-000407 (this STAR is specific to the XXXX Operating Experience Program).

Keywords: Training

Activity: Emergency Management

Hazard: Other

ISMS Function: Feedback/Improvement

See additional Operating Experience information at the XXXX Operating Experience Home Page. Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of Operating Experience this report please notify the Site Operating Experience Administrator of any action taken as a result of this report or of any technical inaccuracies you find.

Example 17: LL – Potential Event Condition

Coordinators,

This **BLUE ALERT** (Potential Event Condition) is being distributed for review and utilization.

Please review this **BLUE ALERT** Lessons Learned for generic and training implications and share this information with employees and subcontractors who perform similar work.

If you have questions about this Lesson contact (XXX)XXX-XXXX

If you have any questions about the Lessons Learned Program contact (XXX)XXX-XXXX.

To view other Lessons Learned that may be applicable to your work planning or training implications or those with similar lessons visit the **Lessons Learned System**.

*For anyone who receives and **uses** this Lessons Learned, the Lessons Learned Program would appreciate your using the **revised Lessons Learned Feedback form UCN 21013** to identify actions taken in response to this Lesson Learned and to assist the Lessons Learned Program in understanding how this Lessons Learned is best being used, for example, to modify a job hazard analysis, improve work planning, work process, or work performance, avoid costs, prevent recurrence, or to identify safe work practices, or those with potential for incorporation into training and other actions taken as a result of this Lessons Learned. Feel free to elaborate on this form as well. Invite your Lessons Learned recipients to use this form as well.*

Title: Improper Usage of Emergency Terminology

Identifier:

Date: 4/3/20XX

Lesson Learned Statement: Improper use of protective action terms can lead to confusion and ineffective implementation of protective actions.

Usage of the term "Orderly Evacuation" by personnel, first responders and in many of the facilities has led to confusion and ineffective implementation of protective actions. This term contradicts both the specific meaning and the intent of the protective action of evacuation as set forth in plans and procedures, DOE Orders and Guides and the Codes of Federal Regulation. Improper use of protective action terms can lead to confusion and preclude appropriate action on the part of the affected, at-risk population in implementing appropriate protective actions in a timely manner. At, there is no authorized protective action known as "Orderly Evacuation."

Discussion: There are three, authorized protective action measures in the DOE emergency management system. These measures are: Evacuation, Shelter in Place, and Take Cover. Also, at there is an additional term used – Curfew – which is a population control measure but not a protective action. Evacuation is a protective action involving the movement of an at-risk population from an area of known danger or unacceptable risk to a safer location. Shelter in Place is a protective action involving the use of a barrier, most often a building, to shield individuals from an airborne hazardous materials release. Take Cover is a protective action involving the use of a barrier, usually a strong interior room or below grade area of a building, to protect individuals from flying projectiles and debris such as from a tornado or severe weather. Curfew is a population control action designed to be used in an emergency response situation in which there is a need to control movement throughout the site or portions of the site, but not requiring Evacuation, Shelter in Place or Take Cover.

This Lesson Learned will address only the protective action measure of evacuation.

The protective action of "EVACUATION" requires that a designated, at-risk population exit a facility by the closest, most expeditious exit and report to the designated assembly station(s) for that facility. Within some facilities this requires the evacuees to break out of emergency doors, to swiftly vacate possible contaminated areas without observing the normal administrative controls, and to leave areas bypassing certain other controls and checkpoints in place for normal operations. The compelling rationale for an evacuation is that emergency conditions exist within the facility; that there are credible hazards to life and/or health inside the facility; and that time is of the essence.

“EVACUATION” may be directed by the Plant Shift Superintendent or by an alarm system such as the Criticality Accident Alarm System (CAAS). Regardless, during an “EVACUATION” time is of the essence for safety of personnel.

Organizational memory indicates that the term “Orderly Evacuation” came into usage at over a decade ago. Apparently, the intent of this unauthorized instruction was to relocate a facility population during other-than-emergency conditions. An “orderly evacuation” did not permit any evacuating individual to bypass any of the monitoring measures or administrative/physical controls at the facility. As there were no emergency conditions in the facility – but rather some administrative reason to relocate a population – the administrative and physical controls and the integrity of the facility would not be impacted as opposed to what would happen during a real emergency.

Over time, the use of the term “orderly evacuation” became commonplace. This has resulted in personnel improperly exiting a facility when what was required was a prompt, timely “EVACUATION.” Confusion associated with the term “orderly evacuation” hampered timely building evacuation and personnel accountability in response to the 9204-2E fire on March 15, 20XX. During the event, facility personnel initially directed an “orderly evacuation” rather than an immediate evacuation of the facility. The term “EVACUATION” is reserved for the expeditious egress of personnel from an affected facility by the most direct route, including through sealed, alarmed doors, bypassing monitoring, to the nearest assembly station.

Analysis: N/A

Recommended Actions/Resolution:

1. “Orderly Evacuation” must be eliminated from the lexicon and all written procedures, documentation, and instructions. XXXX organizations must review existing documents to ensure that there are no uses of the term “orderly evacuation” in lieu of or in conjunction with an emergency evacuation of any facility.
2. Building Emergency Wardens must conduct remedial training for their personnel stressing the protective action of “EVACUATION” and eliminating the use of “orderly evacuation”.
3. Where it is desired to move a population or portion thereof within or outside a facility under non-emergency conditions, the term “Relocation” will be used instead of “Orderly Evacuation.”

Originator:

Validator:

Contact:

Name of Derivative Classifier:

Name of Reviewing Official:

Keywords: Evacuation, orderly evacuation, relocation

References: DOE Order 151.1C, Comprehensive Emergency Management System EMPO-500, XXXX Emergency Plan Building Facility Emergency Plans

Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify the Lessons Learned Site Administrator, of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.

Ism Core Functions: AH - Analyze Hazards

XXXX Functional Categories: EH - Environment, Safety & Health; SS - Safeguards and Security

Hazard Categories: PO - Personal Injury/Exposure- Other

Work/Functions/Activity Codes: EM - Emergency Management

Example 18: LL – Process for Capturing Lessons Learned

XXXX does not really use any formal forms for lessons learned on the Federal level which XXXX deals with. The ORO contractors follow the recommended formats for the occurrence reporting and for what is filed on the DOE HQ Lessons Learned web pages. There are several lessons learned that can be examined there.

For XXXX's training, they review lessons learned from multiple FEMA, federal, contractor, and commercial industry sources and currently (2007 and later) send out what they find several times a year to the federal ERO personnel and contractor ERO managers for reading. They reply by email that they have read it and XXXX follows up if XXXX does not receive an email back. In 2006 and earlier, XXXX only did it once a year and put all the lessons learned into one transmittal. XXXX follows up the integration of the lessons learned when they do various assessments, both AMS and AMEM line reviews and oversight ORO review.

XXXX tries to incorporate relevant lessons learned from previous exercises, tabletops, drills, etc. when planning future training.

Example 19: LL – Protective Actions and Reentry

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Protective Actions and Reentry

Title: Common Understanding of Roles and Responsibilities

LL/BP Date: August 1, 20XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: During an Operational Emergency, there was some uncertainty over when the control of reentry changed from the Incident Commander to the EOC Crisis Manager for recovery

Genesis for LL – provide:

Root Cause(s):

Effects: Potential conflict of authorities

Recommendations/Corrective Actions: Clarify and formalize the transition from emergency to recovery for reentry operations. This involved meetings and discussions on transition and the decision to incorporate a formal turnover point between the Incident Commander and the Crisis Manager when both agree that emergency actions are no longer necessary (the Incident Commander retains the on-scene authority to take action if additional emergency action is necessary or for safety reasons). The Recovery procedure is being revised to make this clear and to define a formal, documented turnover point and it is being incorporated into the appropriate checklists as well. A briefing and discussion on the changes will be done with all Incident Commanders and Crisis Managers at a regularly scheduled (monthly) Crisis Managers' Meeting and in the FY 20XX refresher training on the procedures/checklists.

Genesis for BP – explain how it was recognized and promulgated:

Hazard (if applicable):

Reference: ICS-100, ICS-200, XXXX Office Concept of Operations Training

Description of method used to communicate LL and BP: Discussion at regularly scheduled Crisis Managers Meeting and FY 20XX refresher training on revised procedures/checklists

Description of process used to incorporate LL and BP into EM training: Add corrective actions to the ACTS system and track to completion. Added to appropriate procedures/checklists, which are required reading (at a minimum) each fiscal year. Also, this topic was included in the comprehensive final exam question bank for reinforcement with key decision-makers.

Example 20: LL – Training and Drills, Written Exams

Type: Lesson Learned Best Practice

DOE/NNSA EM Program Element: Training and Drills

Title: Written Examinations

LL/BP Date: 10/15/20XX

Source:

Internal, specify (e.g., exercise, incident, assessment, other)

External, specify (e.g., EMI SIG presentations, LLIS, SELLS, other)

Description: Institute written examinations for training modules

Genesis for LL – provide:

Root Cause(s):

Effects:

Recommendations/Corrective Actions:

Genesis for BP – explain how it was recognized and promulgated: HS-63 noted that some training modules did not have final written examinations (opportunity for improvement). The Training Coordinator had already planned to add examinations as appropriate and this was documented in the training plan. The Training Coordinator went beyond this HS-63 observation to develop written examinations for each module (completed), but in addition has developed a comprehensive final written examination for key decision-making positions within the ERO. This exam will be coupled with the final documented demonstration of initial proficiency to determine qualification for key decision-making positions. The plan is to also have all previously qualified personnel complete this examination as a "challenge" exam during FY 20XX refresher training.

Hazard (if applicable):

Reference:

Description of method used to communicate LL and BP: Discussion at regularly scheduled Crisis Managers' Meeting (monthly)

Description of process used to incorporate LL and BP into EM training: Added to training requirements matrix and training program plan

Example 21: LLBP – NEI Program

Category: Exercises and Lessons Learned Sharing

Best Practice or **Lesson Learned**

Source: Nuclear Energy Institute

Summary: The Nuclear Energy Institute is the trade organization representing the nuclear utility industry in Washington. In 2007 they initiated an industry wide program to share lessons learned between member utilities specifically about hostile action exercise response experience, including functional demonstrations and tabletop drills with offsite stakeholders.

Additional Details: NEI designed a template used for updating and maintaining the lessons learned information submitted by nuclear plants following exercise experience. The template is based on guidelines drafted for conducting hostile action exercises and drills. As member utilities experience and capture lessons learned following exercises the information is submitted for all nuclear utilities to share and incorporate the lessons. The Guidelines are also revised and updated to integrate the experience and periodically re-distributed to the industry.

Contact for additional information: Martin Hug, NEI Office of Emergency Planning, phone: 202-739-8110