Incident Command System for Structural Collapse Incidents

ICSSCI-Student Manual

3rd Edition, 3rd Printing-February 2006

Homeland Security

DHS/USFA/NFA
ICSSCI-SM
February 2006
3rd Edition, 3rd Printing

Incident Command System for Structural Collapse Incidents

Homeland Security

Incident Command System for Structural Collapse Incidents

ICSSCI-Student Manual

3rd Edition, 3rd Printing-February 2006

Homeland Security

U.S. DEPARTMENT OF HOMELAND SECURITY

PREPAREDNESS DIRECTORATE

UNITED STATES FIRE ADMINISTRATION

NATIONAL FIRE ACADEMY

FOREWORD

The U.S. Fire Administration (USFA), an important component of the Department of Homeland Security (DHS) Preparedness Directorate, serves the leadership of this Nation as the DHS's fire protection and emergency response expert. The USFA is located at the National Emergency Training Center (NETC) in Emmitsburg, Maryland, and includes the National Fire Academy (NFA), National Fire Data Center (NFDC), National Fire Programs (NFP), and the National Preparedness Network (PREPnet). The USFA also provides oversight and management of the Noble Training Center in Anniston, Alabama. The mission of the USFA is to save lives and reduce economic losses due to fire and related emergencies through training, research, data collection and analysis, public education, and coordination with other Federal agencies and fire protection and emergency service personnel.

The USFA's National Fire Academy offers a diverse course delivery system, combining resident courses, off-campus deliveries in cooperation with State training organizations, weekend instruction, and online courses. The USFA maintains a blended learning approach to its course selections and course development. Resident courses are delivered at both the Emmitsburg campus and its Noble facility. Off-campus courses are delivered in cooperation with State and local fire training organizations to ensure this Nation's firefighters are prepared for the hazards they face.

Incident Command System for Structural Collapse Incidents is designed to provide fire command officers with an understanding of command operations at structural collapse incidents.

ACKNOWLEDGMENTS

The dedication, cooperation, and assistance of many professionals have made this course possible. The National Fire Academy wishes to thank the following people and organizations for their role in the development of this course:

DEVELOPMENT GROUP

Mr. Louis Bloom, National Fire Academy, Emmitsburg, MD
Mr. Frank Borden, Asst. Fire Chief (Retired), Los Angeles City Fire Department, Los Angeles, CA, Consultant, Borden/Lee Consulting, San Pedro, CA (Primary Course Developer)
Mr. Gene Chantler, Gene Chantler Training and Consultation, Fort Collins, CO (Incident Management System Consortium)
Mr. John Cochran, U.S. Fire Administration, Emmitsburg, MD
Mr. Mike Colgan, Orange County Fire Authority--Air Operations, Fullerton, CA (FIRESCOPE)
Ms. Jill Gollner, APEX Technology, Inc., Germantown, MD
Mr. Chuck Mills, National Association for Search and Rescue, Chantilly, VA
Mr. Gary Morris, Emergency Services Institute (ESI), Phoenix, AZ (Incident Management System Consortium)
Mr. Hugh Wood, National Fire Academy, Emmitsburg, MD
Mr. David Webb, Urban Search and Rescue Program, Federal Emergency Management Agency, Washington, DC
Mr. Chris Wurzell, State of California, Department of Forestry and Fire Protection, Riverside, CA (FIRESCOPE)

TABLE OF CONTENTS

BIBLIOGRAPHY

"Alfred P. Murrah Federal Building Bombing, April 19, 1995 "Final Report, City of Oklahoma City, April 16, 1996.

"Basic Emergency Rescue Technician Course." Indianapolis Fire Department, June 1995.

Borden, Frank W. "Before the Cavalry Comes--A Tiered Approach to Technical Rescue." *National Fire & Rescue*, Summer 1997.

________. "Managing Urban Search and Rescue Operations Using ICS." April 1991.

________. "Rescue Operations." *The Fire Chief's Handbook.* 5th ed. Fire Engineering, 1995.

________. "US&R and EMS in a Hostile Environment," *American Fire Journal*, 1993.

________. "US&R Initial Response Strategies for Heavy Rescue Operations," 1993.

________. "US&R Operations: An Overview," *Fire Engineering*, Aug. 1994.

Defeo, Robert J., Gerald L. Reinitz, Correy G. Rose, and Larry Collins. "Northridge Meadows Apartments Collapse Articles." *Fire Engineering,* August 1994.

FEMA Urban Search and Rescue (US&R) Response System Operational System Description, July 1992.

FEMA US&R Technical Search Specialist and Rescue Specialist Training Courses, 1995.

Field Operations Guide. FEMA US&R Response System, November 1992.

FIRESCOPE Field Operations Guide. I-420-1 State of California Fire Service, 1997.

"Incident and Event Planning I-300." ICS National Training Curriculum, National Wildfire Coordinating Group, May 1994.

"Incident Command for Highrise Incidents." FEMA: National Fire Academy Course, Draft, 1998.

"Incident Management System Model Procedures Guide for Structural Collapse and US&R." Draft, January 1998.

NFPA 1470, *Standard on Search and Rescue Training for Structural Collapse Incidents*, 1994.

NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents,* 1999.

"Oklahoma City Bombing Rescue Operations, Preliminary Report." NFPA, 1995.

"Oklahoma City Response." *Rescue Magazine,* Sept./Oct. 1995.

"S-339 Division/Group Supervisor Course." National Wildfire Coordinating Group.

"Search and Rescue Operations Following the Northridge Earthquake; January 17, 1994, Los Angeles CA." FEMA--USFA Technical Rescue Incident Report.

"Standardized Emergency Management System, ICS Field Course." State of California, Office of Emergency Services (OES), Aug. 1995.

State of California OES FIRESCOPE US&R Operational System Description. ICS--US&R--120-1, February 1995.

Technical Rescue Program Development Manual. FA-159, FEMA--USFA, February 1996.

"US&R Training and Company Officers Course." Los Angeles City Fire Department, 1995.

UNIT 1: INTRODUCTION

TERMINAL OBJECTIVE

The students will be able to describe key aspects of a structural collapse.

ENABLING OBJECTIVES

The students will:

1. *Identify hazards and conditions associated with a structural collapse.*
2. *Understand the causes and complexities of structural collapses.*
3. *Describe the difference between response and recovery operations.*

COURSE OVERVIEW

Course Goal

The goal of this course is to provide fire officers with an understanding of command operations at structural collapse incidents.

Why do I Need a Course on Structural Collapse?

As a fire officer, it is important for you to gain a basic knowledge of factors involved in incidents of this type. It is possible for all of us to be involved in such an incident during our careers. This course should leave you with an appreciation for incident complexity and the knowledge that successful conclusion of incidents of this type depends on strong command skills and effective incident management.

Instructional Units

During the next 2 days, we will cover the following instructional units:

Unit 1: Introduction.
Unit 2: The Incident Command System Organizational Structure.
Unit 3: Response Resource Capabilities.
Unit 4: Scene Management: Factors and Issues.
Unit 5: Response Functions.
Unit 6: Structural Collapse: Operational Phases.

OVERVIEW OF STRUCTURAL COLLAPSE

Causes and Complexities of Structural Collapse

Structures collapse from a variety of causes. Over 500 major collapses occur in the United States each year. Collapse can be caused by various factors, including the following.

Construction Accidents

These may result from design problems, overloading, or poor construction. They may occur during construction or after construction has been completed, when the structure is occupied or in use.

Structural Deterioration

As structures age, structural weaknesses develop from building material failure, settling, or other factors. A minor causative event may result in collapse.

Fire or Explosion

Fire commonly causes structural collapse by destroying building materials and weakening support elements. Explosions cause rapid collapse due to blast forces on the structure.

Natural Hazards (e.g., Earthquakes, Hurricanes, Tornadoes, Floods, and Landslides)

Structures react differently to stresses caused by earth movement, water, or wind forces, thus creating different rescue problems and strategies. These events may cause widespread damage, with multiple-site rescues and large numbers of victims.

Transportation Accidents

Vehicles, trains, ships, and aircraft may crash into structures. When structures collapse in these incidents, the complexity of the response increases.

Specific Causes and Factors

Natural Disasters

Earthquakes, hurricanes, tornadoes, floods, mudslides, high winds, snow, heavy rainfall, tsunami, ocean waves, ground subsidence, and landslides may result in major damage to structures, numerous victims and hazards, and damage to the infrastructure over a large geographic area.

Wall Failure

Supporting walls can collapse from foundation failure, deterioration, and vertical and horizontal stresses. These collapses most commonly create lean-to void spaces.

Overloaded Floors

The most common causes of failure from heavy loading are heavy machinery and equipment. Additional loads tremendously stress the beams, and even a slight impact load applied to the floor may cause beam failure. Victims may be found in V-shaped or lean-to void spaces, or pinned under stock and debris.

Overloaded Roofs

Possible causes of collapse are from excessive weight such as air-handling units, large signs, heavy snow or rain, and improper or blocked drainage ducts. Roof failure may cause partial or entire roof pancake collapse and wall collapse.

Column or Arch Failure

If a column supporting a beam joint fails or an arch fails, collapse will occur, sometimes with little warning. These collapses generally create V-shaped void spaces.

Structural Weakness

This problem is one of the most difficult to detect because the majority of the structural elements vital to the building's stability may be hidden from view by interior or exterior coverings such as plaster and siding materials. Exposure to weather, shaking from earthquakes or constant vibration, and neglect cause structures to deteriorate rapidly. Collapses in already weakened structures may result in a variety of conditions and voids.

Improper Alterations

This is a common cause of structural collapse in the urban environment. These alterations may result in the removal of vital supporting materials or the addition and installation of inadequate and nonengineered structural materials, thereby changing and weakening structural strength and stability.

Fire-Weakened Structural Members

This is a common cause of structural collapse during or after a fire. Buildings that have suffered previous fire damage and have not been repaired face collapse hazards from other factors such as high winds, shaking forces, heavy rain, etc.

Explosions

Explosions may be caused accidentally by such things as leaking natural or propane gas, or by explosive devices. Explosions may cause the collapse and demolition of the entire building, with damage to surrounding structures. The force of the blast subjects the structural members to extreme stresses and may cause extensive amounts of debris and demolished construction materials to be blown throughout the inside of the structure and into the surrounding outside area. The number of survivable void spaces may be limited, and victims may be found anywhere in the debris. Injuries related to explosions generally are severe.

Collision Impact

Structural collapse may be caused by collision from various types of transportation vehicles or heavy equipment. Generally the collapse area is localized but may be complex due to the victim locations in the vehicle, victims in the structure, and the potential for spillage of fuel and cargo.

Progressive Collapse

Progressive collapses are a chain reaction caused by the collapse of one structure or part of a structure onto another structure. Walls, floors, or entire buildings may collapse progressively in domino fashion.

Examples of Structural Collapse

The following examples of major incidents occurred during the 1980's and 1990's. Many of these incidents focused national attention on our capability to manage and perform search and rescue operations at structural collapse incidents. That focus has resulted in improvements in construction techniques and response capability.

Harbor Cay Condominium Collapse (Cocoa Beach, Florida, 1981)

This building was under construction at the time of collapse. Heavy floor and wall construction consisted of precast reinforced concrete slabs and cast-in-place concrete components. All five floors and the roof of the condominium collapsed in a pancake configuration, trapping a large number of construction workers. Eleven were killed and 23 injured. The incident involved more than 60 hours of continuous rescue operations and resources from 5 county fire districts; 16 municipal fire departments; and a response of Civil Defense, military, and private sector technical specialists.

Hyatt Regency Sky Walk Collapse (Kansas City, Missouri, 1981)

During a large social event at the hotel, two suspended walkways, which were overloaded with people, collapsed from 50 feet above the atrium leaving 113 people dead and 186 injured. The suspended walkways, constructed of structural steel and lightweight concrete, spanned 120 feet across the atrium space, above hundreds of people on the floor below. The high number of dead and injured, the location of the collapse, the size of the collapsed material, and the ineffectiveness of the typical emergency service tools created severe rescue limitations. The incident required a large number of medical personnel working alongside the rescuers. Twenty-nine live victims were removed from under the debris during the rescue operations. Heavy rigging and construction specialists and heavy equipment were needed to remove the debris during the rescue operations.

Mexico City Earthquake (Mexico, September, 1985)

The devastating Mexico City earthquake caused the collapse of more than 264 major structures (many were 10 to 18 stories tall) and widespread damage and partial collapse of more than 7,000 smaller structures. The quake also had a major impact on the city's infrastructure, causing many problems for the responders as well as the victims. It is estimated that more than 20,000 of the 18 million residents of the city were killed, 30,000 injured, and more than 300,000 left homeless. This incident clearly focused the attention of the world on the problem of collapsed structure search and rescue and major incident management. It also brought to light the high degree of risk and danger associated with collapse rescue operations, when more than 100 rescue personnel died during rescue operations (the majority were killed in a major aftershock that caused additional collapses).

Numerous other incidents involving structural collapse occurred during the 80's. They challenged and expanded the concepts of Urban Search and Rescue (US&R) operations and incident management. Among these incidents are the following:

- Hurricane Alicia, Texas, 1982;
- propane explosion and collapse, Buffalo, New York, 1983;
- Coalinga earthquake, Coalinga, California, 1983;
- L'Ambiance Plaza collapse, Bridgeport, Connecticut, 1987;
- Whittier Narrows earthquake, Los Angeles area, 1987;
- department store collapse, Brownsville, Texas, 1988;
- Armenia earthquake, Soviet Armenia, USSR, 1988;
- building collapse, West 31st Street, New York City, 1988;
- Loma Prieta earthquake, San Francisco Bay area, 1989;
- Hurricane Hugo, east coast, 1989; and
- San Bernardino train derailment and structural collapse, California, 1989.

The 1990's has been a decade of continuous challenges in structural collapse rescue and emergency management. This also has been the decade of the most advances in these operations, with improved tools and equipment, search and rescue techniques, safety requirements, training, additional resource capabilities and coordinated response, and the expanded use of the Incident Command System (ICS). Some examples of significant incidents are

- explosion and collapse of the Crested Butte State Bank, Colorado, 1990;
- Hurricane Andrew, southeast Florida, 1992;
- explosion, World Trade Center, New York City, 1993;
- Northridge earthquake, Los Angeles area, 1994;
- explosion, Murrah Building, Oklahoma City, Oklahoma, 1995;
- Kobe earthquake, Kobe, Japan, 1995;
- explosion, Humberto Vidal Building, Puerto Rico, 1996;
- tornadoes, southeast Michigan, 1997; and
- tornadoes, Atlanta, Georgia, 1998.

Structural collapse incidents may be considered low probability but high consequence events. The rescue of trapped victims may be both complex and dangerous, involving the response of various levels of capability in a time-critical situation to locate and remove trapped or injured victims safely from the collapsed structure.

Hazards

Structural collapse creates many hazardous conditions for the rescuers, who may suffer injury, illness, psychological problems, or even death. A hazard is anything presenting a risk or danger to the rescue effort. The best methods to reduce the risks of injuries or illness during the rescue operation are prevention and avoidance. Rescue personnel can reduce the threats inherent in rescue operations through knowledge and awareness of potential hazards.

Types of potential threats that may be encountered by the responder are discussed below.

Physical

Two common threats that can be encountered are atmospheric contamination and changes in temperature that affect bodily functions.

Atmospheric contamination may involve a toxic or flammable condition, or a reduced level of oxygen, sometimes found in confined spaces. The proper safety equipment, air monitoring devices, and operational procedures are necessary in these environments.

The human body functions efficiently within a narrow temperature range. During rescue operations responders may be exposed to cold or heat over a prolonged time, or may experience a rapid increase or decrease in temperature that affects normal bodily functions.

In many rescue operations, **dehydration** is a problem that affects both victims and rescuers. An environment does not have to be dry for dehydration to occur. Adequate fluid intake prevents dehydration.

Adequate nutrition may be a problem in long-term rescues. Food is fuel for body functioning, and inadequate nutritional intake can impair performance. Physical exertion and the stress of rescue operations require high-energy output. A high-energy output with a lack of readily available energy may result in a weakened physical status, reduced coordination, irritability, or increased susceptibility to hypothermia.

Overeating can reduce both physical and mental performance because the blood required for the digestive process is not available for other body activities. Adequate nutrition can be provided through a supply of high-energy foods and the consumption of small meals on a periodic basis.

Good **physical conditioning**, providing both strength and stamina, is important for the rescuer because it allows prolonged exertion and the peaks of power needed to perform rescue activities. Emergency responders should participate in regular exercise programs that promote conditioning.

Medical

Medical threats may include **pre-existing conditions** such as heart disease, lung disease, or diabetes, and certainly pose a serious threat to the rescuer and to the rescue operation. Responders with known pre-existing medical problems should not participate in rescue operations.

Short-term medical problems such as headaches and stomach disorders or minor cuts and scrapes may be more of an annoyance than an emergency, but could become debilitating and, if not treated, may take the responder out of action. Short-term medical problems should be taken care of before they become debilitating. In either case we do not want the rescuers to become part of the problem. They are part of the solution, and must be able to perform at their highest capacity.

Environmental

Extreme working environments caused by cold, wet, or hot weather affect the human body and can cause hypothermia and heat exhaustion. Confined spaces or enclosed areas also may cause similar problems. Body core temperature differences of only a few degrees cause bodily malfunctions in such areas as thinking, judgment, and coordination. As the temperature moves away from the normal range, dysfunction increases, and unconsciousness or even death may result.

Hypethermia is caused by exposure to heat. Increased body temperature may result in heat exhaustion or heat stroke, which may be fatal if not treated.

Hypothermia is caused by exposure to cold, and results in the lowering of the body core temperature. The body's neurological and psychological systems are affected, causing impaired mental functions, loss of coordination, unconsciousness, and, if it continues, death.

Exposure to chilling winds or water may cause **frostbite**, which, if prolonged, freezes and destroys body tissue. Susceptible areas are feet, hands, ears, and nose.

The danger of **hazardous materials** released in a structural collapse should be considered a factor at nearly every incident. The type of occupancy is a factor in assessing this risk, as is the availability of monitoring equipment. Product identification is critical in determining the methods used to respond to and mitigate the problem.

Biohazards from body fluids are a hazard to rescuers working around injured or deceased victims. Suitable precautions should be taken to protect the rescuer.

External

External threats include those caused by terrain, unstable surfaces, electrical shock, falling objects, and the risk of falling.

Terrain may present major obstacles to search and rescue operations, such as distance to site, access, obstacles, and hazards. These factors may increase time to reach the rescue site and result in extreme physical exertion for rescuers.

Collapsed structures may present the **risk of falling**, which could result in injury or death. Working in elevated situations may require the use of barrier lines to prevent access to dangerous edges, the use of safety lines to belay persons at risk of falling, wearing safety equipment, and the designation of a Safety Officer (SO).

Any surface that must be negotiated where there is the potential for a fall or loss of control is an **unstable surface**. Unstable surfaces may not have the strength to support weight, i.e., the pounds per square inch (psi) of the supporting surface is less than the psi of the weight of the rescuer(s). Any questionable or untested surface must be considered hazardous. These areas must be identified and either avoided or made safe. Unstable surfaces also may be caused by slippery materials such as water or oil on a concrete or metal surface. These problems may be mitigated by identification, using safety equipment, avoidance of the area, reducing exposure in the area, or removal of the hazard.

Electrical shock may be caused by **electrical current** in wires or equipment. Collapsed structures or stand-alone electrical hazards should be de-energized or avoided by establishing a danger zone around the hazard.

Lightning may be a threat to rescuers in certain areas. Develop a safety plan to include criteria for suspension of rescue operations, avoiding metal surfaces, projections, and conductive surfaces.

Falling Objects

Areas where rescuers are most likely to encounter falling objects, such as around an unstable collapsed structure, should be designated a collapse hazard or fall zone. Personnel should be observant and wear safety equipment. A SO and assistants may be used to warn of danger or to assist in the mitigation of potential falling objects by securing or removing them. Signals and escape routes should be understood by all persons working in the hazard area.

Avalanches and Landslides

Avalanches or landslides may cause or threaten to cause structures to collapse, thereby placing rescuers in potentially dangerous situations on the lower side of the slope. Information, communication, and emergency plans are critical for this type of rescue.

Psychological

Psychological impacts from the rescue operations may include stress or anxiety from the fear of heights (acrophobia) or of enclosed places (claustrophobia). We need to recognize the signs and symptoms, communicate our concerns, and obtain professional guidance.

Stress during and after (delayed) rescue operations may have many causes, and those with stress may exhibit many symptoms such as irritability, chronic fatigue, difficulty sleeping, changes in social behavior, etc. It is important for agencies to have a critical incident stress management (CISM) program in place prior to an incident.

Safety Considerations

Structural collapse results in many unsafe conditions for the rescuer and victim. Possible safety issues that may be encountered consist of:

- unstable rescue areas (creating the possibility of secondary collapse);
- confined spaces;
- flammable or toxic hazards;
- oxygen-deficient atmospheres;

- ignition sources; and
- sharp, irregular, or unstable surfaces.

Safety considerations are a high priority in the response and management of a structural collapse incident. The following five issues always should be considered if you are involved in such an incident:

1. Safety starts with preplanning and training.

   Understanding the causes and hazards of collapsed structures provides the knowledge needed to develop Standard Operating Guidelines (SOG's) and training programs for the rescuers. An integral part of this preparedness phase is safety. Identify equipment requirements that provide the level of safety needed for the rescuers in various types of potential hazardous environments.

2. Use the ICS.

   The ICS provides an effective, all-hazard incident management tool that incorporates safety into the organization; from the responsibility of the Incident Commander (IC), to the SO, to all personnel in the incident organization. Responsibility and accountability are major components of the ICS.

3. Provide a SO, a safety plan, and a Rapid Intervention Crew (RIC) or company.

   Risks must be reduced and managed through a variety of methods, including the establishment of safety plans which may be a written part of the Incident Action Plan (IAP); the designation of a SO and assistants, where needed, who have direct responsibility and authority for scene safety; and the deployment of an RIC to be on immediate response standby at the incident for contingencies involving the rescue of response personnel.

4. Use a personnel accountability system.

   The location of response personnel during search and rescue operations is critical to their safety. It becomes the individual's responsibility to make sure supervisors are aware of his/her location, and the supervisor's responsibility to know where subordinates are at any given time. Good discipline, training, communications, and an adequate accountability system are essential to the safety of the rescuer in these hazardous environments.

5. Require protective clothing and equipment.

   The level of protection must be determined for the hazard before rescuers enter the hazard zone.

6. Rescue risk/benefit ratio.

   Incident information must be analyzed to determine the best rescue risk-to-benefit ratio.

RESPONSE VERSUS RECOVERY OPERATIONS

Many times, structural collapse incidents result in survivors as well as deceased victims. The priority of efforts should be directed toward the safe location and removal of the live victims. Some incidents result in the death of all those in or around the structure. Survivability factors change our priorities and the margin of the risks we take versus the benefits of the resultant rescues.

Response Operations

Response operations involve the search for, and rescue of, live victims. Many times the rescue operation involves "the delicate application of force" to extricate victims safely and quickly.

Time is a critical factor in the survivability of the trapped or injured victim. Initial strategy should include a time factor for completing various rescue objectives, with the commensurate deployment of resources adequate for the job. Victim condition, viability, and location are all factors in determining response priorities.

Risk/Benefit and safety are major considerations in the response phase. Hazard identification and the development of a risk management plan is an essential part of the development of the strategy used in the response operation. Risks to the rescuer must be minimized or eliminated if possible. A decision not to send rescuers in may have to be made in order to ensure the safety of rescue personnel. A thorough sizeup is needed, and intelligence is vital to the development of the response plan.

The general strategy in response is
"Do the greatest good for the greatest number
in the shortest period of time."

Recovery Operations

Recovery operations involve the removal of the deceased victims, as well as personal items, equipment, etc., from the structure.

Time is not a critical factor. Taking additional safety precautions, such as adding more shoring or using heavy equipment for debris removal, reduces the risk level to the rescuer. These tactics help protect the rescuers from potential hazards by making the rescue site safer to work in and by reducing the exposure of the rescuer to injury.

The decision to move to the recovery phase from the response phase of operations may be difficult to make without very accurate information about the victims in the structure. Victims trapped in structural collapses have survived in void spaces for up to 2 weeks.

Recovery of personal items, important materials, and equipment from a structure after the removal of live victims and the deceased should be organized using a specialized task force or group, including the fire department for access and safety, the police department for identification of ownership and security, and public works or private contractors to assist with structural stabilization. Sites or areas for recovery should be prioritized by the IC.

A CISM program should be in place. A major factor causing stress for the rescuer is the body recovery operation. A prebriefing and a defusing of rescue personnel should be strongly considered along with limited exposure in the area and adequate rehabilitation.

Law enforcement and the coroner are involved in the recovery and investigation. These incidents require effective coordination, the preservation of evidence, and a logistics system that may be required to support a long-term operation (more than 2 weeks).

The final stages of the recovery operation involve the stabilization of the structure and providing security for the site. Stabilization may involve the fire department, structural engineers, and private contractors with heavy equipment and materials to complete the task. Site security should be handled by the local police or private security services, depending on the type of occupancy and ownership. A crime scene would have different and stricter requirements.

UNIT 2: THE INCIDENT COMMAND SYSTEM ORGANIZATIONAL STRUCTURE

TERMINAL OBJECTIVE

The students will be able to explain basic Command procedures and Incident Command System (ICS) organizational structure.

ENABLING OBJECTIVES

The students will:

1. *Identify the functions of an Incident Commander (IC).*
2. *Identify the three levels of Command.*
3. *Describe operational elements within the Command structure.*

INTRODUCTION TO THE INCIDENT COMMAND SYSTEM

The Incident Command System (ICS) should be considered the basic command system to use on any size or kind of structural collapse incident. The only difference between using the ICS for a very large incident and using it for a small incident is expanding the basic emergency command organization to meet the increased needs of the larger incident. The ICS organization is flexible, adaptable, and very effective for structural collapse incidents requiring a number of major functions and multiagency or multijurisdictional response. Some of the primary features of the ICS include common responsibilities, limited span of control, incident action planning, and the establishment and use of incident facilities.

Every incident has certain major management activities or actions that must be performed. Even if the incident is small and only one or two people are involved, these activities are always performed to some degree. The ICS organization is built around five major incident management functions.

1. Command.

   This function sets objectives and priorities and has overall responsibility at the incident.

2. Operations.

   Operations conducts tactical operations to carry out the plan, develops the tactical objectives, organizes tactical units, and directs all tactical resources.

3. Planning.

   Planning develops the action plan to accomplish the objectives, collects and evaluates information, and maintains resource status (RESTAT).

4. Logistics.

   Logistics provides support to meet incident needs. This function also provides resources and all other services needed to support the incident.

5. Finance/Administration.

   Monitors costs related to the incident. Provides accounting, procurement, time recording, and cost analysis.

COMMAND STRUCTURE AND GENERAL STAFF

As a small incident escalates into a major incident, additional organizational support is required. The Incident Commander (IC) can become overwhelmed and overloaded quickly with information management, assigning companies, filling out and updating the tactical worksheets, planning, forecasting, requesting additional resources, talking on the radio, and fulfilling all the other functions of Command. The immediate need of the IC is support. As additional ranking officers arrive on the scene, the Command organization may be expanded through the involvement of officers and staff personnel to fill the Command and General Staff positions of the ICS organization.

Section- and unit-level positions within the ICS are activated only when their functions are required by the incident.

Until such time as a section or unit is activated, all functions associated with that section or unit are the responsibility of the IC or the appropriate section chief. It may be necessary to combine two or more units into a single unit.

The Command structure defines the lines of authority. The transfer of information within the ICS, however, is not restricted to the lines of the chain of command. An individual will receive orders from a superior, but may give information to any position in the organization within the guidelines specified in the operational procedures for each position.

The majority of positions within the ICS are not activated until the initial response is determined to be insufficient to handle the situation. When this occurs, qualified personnel are requested, through normal dispatching procedures, to fill the positions determined to be required for the type of incident in progress. If it is later determined that a specific position is not needed, the request can be canceled. Some agencies have elected to use a modular form of dispatching entire units or incident management teams.

The transition from the initial response to a major incident organization is evolutionary. Positions are filled as the corresponding tasks are required.

The Incident Commander

Overall, the IC concentrates on the "big picture." He/She focuses on the strategic plans of the entire incident and manages Command and General Staff positions.

Responsibilities include

- reviewing and evaluating the plan (and initiating needed changes);
- providing ongoing review of the overall incident;
- providing direction to Command and General Staff positions;
- reviewing the organizational structure (and initiating changes or expansion as needed);
- staffing Command and General Staff positions; and
- establishing liaison with other internal agencies and officials, outside agencies, and property owners or tenants.

During the initial phases of the incident, the IC normally carries out the functions of these four sections:

1. Operations.

2. Planning.

3. Logistics.

4. Finance/Administration.

General Staff

The functions of Operations, Planning, Logistics, and Finance/ Administration comprise the General Staff within a fully expanded incident command structure.

Section-level positions can be implemented at any time, based on the needs of the incident. Typically, Operations is one of the first sections to be implemented.

Operations Section

The Operations Section is responsible for the direct management of all incident tactical activities, the tactical priorities, and the safety and welfare of the personnel working in the Operations Section. The Operations Section Chief (OSC) uses an appropriate radio channel to communicate tactical objectives to the branches, divisions, or groups.

The Operations Section is implemented most often (staffed) to maintain an effective span of control. When the number of branches, divisions, or groups exceeds the capacity of the IC to manage effectively, the IC may staff the Operations Section to reduce his/her span of control by transferring direct management of all tactical activities to the OSC. The IC then is able to focus his/her attention on management of the entire incident rather than concentrating on tactical activities.

Once the Operations Section is in place and functioning, the IC's focus should be on the strategic issues, overall strategic planning, and other components and functions of the incident as a whole. This focus is on the "big picture" and the impact of the incident from a broad perspective. The IC should provide direction, advice, and guidance to the Command and General Staff to ensure the tactical aspects of the incident are managed in accordance with the strategic plan.

Figure 2-1 shows how a typical ICS Operations Section is organized.

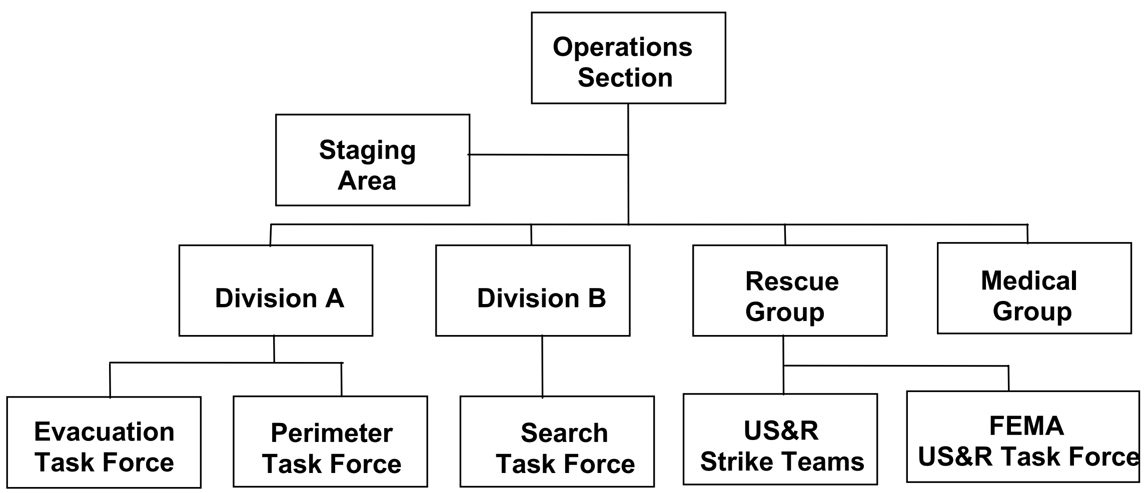


Figure 2-1
Operations Section

<u>Operations Section Chief</u>

The OSC is responsible for the direct management of all incident tactical activities and should have direct involvement in the preparation of the action plan for the period of responsibility.

The responsibilities of the OSC may be summarized as follows:

- manage incident tactical activities;
- coordinate activities with the IC;

- implement the action plan;
- assign resources to tactical-level areas based on tactical objectives and priorities;
- build an effective organizational structure through the use of branches, divisions, and groups;
- provide tactical objectives for the branches, divisions, groups, and single resources;
- control Staging and air operations;
- provide for life safety;
- determine needs and request additional resources; and
- consult with and inform other sections and the incident Command Staff as needed.

Staging Areas

The incident scene can become congested quickly with emergency equipment if this equipment is not managed effectively. Staging Areas are locations designated within the incident area that are used temporarily to locate resources that are available for immediate assignment. For major or complex operations, the IC should establish a central Staging Area early and place an officer in charge of Staging. The radio designation "Staging" should be used for this position.

In this expanded organizational structure, the Staging Area Manager reports to the OSC. The OSC may establish one or more Staging Areas, move, or discontinue the use of Staging Areas. All resources within the designated Staging Areas are under the direct control of the OSC and are available for immediate assignment. Staging requests logistical support (e.g., food, fuel, sanitation, etc.) from the Logistics Section.

Planning Section

The Planning Section is responsible for gathering, assimilating, analyzing, and processing information needed for effective decisionmaking. Information management is a full-time task at large and complex incidents. The Planning Section serves as the IC's "clearinghouse" for information. This allows the IC's staff to provide information instead of having to deal with dozens of information sources. Critical information should be forwarded immediately to Command (or whoever needs it). Information also is used to make long-range plans. The Planning Section Chief's (PSC) goal is to plan ahead of current events and to identify the need for resources before they are needed.

Figure 2-2 shows how the Planning Section may be organized.

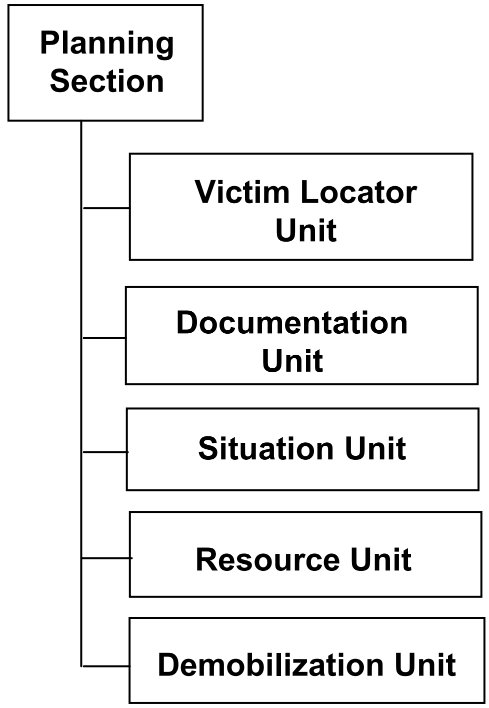


Figure 2-2
Planning Section

Planning Section Chief

The responsibilities of the PSC may be summarized as follows:

- evaluates current strategy and Incident Action Plan (IAP) with the IC;
- maintains RESTAT and personnel accountability;
- refines and recommends any needed changes to plan with Operations Section input;
- evaluates incident organization and span of control;
- forecasts possible outcome(s);
- evaluates future resource requirements;
- uses technical assistance as needed;
- evaluates tactical priorities, specific critical factors, and safety;
- gathers, updates, improves, and manages situation status (SITSTAT) with a standard systematic approach;
- coordinates planning needs with available outside agencies;
- plans for incident demobilization; and
- maintains incident records.

A **Victim Locator Unit** (VLU) also may be part of the Planning Section. It may begin with a technical specialist and develop into a full unit. The primary function of this unit is to gather intelligence that may assist in locating victims. The principal method is to interview witnesses, occupants, neighbors, and injured victims. The VLU may consist of a unit officer and a staff of fire, police, and EMS personnel. It may be assigned directly to a Search Group. This unit's primary responsibility is to determine the victim locations in the collapsed structure and to document all pertinent information to assure that rescue operations are timely and effective.

Logistics Section

The Logistics Section is the support mechanism for the entire organization. Logistics provides services and support systems to all the organizational components involved in the incident, including facilities, base, transportation, supplies, equipment maintenance, fueling, feeding, communications, and medical services to include responder rehabilitation.

The organization of a Logistics Section is illustrated in Figure 2-3, below.

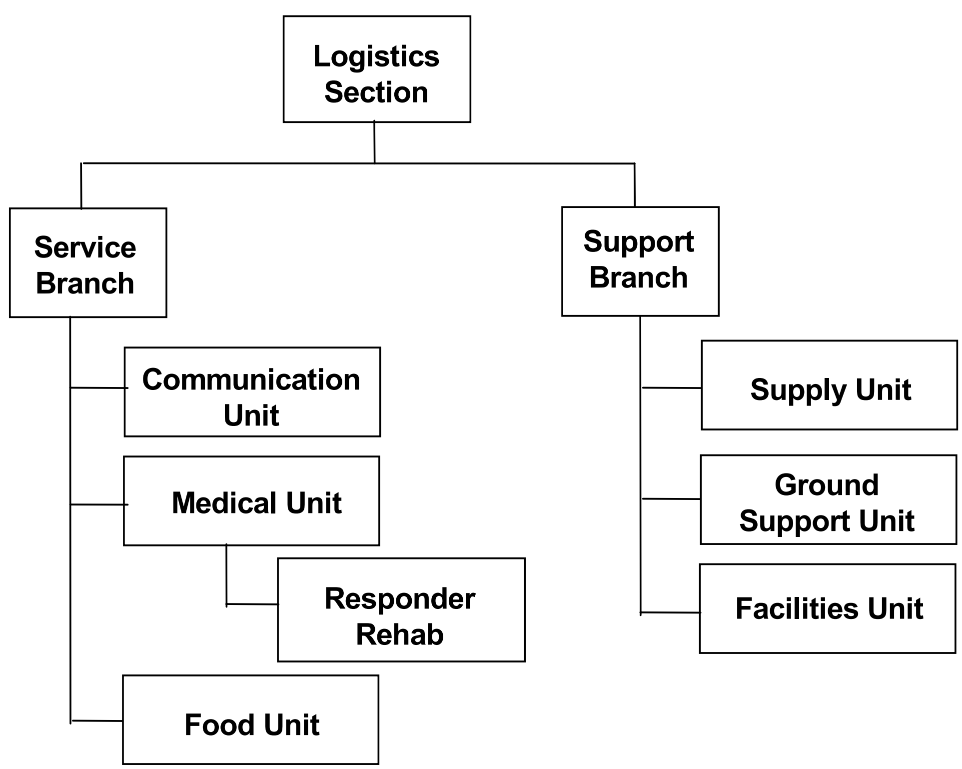


Figure 2-3
Logistics Section

Logistics Section Chief

The responsibilities of the Logistics Section Chief (LSC) may be summarized as follows:

- provides medical aid to incident personnel and manages responder rehabilitation;
- coordinates the immediate critical incident stress management (CISM) function;
- provides and manages any needed supplies or equipment;
- forecasts and obtains future resource needs (coordinates with the Planning Section);
- provides a communications plan and communications equipment;
- provides fuel and equipment repairs;
- obtains specialized equipment or expertise required by Command;
- provides food and associated supplies;
- secures fixed or portable sanitary facilities;
- provides any other logistical needs as requested by Command; and
- supervises assigned personnel.

Finance/Administration Section

The Finance/Administration Section is established on incidents when agencies involved have a specific need for financial services. Not all agencies require the establishment of a separate Finance/Administration Section. When only one specific function is required, such as cost analysis, that position can be established as a Technical Specialist in the Planning Section.

The organization of a Finance/Administration Section is illustrated in Figure 2-4, on the following page.

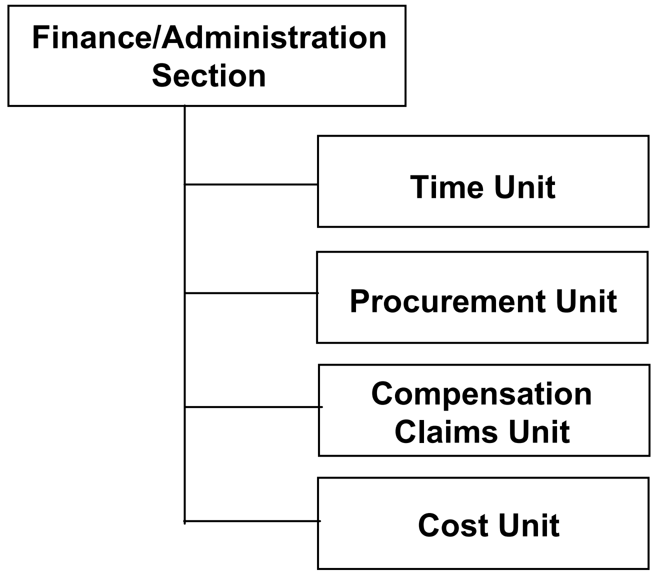


Figure 2-4
Finance/Administration Section

Finance/Administration Section Chief

The responsibilities of the Finance/Administration Section Chief may be summarized as follows:

- procures services and supplies from sources within and outside the fire department or city as requested by Command (coordinates with Logistics);
- documents all financial costs of the incident;
- documents for possible cost recovery of services and supplies;
- analyzes and manages legal risk for incidents (e.g., hazardous materials cleanup or building demolition);
- documents for compensation and claims of injury;
- obtains any and all needed incident documentation for potential cost recovery efforts; and
- is responsible for all legal aspects of the incident.

Command Staff

Command Staff positions are established to assume responsibility for key activities that are not a part of the line sections. There are three specific staff positions.

- Public Information Officer;
- Safety Officer; and
- Liaison Officer.

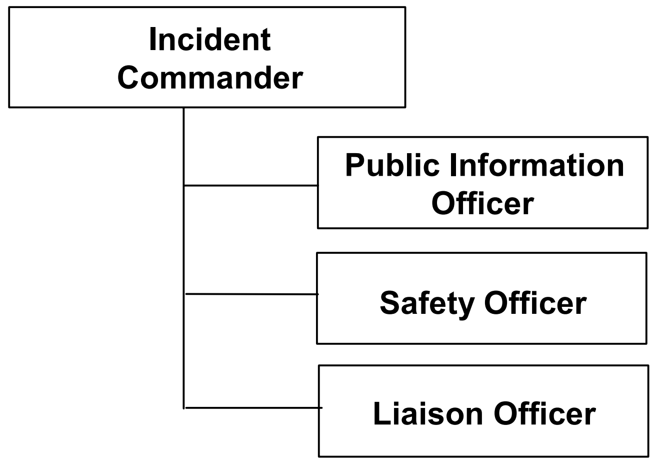


Figure 2-5
Command Staff Positions

Additional positions may be established depending upon the nature and location of the incident, or requirements established by the IC.

Public Information Officer

The Public Information Officer's (PIO) function is to develop accurate and complete information regarding incident cause, size, current situation, resources committed, and other matters of general interest. The PIO is the point of contact for the media and other government agencies that desire information directly from the incident. In either a Single or Unified Command structure, only one PIO is designated. Assistants may be assigned from the parent agency or from other agencies or departments involved.

The PIO should provide a "media area" away from the Incident Command Post (ICP) and direct all the media representatives to report to that area. An assistant PIO should accompany the media at all times.

A structural collapse incident in your community will be a media event. The print, radio, and television media will be present. They will be seeking information, and the print and television media will want photos of the incident. The PIO probably will need a few assistants to handle the needs of the media. Frequent briefings are necessary to supply media representatives with the current and accurate information demanded for effective public relations.

Safety Officer

The Safety Officer's function is to assess hazardous and unsafe situations and to develop measures for ensuring personnel safety. The Safety Officer has emergency authority to stop and prevent unsafe acts. In a Unified Command structure, a single Safety Officer is designated. Assistants may be required and may be assigned from other agencies or departments making up the Unified Command. Responder rehabilitation assessment should be assigned as a primary function to an assistant Safety Officer. The Safety Officer position should be implemented early in a structural collapse incident.

Liaison Officer

The Liaison Officer's function is to be a point of contact for representatives from other agencies. In a Single Command structure, the representatives from assisting agencies would coordinate through the Liaison Officer. Under a Unified Command structure, representatives from agencies not involved in the Unified Command would coordinate through the Liaison Officer. Agency representatives assigned to an incident should have the authority to speak on all matters for their agency.

COMMAND PROCEDURES

Purpose

Fire departments respond to a wide range of emergency incidents. These procedures identify Standard Operating Guidelines (SOG's) that can be employed in establishing Command. The system provides for the effective management of personnel and resources for the safety and welfare of personnel.

Command procedures are designed to:

- Fix the responsibility for Command on a specific individual through a standard identification system that depends on the arrival sequence of members, companies, and chief officers.

- Ensure that a strong, direct, and visible Command is established from the onset of the incident.

- Establish an effective incident organization, defining the activities and responsibilities assigned to the IC and to other individuals operating within the ICS.

- Provide a system to process information to support incident command, planning, and decisionmaking.
- Provide a system for the orderly transfer of command to subsequent arriving officers.

Responsibilities of Command

The IC is responsible for the completion of the tactical priorities:

- Locate and remove endangered occupants and treat the injured.
- Stabilize the incident and provide for life safety.
- Conserve property.
- Provide for the safety, accountability, and welfare of responding personnel. (This priority is ongoing throughout the incident.)

The ICS is used to facilitate the completion of the tactical priorities. The IC is the person who drives the ICS toward that end. The IC is responsible for building a Command structure that matches the organizational needs of the incident to achieve the completion of the tactical priorities for the incident. The functions of Command define standard activities that are performed by the IC to achieve the tactical priorities.

Functions of Command

- Assume and announce Command and establish an effective operating position (ICP).
- Rapidly evaluate the situation (sizeup).
- Initiate, maintain, and control the communications process.
- Identify the overall strategy, develop an IAP, and assign companies and personnel consistent with plans and SOG's.
- Develop an effective Incident Command Organization.
- Provide tactical objectives.
- Support incident operations.

- Review, evaluate, and revise the action plan (as needed).

- Provide for the continuity, transfer, and termination of Command.

The IC is responsible for all of these functions. As Command is transferred, so is the responsibility for these functions. The first five functions must be addressed immediately from the initial assumption of Command.

ESTABLISHING COMMAND

The first fire department member or unit to arrive at the scene shall assume command of the incident. The initial IC shall remain in command until Command is transferred or the incident is stabilized and terminated.

The first unit or member on the scene must initiate whatever parts of the ICS are needed to manage the incident scene effectively.

A single-company incident (trash fires, single-patient EMS incidents, etc.) may require only that the company or unit acknowledge its arrival on the scene.

For incidents that require the commitment of multiple companies or units, the first unit or member on the scene must establish and announce "Command," and develop an incident command structure appropriate for the incident.

The first-arriving fire department unit activates the Command process by giving an initial radio report that includes

- unit designation of the unit arriving on the scene;
- a brief description of the incident situation (i.e., building size, occupancy, haz mat release, multivehicle accident, etc.);
- obvious conditions (working fire, haz mat spill, collapsed building, multiple patients, etc.);
- brief description of action taken;
- any obvious safety concerns;
- assumption, identification, and location of Command; and
- request or release resources as required.

Examples

Structural Collapse

"Engine 27 is on the scene of a three-story masonry apartment house collapse with occupants trapped inside. Engine 27 is Vine Street Command and is initiating search and rescue."

Structural Collapse

"Truck 10 is on the scene of an 11-story, steel and concrete building under construction collapse. Approximately 10 workers are trapped and injured. Seventh Street is closed because of debris. Truck 10 is Seventh Street Command and is initiating search and rescue operations with Engine 10. Give me a second-alarm assignment, a heavy rescue, five ambulances, and the police for traffic control. Staging is at Seventh and Flower."

Transportation Incident

"Engine 57 is on the scene of a train derailment into the back of several dwellings at 58th Street and Vermont. There is a chemical spill that may be hazardous materials and is flowing toward 60th Street. There appear to be many injured and trapped in the dwellings. We need mutual aid. Give me a fourth-alarm assignment, 2 heavy rescues, a multicasualty medical assignment with 10 ambulances, a haz mat team, and the police for traffic and evacuation. Engine 57 is Vermont Command."

Single-company Incident

"Engine 6 is on the scene of a dumpster fire with no exposures. Engine 6 can handle."

Radio Designation

The radio designation "Command" is used along with the geographical location of the incident (i.e., "Seventh Street Command," "Metro Center Command"). This designation does not change throughout the duration of the incident. The designation of "Command" remains with the officer currently in command (the IC) of the incident throughout the event.

Command Options

The responsibility of the first-arriving unit or member to assume command of the incident presents several options, depending on the situation. If a chief officer, member, or unit without tactical capabilities (i.e., staff vehicle, no equipment, etc.) initiates Command, the establishment of an ICP should be a top priority. At most incidents, the initial IC is a Company Officer (CO). The following command options define the CO's direct involvement in tactical activities and the modes of Command that may be used.

Nothing-showing Mode

These situations generally require investigation by the initial-arriving company while other units remain in a staged mode. The officer should go with the company to investigate while using a portable radio to command the incident.

Fast-attack Mode

This is used when the CO's direct involvement is required to take an immediate action that will stabilize the incident. In these situations, the CO goes with the crew to provide the appropriate level of supervision. Examples of these situations include

- initial search and rescue of surface victims;
- critical life safety situations (e.g., rescue) that must be achieved in a compressed time;
- any incident where the safety and welfare of firefighters are of major concern; and
- obvious working incidents that require further investigation by the CO.

Where fast intervention is critical, use of the portable radio permits the CO's involvement in the attack without neglecting Command responsibilities. The Fast-attack Mode should not last more than a few minutes and ends with one of the following:

- The situation is stabilized.

- The situation is not stabilized and the CO must withdraw to the exterior and establish an ICP. At some time, the CO must decide whether or not to withdraw the remainder of the crew--based on the crew's capabilities and experience, safety issues, and the ability to communicate with the crew. **No crew should remain in a hazardous area without radio communication capability.**

- Command is transferred to a higher-ranking officer. When a chief officer is assuming Command, the chief officer may opt to return the CO to his/her crew, or assign him/her to a subordinate position.

The Fast-attack Mode is applicable only at incidents when the incident site is safe enough for the responders to take immediate action. The IC must make a risk/benefit analysis for the response. Remember, safety is the top priority.

Command Mode

Certain incidents, by virtue of their size, complexity, or potential for rapid expansion, require immediate strong, direct, overall Command. In such cases, the CO initially assumes an exterior, safe, and effective Command position and maintains that position until relieved by a higher-ranking officer. A tactical worksheet should be initiated and used to assist in managing this type of incident.

If the CO selects the Command Mode, the following options are available regarding the assignment of the remaining crew members.

- The officer may "move up" within the company, and place the company into action with the remaining members. **One of the crew members will serve as the acting CO and should be provided with a portable radio.** The collective and individual capabilities and experience of the crew regulate this action.

- The officer may assign the crew members to work under the supervision of another CO. In such cases, the officer assuming Command must communicate with the officer of the other company and indicate the assignment of those personnel.

- The officer may elect to assign the crew members to perform staff functions to assist Command.

A CO assuming Command has a choice of modes and degrees of personal involvement in the tactical activities, but continues to be fully responsible for the Command functions. The initiative and judgment of the officer are of great importance. The modes identified are guidelines to assist the officer in planning appropriate actions. The actions initiated should conform to one of the previously mentioned modes of operation and the appropriate safety precautions.

PASSING COMMAND

In certain situations, it may be advantageous for a first-arriving company officer to pass Command to the next company on the scene. This is indicated when the initial commitment of the first-arriving company requires a full crew (i.e., immediate rescue situation) and another company is on the scene.

"Passing Command" to a unit that is not on the scene can create a gap in the Command process and compromise incident command. **To prevent this "gap," Command shall not be assumed by an officer who is not on the scene.** Command can be passed to an incoming unit, but cannot be assumed until that arriving officer contacts the original officer and then assumes Command.

When a chief officer arrives at the scene at the same time as the initial-arriving company, the chief officer should assume Command of the incident.

Should a situation occur where a later-arriving company or chief officer cannot locate or communicate with Command (after several radio attempts), they assume and announce their assumption of Command, and initiate whatever actions are necessary to confirm the safety of the missing crew.

TRANSFER OF COMMAND

Command is transferred to improve the quality of the Command organization. The following guidelines outline the transfer of command process. Local departments must predetermine the transfer of command (through various ranking officers).

- The first fire department member arriving on the scene automatically assumes Command. This normally is a CO, but it could be any fire department member up to, and including, the fire chief.
- The first-arriving CO assumes Command after the transfer-of-command procedures have been completed (assuming an equal or higher ranking officer has not already assumed Command).
- The first-arriving chief officer should assume Command of the incident following transfer-of-command procedures.
- The second-arriving chief officer should report to the ICP for assignment.

- Later-arriving, higher-ranking chief officers may choose to assume Command, or assume advisor positions.

- Assumption of Command is discretionary for assistant chiefs and the fire chief.

Within the chain of command, the actual transfer of command is regulated by the following procedure:

- The officer assuming Command may do a preliminary sizeup prior to communicating by radio or face to face with the person being relieved. Face to face is the preferred method to transfer Command.

- The person being relieved briefs the officer assuming Command, indicating a minimum of the following information:

  - Incident conditions (fire location and extent, haz mat spill or release, number of patients, etc.)

  - Action plan for the incident.

  - Progress toward completion of the tactical objectives.

  - Safety considerations.

  - Deployment and assignment of operating companies and personnel.

  - Appraisal of need for additional resources.

- The person being relieved of Command should review the tactical worksheet with the officer assuming Command. This sheet provides the most effective framework for Command transfer because it outlines the location and status of personnel and resources in a standard form that should be well known to all members.

- The person being relieved of Command is reassigned--based on the needs of the incident--by the officer assuming Command.

GENERAL CONSIDERATIONS

The response and arrival of additional ranking officers on the incident scene strengthens the overall Command function. As the incident escalates, the IC should use these subordinate officers as needed.

A fire department's communications procedures should include communications necessary to gather and analyze information to plan, issue orders, and supervise operations.

For example:

- sizeup;
- assignment completed;
- additional resources required;
- unable to complete the assignment; and
- special information (partial collapse, haz mat in area, etc).

The arrival of a ranking officer on the incident scene does not automatically mean that Command has been transferred to that officer. Command is only transferred when the outlined transfer-of-command process has been completed. Chief officers and staff personnel should report directly to a designated location for assignment by the IC.

When time and circumstances allow, the officer who will be assuming Command should endeavor to do his/her own sizeup prior to assuming Command. It gives him/her the opportunity to see where companies are operating and an idea of their effectiveness. It also gives the officer a chance to get his/her own perspective and understanding of the scope and magnitude of the incident. By doing this prior to assuming Command, the officer can gain some understanding of the current action plan and ease the transition from one IC to another. The officer should announce his/her on-scene arrival to the IC, and advise that he/she will be doing the sizeup. Until the officer completes the sizeup and the formal transfer-of-command process has taken place, the current IC maintains command of the incident.

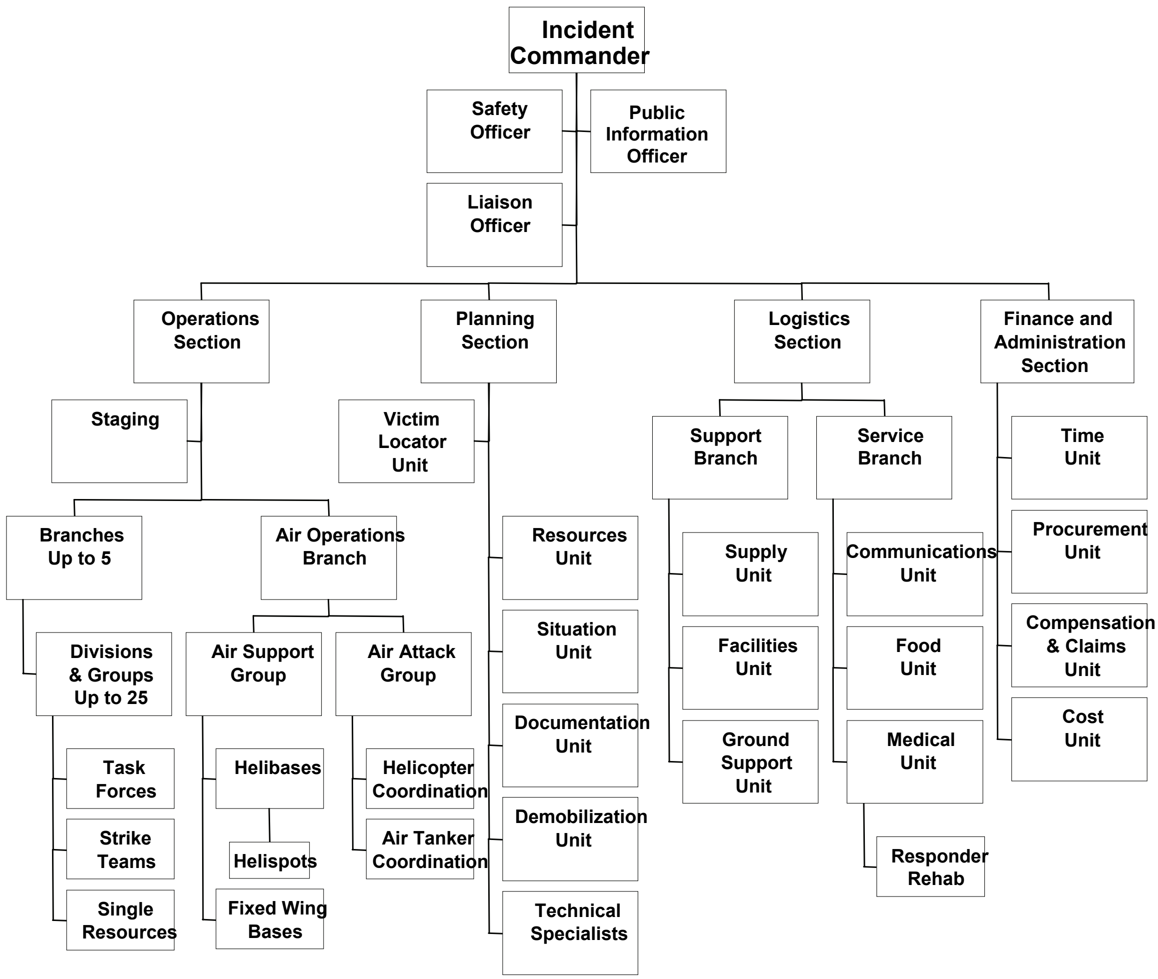
The IC has the overall responsibility for managing an incident. Simply stated, the IC has complete authority and responsibility for the incident. If a higher ranking officer wants to effect a change in the command of an incident, he/she must first be on the scene of the incident, then use the transfer-of-command procedure to assume Command.

In extreme and life-threatening situations that affect personnel safety, anyone can effect change by initiating corrective action and notifying Command.

Command Structure

The IC is responsible for developing an organizational structure based on SOG's as soon as possible after arrival, making a sizeup, developing objectives, and implementing initial tactical control measures. The size and complexity of the organizational structure are determined by the scope of the emergency and availability of resources.

STRUCTURAL COLLAPSE ICS ORGANIZATION CHART (EXAMPLE)



Incident Command System Operations

The ICS should be considered the basic command system to be used on any size or kind of structural collapse incident. The only difference between using the ICS on a very large incident and using it for a small incident is expanding the basic emergency command organization to meet the increased needs of the larger incident. Thus, the full establishment of the ICS should be viewed as an extension of the existing incident organization. The decision to expand the organization is that of the IC, and is made when it is clear that the initial attack or reinforced attack is insufficient. This determination is made by the IC at the scene.

ICS Organizational Development

The following examples are guides in using the basic ICS organization for incidents of various sizes.

Initial Response	1 to 5 Increments/1st Alarm
Reinforced Response	Greater Alarm/Mutual Aid

Initial Response

The first-arriving unit or officer assumes Command until arrival of a higher ranking officer. Upon arrival of a higher ranking officer, he/she is briefed by the onscene IC. The higher ranking officer then assumes Command. This transfer of command must be announced. The officer being relieved of Command responsibilities is reassigned by the new IC.

Reinforced Response

A reinforced response is initiated when the onscene IC determines that the initial response resources are insufficient to deal with the size or complexity of the incident.

Command Organization

The Command organization must develop at a pace that stays ahead of the tactical deployment of personnel and resources. In order for the IC to manage the incident, he/she first must be able to direct, control, and track the positions and functions of all operating companies. Building a Command organization is the best support mechanism the IC can use to achieve the harmonious balance between managing personnel and incident needs. Simply put, this means

Large-Scale and Complex Incidents	=	Large Command Organization

Small Scale and "Simple" Incidents	=	Small Command Organization

Note: The IC should have more people working than commanding.

The basic configuration of Command includes three levels:

Strategic Level Overall direction of the incident
Tactical Level Assigns operational activities
Task Level Specific tasks assigned to companies

Strategic Level

The strategic level involves the overall command of the incident. The IC is responsible for the strategic level of the Command structure. The action plan should cover all strategic responsibilities, all tactical objectives, and all support activities needed during the entire operational period. The action plan defines where and when resources are assigned to the incident to control the situation. This plan is the basis for developing a Command organization, assigning all resources, and establishing tactical objectives.

The strategic-level responsibilities include

- adopting offensive or defensive strategy (These should be well defined in SOG's.);
- determining the appropriate strategy;
- establishing overall incident objectives;
- setting priorities;
- developing an action plan;
- obtaining and assigning resources;
- predicting outcomes and planning; and
- assigning specific objectives to tactical-level units.

Tactical Level

Branches, divisions, and groups direct operational activities toward specific objectives. Branches, divisions, and groups are responsible for specific geographic areas or functions and supervising assigned personnel. A tactical-level assignment comes with the authority to make decisions and assignments within the boundaries of the overall plan and safety conditions. The accumulated achievements of tactical objectives should accomplish the strategy as outlined in the action plan.

Task Level

The task level refers to those activities normally accomplished by individual companies or specific personnel. The task level is where the work is actually done. Task-level activities are supervised routinely by CO's. The accumulated achievements of task-level activities should accomplish tactical objectives.

Example

The following example using one of the largest military operations ever undertaken is used to describe the relationship between the strategic level, the tactical level, and the task level. "Operation Overlord" was the plan to invade Europe in Normandy on June 6, 1944 (focuses on U.S. participation in a very simplistic example of just some of the operations involved).

The strategic level (what needs to be done):

- land troops, secure and hold the Normandy beaches;
- place troops inland behind enemy lines;
- reinforce and support landing; and
- move forces inland and link with allied forces to move toward Berlin.

The tactical level (how it will be done):

- land troops on beaches by amphibious landing;
- provide naval sea bombardment and air cover;
- drop airborne troops in behind enemy lines;
- reinforce and support invasion with naval supply and additional troops; and
- link up with allied forces at defined areas.

The task level (who will do it, when it will be done, where it will be done):

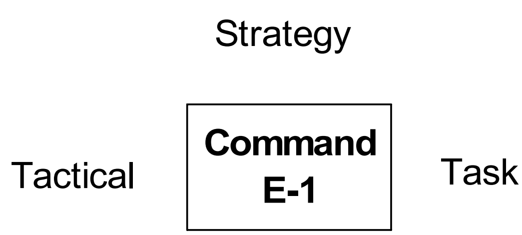
- on the morning of June 6, 1944, land portions of the U.S. 1st Army on Omaha and Utah beaches;

- bomb shore defenses using U.S. Navy ships;
- provide air cover and attack shore defenses with U.S. Army Air Corps;
- make airborne landing in tactical support of beach landings using the 82nd and 101st Airborne around the Ste.-Mere-Eglise area prior to the beach landings;
- move remainder of 1st Army and 3rd Army into beachhead, and move troops inland toward Cherbourg, Bayeux, and St.-Lo, securing occupied areas;
- set up logistical support system to supply troops from the beaches, inland; and
- link up U.S. forces and allied forces inland at various points along the front and continue moving forces into France.

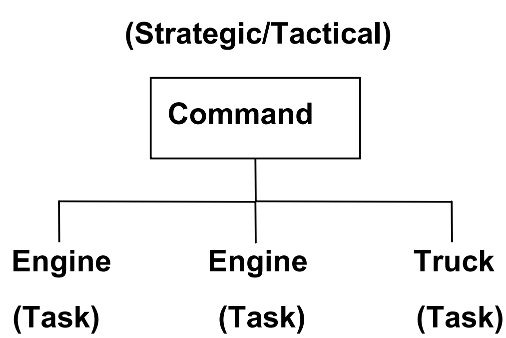
COMMAND STRUCTURE--EXPANDING THE ORGANIZATION

Command Structure--Basic Organization

The most basic structure combines all three levels of the Command structure. The CO on a single-engine response to a dumpster fire determines the strategy and tactics and supervises the crew doing the task.



The basic structure for a "routine" incident, involving a small number of companies, requires only two levels of the Command structure. The role of Command combines the strategic and tactical levels. Companies report directly to Command, and operate at the task level.



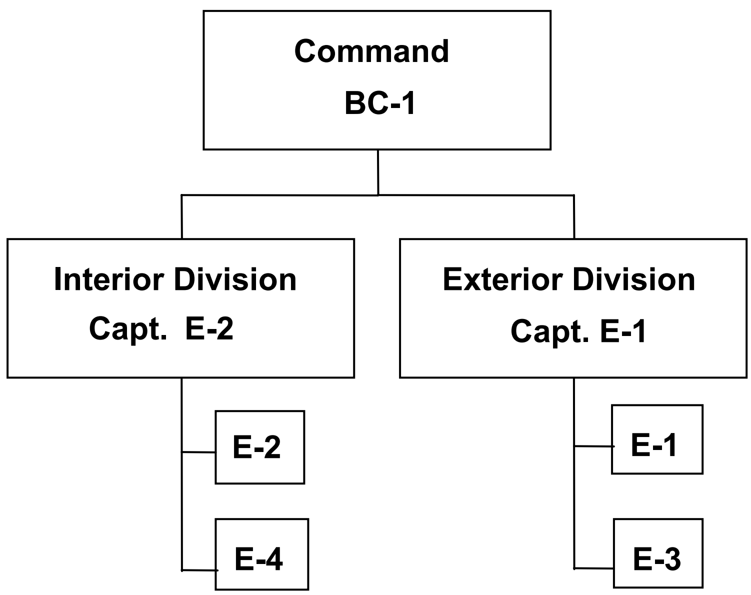
Command Structure--Division and Group

Divisions represent geographic operations and groups represent functional operations. The title of the individuals in charge of divisions or groups is "Supervisor," i.e., Division Supervisor. The following examples illustrate the use of these organizational elements.

Divisions and Groups

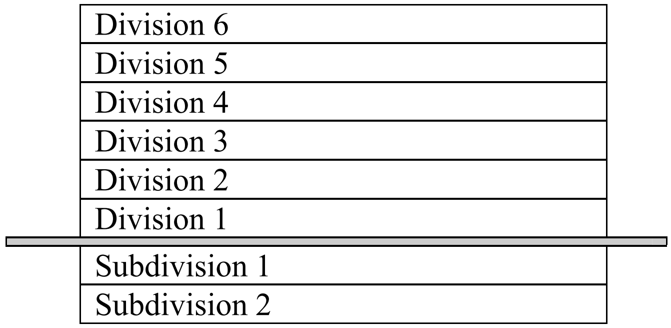
As an incident escalates, the IC should group companies to work in divisions and groups to reduce span of control and increase effectiveness. A division is the organizational level having responsibility for operations within a defined geographic area. To use division and group terminology effectively, a department must have a designated method of dividing an incident scene.

Division Designation

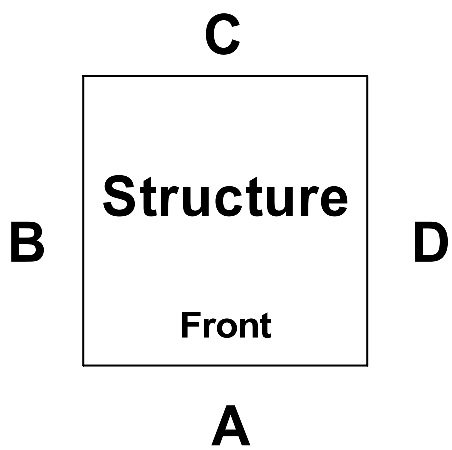


Tactical Assignments for a Multistory Incident Division Designation

In multistory occupancies, divisions usually are indicated by floor number (Division 6 indicates sixth floor). When operating in levels below grade, such as basements, the use of subdivisions is appropriate.



Exterior approaches are identified by alphabetical letter identifiers. These letters start at the front of a building and progress clockwise around the building as illustrated. Division A always will indicate the front or address side of the building.



Note: For clarity during radio communications, the phonetic designations of "Alpha," "Bravo," "Charlie," and "Delta" are suggested. For example, "Command from Division Delta."

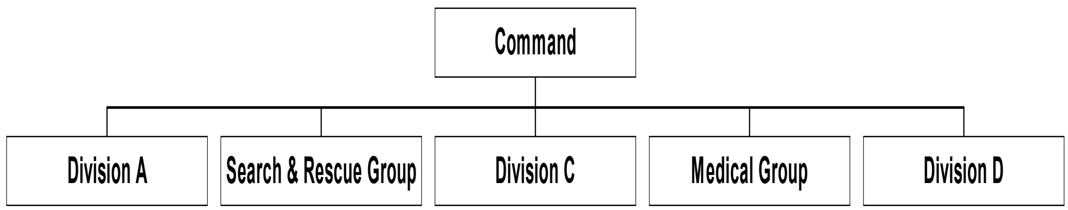
A division is that organizational level having responsibility for operations within a defined geographic area. The division level is organizationally situated between single resources, task force, or the strike team and the branch.

Group Designation

Groups are an organizational level responsible for a specific functional assignment at an incident. Examples are Search Group, Rescue Group, Haz Mat Group, Medical Group, Evacuation Group, and Security Group.

They may be made up from a variety of resources needed to accomplish the task for which they are organized.

Division/Group Designation



Command Structure--Divisions and Groups; Basic Operational Approach

The use of divisions and groups in the Command organization provides a standard system to divide the incident scene into smaller subordinate command units or areas.

Complex emergency situations often exceed the capability of one officer to manage the entire operation effectively. Divisions and groups reduce the span of control to more manageable, smaller-sized units. Divisions and groups allow the IC to communicate principally with these organizational levels, rather than multiple individual CO's, thus providing an effective command structure and incident scene organization. Generally, division and group responsibilities should be assigned early in the incident, typically to the first company assigned to a geographic area or function. This early establishment of divisions and groups provides an effective incident command organization framework on which the operation can be built and expanded.

The number of divisions and groups that can be managed effectively by the IC varies. The normal span of control is three to seven. In fast-moving, complex operations, a span of control of no more than five divisions and groups is indicated. In slower-moving, less complex operations, the IC may manage more divisions and groups effectively.

Where the number of divisions and groups exceeds the span of control that the IC can manage effectively, the incident organization can be expanded to meet incident needs by assigning a Branch Director. Each branch is responsible for several of these divisions and groups and should be assigned a separate radio channel, if available.

The division and group procedures provide an array of major functions that may be implemented selectively according to the needs of a particular situation. This places responsibility for the details and execution of each particular function on a division and group.

When effective divisions and groups have been established, the IC can concentrate on overall strategy and resource assignments, allowing the divisions and groups to manage their assigned units. The IC determines strategy and assigns tactical objectives and resources to each division and group. Each division and group supervisor is responsible for the tactical deployment of the resources at his/her disposal in order to complete the tactical objectives assigned by the IC. Division and group supervisors also are responsible for communicating their needs and progress to Command.

Divisions and groups reduce the overall amount of radio communications. Most routine communications within a division and group should be conducted face to face between CO's and their supervisor. This process reduces unnecessary radio traffic and increases the ability to transmit critical radio communications.

The safety of firefighting personnel represents the major reason for establishing divisions and groups. Each division and group supervisor must maintain communication with assigned companies to control both their position and their function. This supervisor must monitor all hazardous situations and risks to personnel constantly. The division and group supervisor must take appropriate action to ensure that companies are operating in a safe and effective manner.

The IC should begin to assign divisions and groups based on the following factors:

- Situations that involve a number of companies or functions beyond Command's span of control. Command initially should assign responsibility for division and group operations to the first CO assigned to a geographic area or function. As additional chief officers become available, they may be assigned to relieve the CO of responsibility for the area or function.

- When companies are involved in complex operations (large interior or geographic area, multiple search operations, hazardous materials operations, technical rescues, shoring operations, etc.).

- When companies are operating from tactical positions that Command has little or no direct control over (i.e., they are out of Command's sight).

- When the situation presents special hazards and close control is required over operating companies (i.e., unstable structural conditions, heavy fire load, marginal offensive situations, etc.).

When establishing divisions and groups, the IC assigns and advises each unit as follows:

- tactical objectives;
- a radio designation (Rescue Group, Division "A"); and
- the identity of resources assigned to the specific division and group.

Division and Group Guidelines

Divisions and groups are regulated by the following guidelines:

- It is the ongoing responsibility of Command to assign divisions and groups as required for effective emergency operations; this assignment relates to both geographic and functional tactical assignments.

- Command advises each division and group of specific tactical objectives. The overall strategy and plan is provided if time permits so that the supervisors of the divisions and groups have some idea of what is going on and how their assignment fits into the overall plan.

- The number of companies assigned to a division or group depends on conditions within that area of responsibility. Command maintains an awareness of the number of companies operating within a division or group and the capability of that specific division or group to direct operations effectively. If a division or group cannot control the resources within the division and group, it should notify the IC so that responsibilities can be split or other corrective action taken. In most cases three to seven companies or resource increments represent the maximum span of control for a division or group.

- The incident scene should be subdivided in a manner that makes sense. This should be accomplished by assigning divisions to geographic locations (e.g., Division 4, Division "A") and assigning functional responsibilities to groups (e.g., Rescue Group, Medical Group).

- Division and group supervisors use the division/group designation in radio communications (e.g., "Command from Rescue Group").

- Divisions and groups are commanded by chief officers, CO's, or any other fire department member designated by Command.

- The specific guideline for optimum span of control in divisions and groups is five. This applies to operational divisions and groups. Many of the Command Staff functional positions (Information, Safety, Liaison, etc.) are preassigned to certain individuals and are driven by SOG's. These types of functional responsibilities should operate automatically and, as such, should not be included in the IC's span of control.

- Regular transfer-of-command procedures should be followed in transferring division and group responsibility.

- In some cases, a supervisor may be assigned to an area or function to evaluate and report conditions and advise Command of needed tasks and resources. The assigned officer proceeds to the division or group, evaluates and report conditions to the IC, and assumes responsibility for directing resources and operations within his/her assigned area of responsibility.

- The division and group supervisor must be in a position to supervise and monitor operations directly. This requires the division and group supervisor to be equipped with the appropriate protective clothing and equipment for his/her area of responsibility. Division and group supervisors assigned to operate within a hazard zone must be accompanied by a partner if they are not in close proximity to operating personnel.

- These supervisors are responsible for and in control of all assigned functions within their division or group. This requires each division and group supervisor to:

  - Complete objectives assigned by Command.

  - Account for all assigned personnel.

  - Ensure that operations are conducted safely.

  - Monitor work progress.

  - Redirect activities as necessary.

  - Coordinate actions with related activities and adjacent divisions and groups.

- Monitor welfare of assigned personnel.

- Request additional resources as needed.

- Provide Command with essential and frequent progress reports.

- Reallocate or release resources within the division and group.

- The division and group supervisor should be readily identifiable and maintain a visible position as much as possible.

- The primary function of CO's working within a division or group is to direct the operations of their individual crews in performing assigned tasks. CO's advise their division or group supervisor of work progress, preferably face to face. All requests for additional resources or assistance within a division or group must be directed to the division or group supervisor. These supervisors communicate with Command.

- Each division and group supervisor keeps Command informed of conditions and progress in his/her division or group through regular progress reports. These supervisors must limit progress reports to essential information only.

- Command must be advised immediately of significant changes, particularly those involving the ability or inability to complete an objective, or of hazardous conditions, accidents, structural collapse, etc.

- When a company is assigned from Staging to an operating division or group, the company is told which division and group it is reporting to, and the name of the supervisor. The division or group supervisors are informed of which companies or units have been assigned by the IC. It then is the responsibility of these supervisors to contact the assigned company to transmit any instructions relative to the specific action requested.

- Division and group supervisors monitor the condition of the crews operating in their area of responsibility. Relief crews are requested in a manner that assures the safety of personnel and maintains progress toward the division's or group's objectives.

- These supervisors ensure an orderly and thorough reassignment of crews to responder rehabilitation. Crews must report to responder rehabilitation intact to facilitate accountability.

BRANCHES

As previously discussed, divisions and groups identify tactical-level assignments in the Command structure. As the span of control becomes excessive, the incident becomes more complex, or it has developed two or more distinctly different operations (i.e., fire, medical, evacuation, etc.), the organization can be subdivided further into branches.

Branches may be established on an incident to serve several purposes.

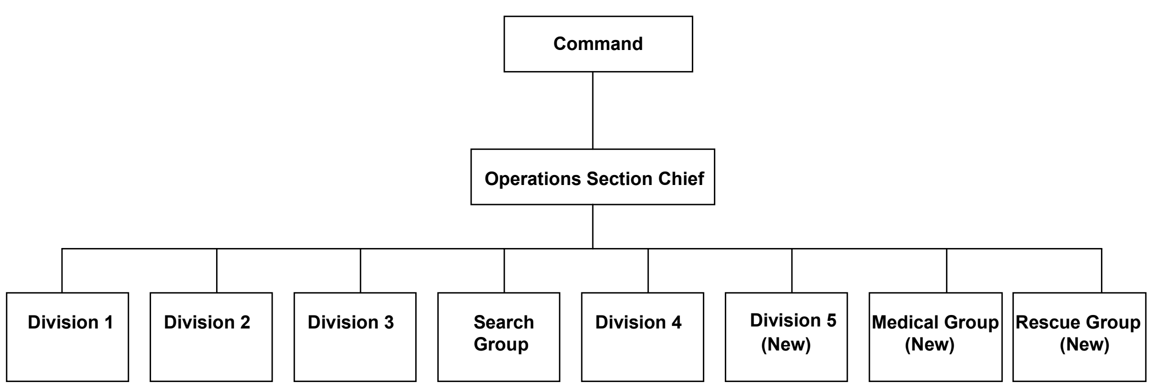
In general, branches may be established for the following reasons:

- Span of control.
- Functional.
- Multijurisdictional.
- When the numbers of divisions and groups exceed the recommended span of control for the OSC, the IC or OSC should designate a multibranch structure, and allocate the divisions and groups within those branches.

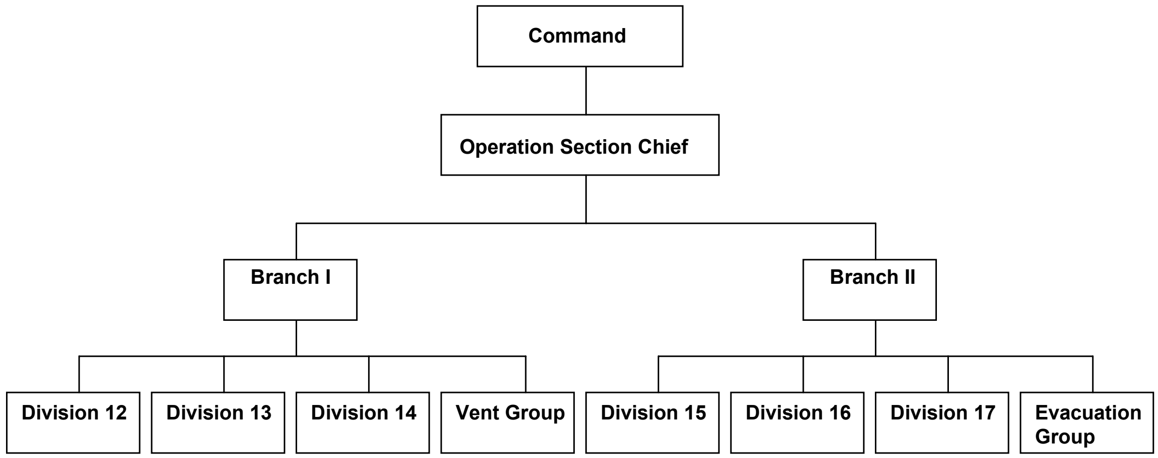
In a structural collapse incident, search, rescue, medical, exposures, and law enforcement each could become a branch operation.

In the following example, one group and four divisions report to the OSC, with one additional division and two groups being added. At this point, a two-branch organization was formed, as reflected below.

Before Multibranch Structure



Two-branch Organization



Branches should operate in their area of responsibility on separate radio channels, and communicate to Operations on a different channel if possible. The radio designation of branches should reflect the objective of the branch, when designating functional branches (i.e., Haz Mat Branch, Multicasualty Branch, etc.). Tactical branches may be designated numerically (i.e., Branch I, Branch II, Branch III, etc.). When Operations implements branch directors, the division and group supervisors **must** be notified of their new supervisor. This information should include

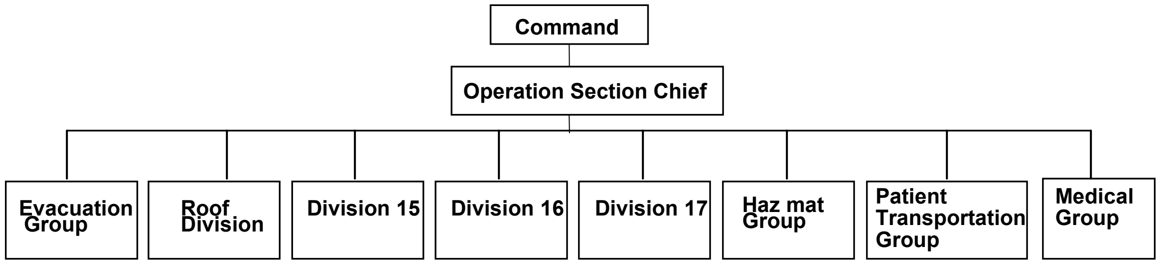
- to which branch the division or group currently is assigned; and
- the radio channel the division or group is operating on in the branch.

Radio communications then should be directed from the division or group supervisor to the branches--instead of Command or Operations. Branch directors will receive direction from Command or Operations, which then will be relayed to the division and groups.

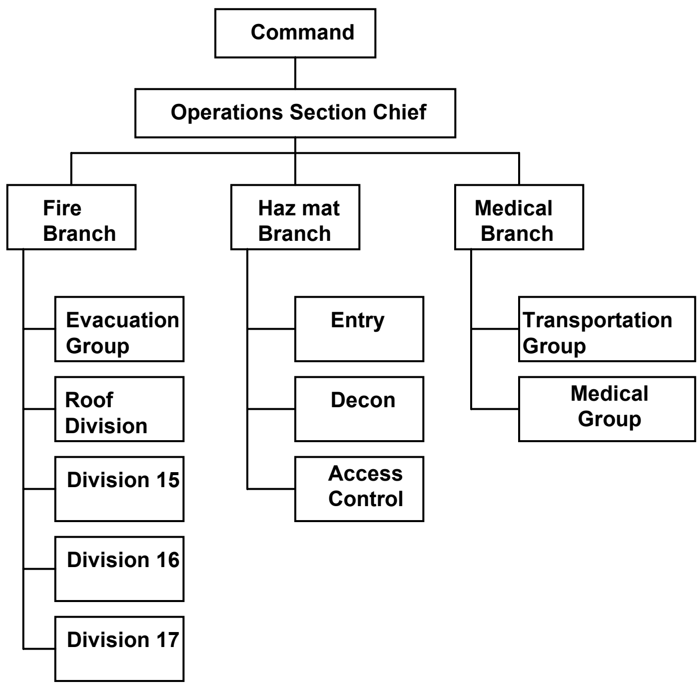
In structural collapse operations, branches should be located at operational locations. When a structural collapse incident encompasses a large geographic area, it is more effective to have branches in tactical locations. When branches are sent to tactical positions, they should immediately implement command and control procedures within their branch.

Another example of expansion to the branch level may involve a structural collapse with a haz mat problem and a large number of casualties.

Organization expands from this…



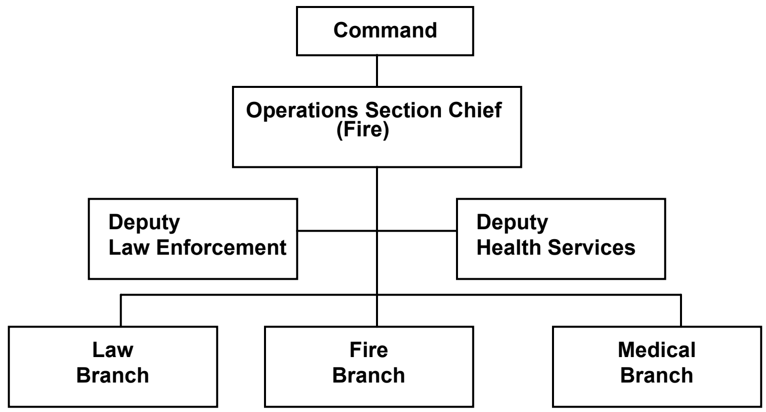
To this…



Functional Branch Structure

When the nature of the incident calls for a functional branch structure, such as a major structural collapse incident within a jurisdiction, three departments within the jurisdiction (police, fire, and health service) will each have a functional branch operating under the direction of a single OSC. In this example, the OSC is from the fire department, with deputies from police and health services departments. Other alignments could be made, depending upon the jurisdictional plan and the type of emergency. Note that the IC in this situation could be either Single or Unified Command, depending upon the jurisdiction.

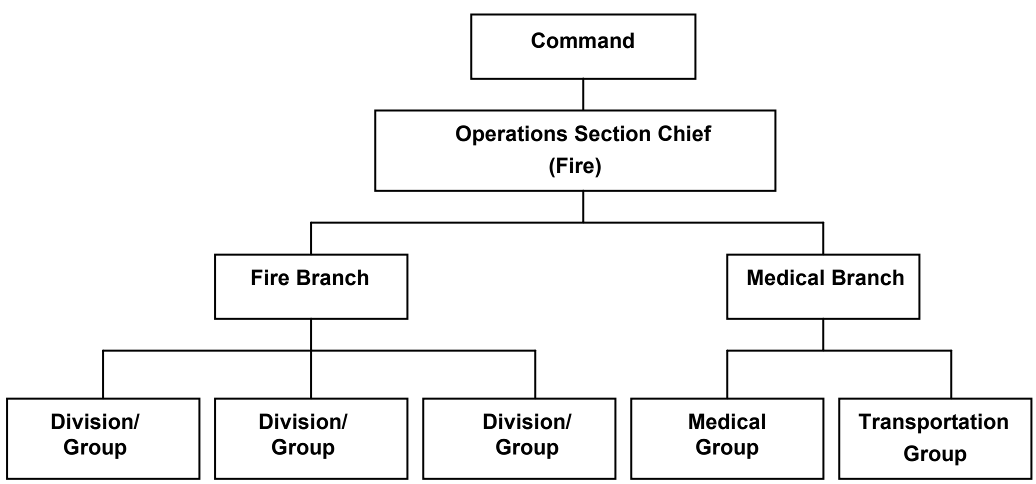
Functional Branches



Multijurisdictional Incidents

When the incident is multijurisdictional, resources are best managed under the agencies that have normal control over those resources.

Branches should be used at incidents where the span of control with divisions and groups is maximized, or at incidents involving two or more distinctly different management components (e.g., a large collapse with a major search and rescue operation, and a large number of patients). The IC may elect to assign branches to forward positions to manage and coordinate activities, as illustrated.



Air Operations

When the incident requires the use of aircraft, such as for the transportation of victims from a multicasualty incident, highrise rooftop rescue, swift water rescue, or wildland fire, the OSC should establish the Air Operations Branch organization. Its size, organization, and use will depend primarily upon the nature of the incident and the availability of aircraft.

Command--Single and Unified

Command is responsible for overall management of the incident. Command also includes certain staff functions. The command function within the ICS may be conducted in two general ways:

- Single Command; or
- Unified Command.

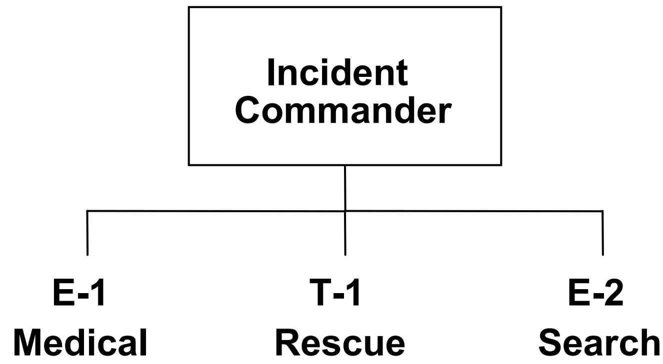
Single Command

Within a jurisdiction in which an incident occurs and where no overlap of jurisdictional boundaries is involved, a single IC is designated by the jurisdictional agency to have overall management responsibility for the incident.

The IC prepares incident objectives that serve as the foundation for subsequent action planning. The IC approves the final action plan, and approves all requests for ordering and releasing primary resources. The IC may have a deputy. The deputy should have the same qualifications as the IC. The deputy may work directly with the IC, be a relief IC, or perform certain specific assigned tasks.

At an incident within a single jurisdiction where the nature of the incident is primarily the responsibility of one agency, e.g., fire, the deputy may be from the same agency. In a multi-agency or multijurisdictional incident, or one that threatens to be multijurisdictional, the deputy role may be filled by an individual from another agency with a primary responsibility or designated by the adjacent jurisdiction. More than one deputy could be involved. Another way of organizing to meet multi-agency or multijurisdictional situations is with a Unified Command.

This figure depicts an incident with Single Incident Command authority.

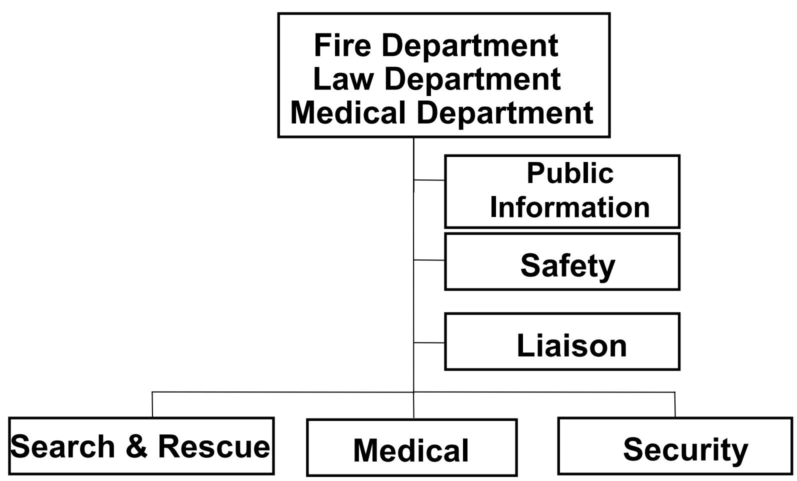


Unified Command

A Unified Command structure is called for under the following conditions:

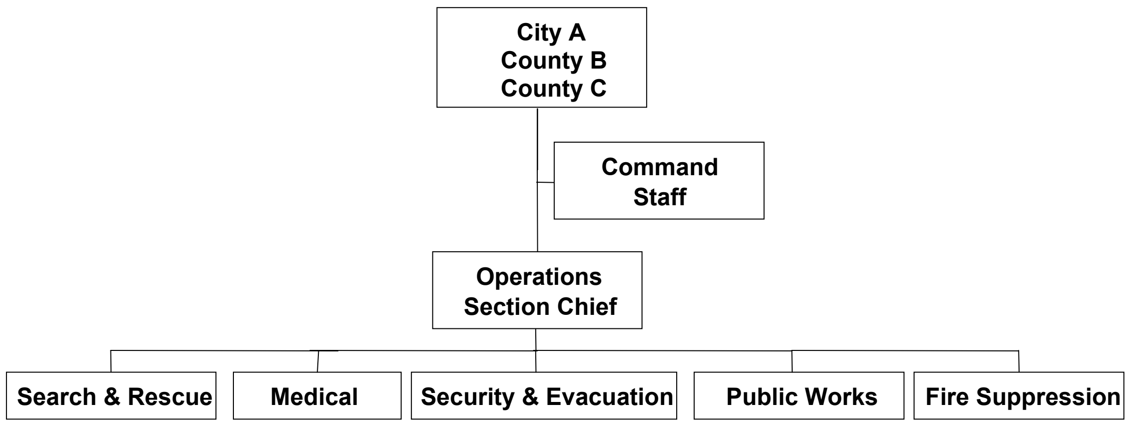
- When the incident is totally contained within a single jurisdiction, but more than one department or agency shares management responsibility due to the nature of the incident or the kinds of resources required (e.g., a World Trade Center type incident). Fire, medical, and law enforcement all have immediate but diverse objectives. An example of this kind of Unified Command structure is depicted below.

Unified Command Structure
Multidepartment, Same Jurisdiction



- When the incident is multijurisdictional, such as a major earthquake or hurricane. An example of this kind of Unified Command structure is shown on the next page.

Unified Command Structure Multijurisdictional



Single/Unified Command Differences

The primary differences between the Single and Unified Command structures are

- In a Single Command structure, a single IC is solely responsible, within the confines of his/her authority, to establish objectives and overall management strategy associated with the incident. The IC is directly responsible for follow-through to ensure that all functional area actions are directed toward accomplishment of the strategy. The implementation of planning required to effect operational control is the responsibility of a single individual (Operations Section Chief) who reports directly to the IC.

- In a Unified Command structure, the individuals designated by their jurisdictions, or by departments within a single jurisdiction, must jointly determine objectives, strategy, and priorities. As in a Single Command structure, the OSC has responsibility for implementation of the plan. The determination of which agency or department provides the OSC must be made by mutual agreement of the Unified Command. It may be done on the basis of greatest agency or jurisdictional involvement, number of resources involved, existing statutory authority, or by consensus opinion of the individual's qualifications.

NATIONAL INCIDENT MANAGEMENT SYSTEM/NATIONAL RESPONSE PLAN VIDEO FACTSHEET

As required by the Department of Homeland Security (DHS), every new and existing DHS training course will include an appropriate amount of information explaining the National Incident Management System (NIMS) and the National Response Plan (NRP). For this level course, the NIMS/NRP Video, along with this fact sheet information, will meet the intent and obligation for this training and education update.

NIMS is more than the Incident Command System (ICS). The NIMS is comprised of the following six components:

1. Command and Management--NIMS incident command and management systems.

2. Preparedness--Necessary components of operational preparedness systems.

3. Resource Management/Mutual Aid--Standardized procedures for resource management processes.

4. Communications and Information Management--Establishing common operating framework, accessibility, and interoperability.

5. Supporting Technologies--Research and development; technology supporting interoperability and compatibility.

6. On-going NIMS Management and Maintenance--NIMS Integration Center.

Command and Management envisions the most familiar (and easily implemented) part of NIMS--the ICS. Organizations must, as a condition of Federal preparedness assistance, take steps to begin institutionalizing the use of ICS during prevention and response efforts. Actions to institutionalize the use of ICS take place at two levels--policy and organizational/operational.

- At the policy level, institutionalizing the ICS means government officials, i.e. governors, mayors, county and city managers, tribal leaders and others:
  - adopt the ICS through executive order, proclamation, or legislation for the jurisdiction; and
  - direct that incident managers and response organizations in their jurisdictions train, exercise, and use the ICS in their response operations.

- At the organizational/operational level, evidence that incident managers and emergency response organizations are institutionalizing the ICS would include the following:

  - ICS is being integrated into functional and system-wide emergency operations policies, plans and procedures.

- ICS training is planned or under way for responders, supervisors and command level officers.

- Responders at all levels are participating in and/or coordinating ICS-oriented exercises that involve responders from multi-disciplines and jurisdictions.

Additional information, requirements, and guidelines for fulfilling an organization's NIMS compliance can be found on the NIMS Integration Center's website: http://www.fema.gov/nims/ Of particular interest to fire service organizations is NIMCAST (National Incident Management Compliance Assessment Tool)--a Web-based self-assessment system that will allow evaluation of an organization's preparedness and response capabilities against the requirements of the NIMS.

The NRP specifies how the resources of the Federal Government will work in concert with State, local, tribal governments, and the private sector in response to Incidents of National Significance. The NRP is predicated on the NIMS. Together the NRP and the NIMS provide a nationwide template for working together to prevent or respond to threats and incidents regardless of cause, size, or complexity.

Two online, self-study courses developed by the Emergency Management Institute are available to learn more about the NIMS and the NRP:

1. IS700 NIMS: An introduction to the NIMS and is a Web-based awareness level course that explains NIMS components, concepts and principles.

2. IS800: An introduction to the NRP, including the concept of operations upon which the plan is built, roles and responsibilities of the key players, the organizational structures for NRP coordination, the field-level organizations and teams activated under the NRP, and the incident management activities addressed by the NRP. The course is designed for DHS and other Federal department/agency staff responsible for implementing the NRP, as well as State, local and private sector emergency management professionals.

Both of these courses, as well as other NIMS-related training, can be accessed at the National Emergency Training Center (NETC) Virtual Campus at www.training.fema.gov

DIFFERENCES BETWEEN NIMS AND FIRESCOPE ICS

- The Information Officer position is called the Public Information Officer (PIO).
- The Information and Intelligence function may be organized in one of the following ways:
    - Officer within the Command Staff;
    - Unit within the Planning Section;
    - Branch within the Operations Section; or
    - Separate General Staff Section.

Information and Intelligence Options in the NIMS

As an Officer in the Command Staff

This option may be most appropriate in incidents with little need for tactical or classified intelligence and in which incident-related intelligence is provided by supporting Agency Representatives through real-time reach-back capabilities.

As a Unit within the Planning Section

This option may be most appropriate in an incident with some need for tactical intelligence and when no law enforcement entity is a member of the Unified Command.

As a Branch within the Operations Section

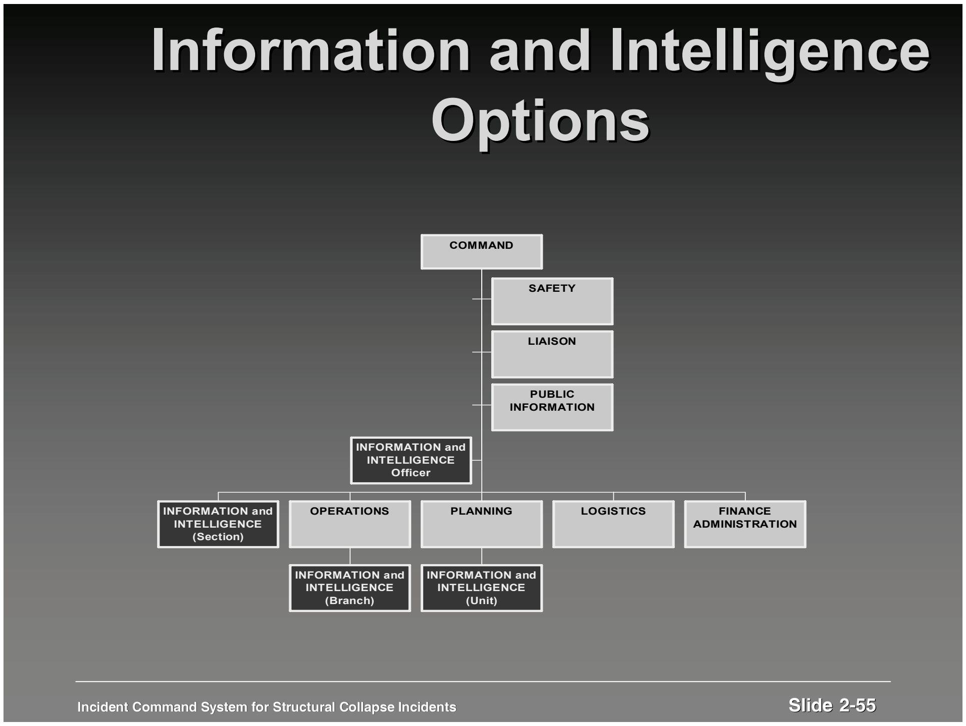
This option may be most appropriate in incidents with a high need for tactical intelligence (particularly classified intelligence) and when law enforcement is a member of the Unified Command.

As a General Staff Section

- This option may be most appropriate when an incident is heavily influenced by intelligence factors.

  - It is also appropriate when there is a need to manage and/or analyze a large volume of classified or highly sensitive intelligence or information.

  - This option is particularly relevant to a terrorism incident, for which intelligence plays a crucial role throughout the incident life cycle.



Information and Intelligence Options in the NIMS - Summary

- Regardless of how it is organized, the Information and Intelligence function is also responsible for developing, conducting, and managing information-related security plans and operations as directed by the IC.

- These can include information security and operational security activities, as well as the complex task of ensuring that sensitive information of all types (e.g., classified information, sensitive law enforcement information, proprietary and personal information, or export-controlled information) is handled in a way that not only safeguards the information but also ensures that it gets to those who need access to it so that they can effectively and safely conduct their missions.

- The Information and Intelligence function also has the responsibility for coordinating information- and operational-security matters with public awareness activities that fall under the responsibility of the PIO, particularly where such public awareness activities may affect information or operations security.

UNIT 3: RESPONSE RESOURCE CAPABILITIES

TERMINAL OBJECTIVE

The students will be able to identify various resource levels, types, and capabilities used for structural collapse incidents.

ENABLING OBJECTIVES

The students will:

1. *Define the types and levels of structural collapse risks within a jurisdiction.*
2. *Define various levels of capability for a structural collapse incident.*
3. *Describe resources available through local, State, and Federal agencies.*

INTRODUCTION

The Incident Commander (IC) at a structural collapse incident must be able to identify the type of collapse that occurred and the hazards to rescuers and victims, and to match the appropriate level of rescue capability with the problem.

There are many levels of capability, including spontaneous volunteers, standard fire companies, heavy rescue squads, technical rescue teams (e.g., confined space and Federal Emergency Management Agency (FEMA) National Urban Search and Rescue (US&R) Task Forces). There are many agencies that may respond to a structural collapse. This type of incident is normally a multi-agency response because of the many tasks that must be accomplished (e.g., medical, law enforcement, heavy equipment resources, etc.).

Structural collapse resources may be available from:

- local jurisdictions;
- State and Federal governments;
- members of the private sector; and
- trained civilian volunteers.

Government Levels of Response

Local Level

Includes trained volunteers, standard fire companies, fire companies with specialized equipment, technical rescue, and heavy rescue teams or companies.

Regional Level

Provides access to resources from surrounding jurisdictions through mutual aid or contract.

State Level

Resources may include specialized teams, equipment, task forces, and the National Guard.

Federal Level

Includes FEMA Task Forces, the military, and many other supporting agencies. (There are 27 FEMA Task Forces.)

International Level

Response may involve search and rescue teams of varying capabilities from other countries.

The IC must know what resources are needed and how to manage and coordinate those resources.

RISK/HAZARD ANALYSIS

The fire service has a key role in collapsed structure response and should have the capability to respond effectively to the various types of incidents encountered. The question is "What type of capability is needed in each community?" This question may be answered by performing a risk/hazard analysis.

Many departments form technical rescue teams after a specific rescue incident has shown a deficiency or inability to handle the rescue safely and effectively. In some cases, a team is developed before a major rescue incident occurs due to the expectation of emergencies created by risks in the community.

In determining whether a team is needed in your community, you must first do some research to evaluate the risks in your area. A risk analysis helps you to determine the level of risk and potential hazards so that you can decide whether a team really is needed. This is particularly important for two reasons. First, political leaders want to know what risks exist to justify funding a team. Second, you want to know what risks confront your department, what type of hazardous scenarios to train for, and what rescue equipment is needed to address the risks. A thorough risk analysis should define your objectives and justify the effort of forming a team.

Risk/Hazard Analysis Elements

A risk/hazard analysis involves the following elements:

Performing a Risk Assessment

A risk assessment is based on historical data plus an analysis of newly introduced hazards and potentially high-risk problems. Begin by assessing past rescue needs in your response area. You may look at incident reports to determine frequency, incident type, and location. Other potential sources of data include your State workers' compensation office, State and national Occupational Safety and Health Administration (OSHA) offices, construction and contractors' associations, building officials and inspectors, and safety managers at local businesses. Past experience may indicate the likelihood of technical rescue-type incidents during major construction projects.

Regardless of the size or economic makeup of the community, almost every jurisdiction is subject to some kind of risk.

Considering Target Hazards

A department faces specific risks each day. You also must consider target hazards in your response area, or those you anticipate in the future. Target hazards are specific risk areas, that confront your department in a rescue emergency that have a high potential for life loss or injury. Make a list of target hazards that present special rescue challenges requiring special training and equipment to control safely and effectively.

A hazard analysis may be used to assist in the development of findings and conclusions using a scoring system based on four criteria:

1. History.
2. Vulnerability.
3. Maximum threat.
4. Probability.

History

The history or the record of previous emergencies is important in hazard analysis. A past record of incidents indicates a predisposition for the same kinds of problems in the future. Unless specific conditions no longer exist or they have been substantially reduced or mitigated, similar emergencies may happen again.

Vulnerability

Vulnerability includes all persons who may be killed, injured, or contaminated and all property that may be destroyed, damaged, or contaminated by an incident. Determining the number of people and the value of property in jeopardy gives useful information for assessing vulnerability. Vital facilities and population groups of special concern can be identified in vulnerability descriptions. For example, power plants, hospitals, the aged, the handicapped, children, etc.

Maximum Threat

Maximum threat is the worst-case scenario of a hazard. In determining this factor assume both the greatest event possible and the greatest impact (e.g., a maximum credible earthquake in an urban center on a weekday during business hours. This also may involve secondary threats such as haz mat problems, etc.).

Probability

Probability is the likelihood that an event will occur. It can be expressed as the odds that an incident may occur during a given period of time, such as the odds are 1 in 100 that it will occur in any given year. There is a correlation between historic data and probability; however, recent development of new hazardous conditions in a community may increase probability over that indicated by history alone.

Rating System

A numbered weight or percentage may be given to each criterion, and a rating of low, medium, or high may be assigned to each criterion for each hazard.

The list of hazards can be ranked by the product of the criterion weights and ratings. The highest ranking hazards should receive priority consideration.

Analyzing Data

The likelihood of a technical rescue emergency is projected by developing a frequency rate. To demonstrate the likelihood of a technical rescue incident, the frequency and incident type must be shown over a given period of time in the community involved or in adjacent communities with similar problems. A "potential" collapse incident and associated hazards must be weighted heavily in the analysis.

For example, confined space incidents may be projected in the future by estimating the number of confined spaces in future years, and then multiplying this by the rate of current incidents per confined space.

Establishing a Risk Threshold for the Hazard

Establishing a risk threshold reflects response capability for equipment and trained personnel. It is the final determination in weighing the potential risk to the community and the potential risk to emergency responders. Each community must decide what is an "acceptable" level of risk and the threshold that necessitates the formation of a special rescue team. The community and city administrators should know exactly what the fire department's rescue capabilities and limitations are, what risks confront the community, and the dangers that rescuers face in performing rescues.

Determining the Type of Team (or Capability) Needed to Respond

The risk analysis should help in determining whether a team is needed. The next step is determining the kind of team for the particular type of hazard. Will the team handle only basic rescue or will it be expected to perform complex rescues? The level of required capability must be developed. The response capability may come from within the jurisdiction, from a single agency or multiple agencies, or from mutual aid or contract from other jurisdictions or agencies in the region. Response time is a critical consideration in this assessment.

Followup To the Risk/Hazard Analysis Process

After the community risk/hazard analysis is completed, the planning process begins with the development of a plan for implementation and obtaining funding support. Next, developing the team, training, equipment, vehicles, a continuing maintenance program, and Standard Operating Guidelines (SOG's) are required.

LEVELS OF OPERATIONAL CAPABILITY

Operational capability refers to different types of operations and resource deployment. They are defined in the National Fire Protection Association (NFPA) Standard 1470, *Standard on Search and Rescue Training for Structural Collapse Incidents.* This Standard establishes levels of operational capability based on the degree of hazard and jurisdictional risk assessment, the training level of personnel, and the availability of resources. Although this standard has been superseded by NFPA Standard 1670, *Standard on Operations and Training for Technical Rescue Incidents, 1999,* the levels may be used as a guide in developing levels of capability. Most of the information in NFPA 1470 has been incorporated into NFPA 1670.

Today, most fire departments would be able to perform at the basic and light operational levels and many at the medium level of capability. Departments need to determine their level of capability using this Standard as a guide.

Levels of operational capability should be established within each jurisdiction to conduct search and rescue operations safely and effectively.

Established levels are based on hazard and risk assessment, training level of personnel, and availability of internal and external resources.

Basic Operational Level

The basic level represents the minimum capability to conduct safe and effective search and rescue operations at noncollapse incidents. Personnel at this level shall be competent at surface rescue that involves minimal removal of debris and building contents to extricate easily accessible victims from noncollapsed structures.

Light Operational Level

The light level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of light-frame construction, and basic rope rescue operations.

Medium Operational Level

The medium level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of reinforced and unreinforced masonry (URM), concrete tilt-up, and heavy timber construction.

Heavy Operational Level

The heavy level represents the minimum capability to conduct safe and effective search and rescue operations at structural collapse incidents involving the collapse or failure of reinforced concrete or steel-frame construction, and confined space rescue operations.

Equipment lists for each of these four operational capabilities has been provided in Appendix C of this manual.

Four Levels of Operational Capability--Minimum Training

Basic Operational Level

The basic operational level represents the minimum capability to operate safely and effectively at noncollapse incidents. Personnel at this level shall be competent at surface rescue and rescue involving minimal removal of debris and building contents to extricate easily accessible victims from noncollapsed structures. Rescue operations would include removal of victims from under furniture, appliances, and the surface of a debris pile.

Light Operational Level

Personnel shall meet all basic level training requirements. In addition, personnel shall be trained in hazard recognition, equipment use, and techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of light-frame construction, and basic rope rescue as specified below.

Personnel shall be trained to recognize the unique hazards associated with the collapse or failure of light-frame construction. Training should include, but not be limited to, the following:

- recognition of the building materials and structural components associated with light-frame construction;
- recognition of unstable collapse and failure zones of light-frame ordinary construction; and
- recognition of collapse patterns and probable victim locations associated with light-frame construction.

Personnel shall have a working knowledge of the resources and procedures for performing search operations intended to locate victims who are not readily visible and who are trapped inside and beneath debris of light-frame construction. Training should include, but not be limited to, the following:

- types of search resources: US&R dogs, optical instruments (search cameras), seismic/acoustic instruments (listening devices);
- capabilities of search resources; and
- acquisition of search resources.

Personnel shall be trained in the procedures for performing access operations intended to reach victims trapped inside and beneath debris associated with light-frame construction. Training should include, but not be limited to, the following:

- lifting techniques to lift structural components (walls, floors, or roofs) safely and efficiently;
- shoring techniques to construct safe and efficient temporary structures needed to stabilize and support structural components to prevent movement of walls, floors, or roofs;
- breaching techniques to create openings in structural components of walls, floors, or roofs safely and efficiently; and
- operating appropriate tools and equipment to accomplish the above tasks safely and efficiently.

Personnel shall be trained in the procedures for performing extrication operations involving packaging, treating, and removing victims trapped inside and beneath debris associated with light-frame construction. Training should include, but not be limited to, the following:

- packaging victims within confined areas;
- removing victims from elevated or below-grade areas;
- providing initial medical treatment to victims to the Basic Life Support (BLS) level at a minimum; and
- operating appropriate tools and equipment to accomplish the above tasks safely and efficiently.

Medium Operational Level

Personnel shall meet all light level training requirements. In addition, personnel shall be trained in hazard recognition, equipment use, and techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of reinforced and URM, concrete tilt-up, and heavy timber construction.

Heavy Operational Level

Personnel shall meet all medium level training requirements. In addition, personnel shall be trained in hazard recognition, equipment to use, and techniques required to operate safely and effectively at structural collapse incidents involving the collapse or failure of reinforced concrete or steel-frame construction, and confined space rescue.

RESCUE SKILLS

Generally, rescue skills needed or performed in structural collapse incidents correspond to the type of victim entrapment.

- About 50 percent of injured victims (not trapped) are rescued by spontaneous volunteer rescuers.

- About 30 percent of victims in nonstructural and light entrapment may be rescued by trained community teams (Community Emergency Response Teams (CERT's)).

- About 15 percent of victims entrapped in structural collapse void spaces are rescued by emergency service providers.

- About 5 percent of victims entombed in a structural collapse are rescued by specialized heavy rescue teams.

Emergency responders must be able to control spontaneous volunteers who may be working at the scene upon arrival.

Supervising volunteers involves ensuring that certain basic procedures are followed

- the incident or each situation is isolated;
- all information is evaluated;
- tasks are delegated; and
- needs are communicated.

The safety of the volunteer workers is of primary importance, and should not be compromised.

NFPA STANDARD 1670

NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, pertains to levels of functional capability for conducting operations safely and effectively at technical rescue incidents including structural collapse. Standards for levels of proficiency have been developed, ranging from awareness to operations to technician. Each level has increasing operational requirements and functions. NFPA 1670 supersedes NFPA 1470.

RESCUE RESOURCES

Introduction

Fire departments across the United States have assumed a major role as primary responders to rescue incidents that involve, among other things, structural collapse, trench cave-ins, confined spaces, industrial and agricultural machinery, water emergencies, and people trapped above or below grade level. These emergencies are grouped into a category called technical rescue. Technical rescue incidents often are complex, requiring specially trained personnel and special equipment to complete the mission. Natural forces such as earthquakes, rain, temperature extremes, and swift water currents often complicate technical rescue incidents. The presence of flammable vapors and toxic chemicals also can increase the level of risk. The safety of crews conducting technical rescue operations is of special concern.

Fire and rescue departments throughout the country perform technical rescues on a daily basis. Some complex technical rescue incidents last many hours or even days, as rescue personnel carefully assess the situation, obtain and set up the appropriate rescue equipment, monitor scene safety, and remove hazards before they can finally reach, stabilize, and extricate the victims. The presence of hazards such as flammable vapors or dust often forces rescuers to take additional precautions and time to ensure that operations are conducted safely. Experience has shown that hasty rescue operations can endanger the lives of both rescuers and victims. At the same time, rescuers know that a victim's survival chances often are dependent on a quick extrication and transportation to a hospital.

Some departments are prepared better than others to perform technical rescue operations. To deal with these complicated rescue operations, many fire departments have created special technical rescue teams. A technical rescue team is a specialized group of personnel having advanced training and special equipment to conduct specialized rescue operations safely and efficiently. The specialties and capabilities of individual teams vary greatly, depending on their level of training, number of trained personnel, and availability of specialized rescue tools and equipment. For example, some departments have the training and equipment to perform rescues at collapsed structures by cutting through concrete and removing heavy debris, while other departments are limited to working with picks and shovels to remove debris.

Many departments have single-discipline rescue teams such as a trench rescue team. These teams are trained and equipped to handle one type of rescue. Other departments have multidiscipline teams that are prepared to perform more than one type of rescue.

The formation of a technical rescue team, whether single or multi-discipline, requires careful planning, a long time commitment from the team members, equipment research and acquisition, risk analysis, training, and funding.

Technical Rescue Capabilities

Confined Space Rescue

A confined space is an enclosed area with limited entry or egress, which has an internal configuration not designed for human occupancy, such that an entrant could become trapped or asphyxiated. It may have inwardly converging walls, or a floor that slopes downward and tapers to a smaller cross section. These spaces include sewers, vats, caves, tanks, and other areas. Rescues from such spaces are dangerous, especially if the interior environment is toxic or oxygen deficient. OSHA terms these dangerous areas "permit-required confined spaces." OSHA estimates that there are over 240,000 such permit-required spaces across the United States.

Collapse Rescue

This involves building collapse or other structural collapse, such as the collapse of various buildings in the 1994 Northridge, California, earthquake or the collapse of the elevated highway in Oakland, California, during the 1989 Loma Prieta earthquake. Many collapse rescue teams have been established in earthquake-prone areas. A collapse rescue capability is a necessity in most parts of the country, with both natural and human-caused collapses occurring with unusual regularity. Recent disasters and acts of terrorism have increased the need for heavy rescue capability.

Trench/Cave-In Rescue

Trench or cave-in rescue could occur in almost any jurisdiction across the country. Trenches often are found in areas of new construction, where pipes or cables are being buried or excavated for new construction footing and foundation work. The most common trench rescue scenario involves rescuing a construction worker trapped when the trench walls collapse.

Rope Rescue

High-angle or low-angle rescues occur around cliffs, ravines, caves, mountainous areas, or highrise buildings, communication towers, water towers, or silos. These rescues may require complex rope and hauling systems to secure personnel and extricate victims safely.

Industrial Rescue

Industrial machinery presents many challenges to rescuers. Many industrial rescues involve confined spaces or heavy extrication to free victims trapped by machinery.

Structural Collapse Resources

Many different kinds of resources from both the government and the private sector are available for response to structural collapses.

- local jurisdictions;
- State and Federal governments;
- members of the private sector;
- trained civilian volunteers; and
- FEMA US&R Task Forces.

Each resource may have varying capabilities and functions for the broad scope of search and rescue requirements. The key to effective resource use is to match the right resource to the job. This becomes problematic when dealing with difficult rescue situations where a very high level of capability is needed, because of the scarcity of these resources throughout the country.

Government Resources

Government response can occur at the following levels:

- local
- regional
- State
- Federal
- international

Government resources may consist of fire department engine, truck, and heavy rescue companies; specialized US&R companies and squads; confined space teams; high-angle rescue teams; technical rescue teams; canine search teams; technical search teams; State and FEMA task forces; and specialized medical teams. Most of these resources come from the fire service, but other agencies (such as public works departments and law enforcement) also may have such specialized resources to offer.

Support resources may include haz mat teams, Emergency Medical Services (EMS) responders, public works departments, law enforcement, the military, the Army Corps of Engineers, and technical specialists such as structural engineers.

The National US&R System

The National US&R Response System, established under the authority of FEMA in 1989, is a framework for structuring local emergency services personnel into integrated disaster response task forces. These task forces, complete with the necessary tools and equipment and requisite skills and techniques, can be deployed by FEMA to rescue victims of structural collapse.

When the Federal government mobilizes resources and conducts activities to support State and local response efforts to disasters, it does so under 12 Emergency Support Functions (ESF's). Each ESF is led by a primary agency, which has been selected based on its authorities, resources, and capabilities in a particular functional area. FEMA is the primary agency for ESF #9, US&R.

After a request for Federal assistance from a Governor is received and approved by the President, task forces may be activated or placed on alert to respond to a major disaster. The alerted task forces start locating personnel and organizing their mobilization. Each task force can be airborne and heading to its destination in a matter of hours.

Currently, there are 28 FEMA US&R Task Forces spread throughout the continental United States. These task forces are trained and equipped by FEMA to handle structural collapse, and encompass local emergency service personnel from 18 States. Any operational task force can be deployed by FEMA to a major disaster to provide assistance with structural rescue. Two task forces also have responded to several international disasters under the auspices of the U.S. Agency for International Development, Office of Foreign Disaster Assistance.

A FEMA US&R Task Force is comprised of 62 specialists, and is divided into 4 major functional elements:

1. Search.

2. Rescue.

3. Technical.

4. Medical.

Task force members include structural engineers and specialists in the areas of hazardous materials, heavy rigging, search (including highly trained search dogs), logistics, rescue, and medicine. By design, there are two task force members assigned to each position to allow rotation and relief of personnel during around-the-clock task force operations.

Each task force is supported by a comprehensive equipment cache totaling 58,000 pounds. The cache elements sent to the disaster scene include communications, locating devices, rope, rigging, hauling, lifting, and pulling equipment. Shoring, structural movement sensing, victim extrication, cutting, and drilling devices are included to perform the often difficult assignments encountered by a FEMA US&R Task Force.

The medical team is comprised of four medical specialists and two physicians. Many of the medical specialists on US&R teams are both paramedics and firefighters, and thus have both rescue experience and extensive experience in prehospital medical care. Most of the physicians involved in US&R are emergency medicine specialists, and also have taken special courses in confined space medicine and crush syndrome.

The medical team is designed to bring the emergency department out to the field. It carries all of the Advanced Life Support (ALS) equipment available in any ALS ambulance. In addition to providing advanced emergency medical care in the field, it has training in hazardous materials, public health issues relevant to disaster management, confined space medicine, and other issues important to the function of a US&R team.

Task Force Capabilities

Task force capabilities include the following:

- physical search and rescue operations in damaged or collapsed structures;

- emergency medical care for entrapped victims, task force personnel, and search canines;
- reconnaissance to assess damages and needs and to provide feedback to local, State, and Federal officials;
- assessment and shutoff of utilities to houses and other buildings;
- hazardous materials survey and evaluations;
- structural and hazard evaluations of buildings needed for immediate occupancy to support disaster relief operations; and
- stabilizing damaged structures, including shoring and cribbing operations on damaged buildings.

Figure 3-1 illustrates the organization of a typical 24-hour, 62-member, State/National US&R task force.

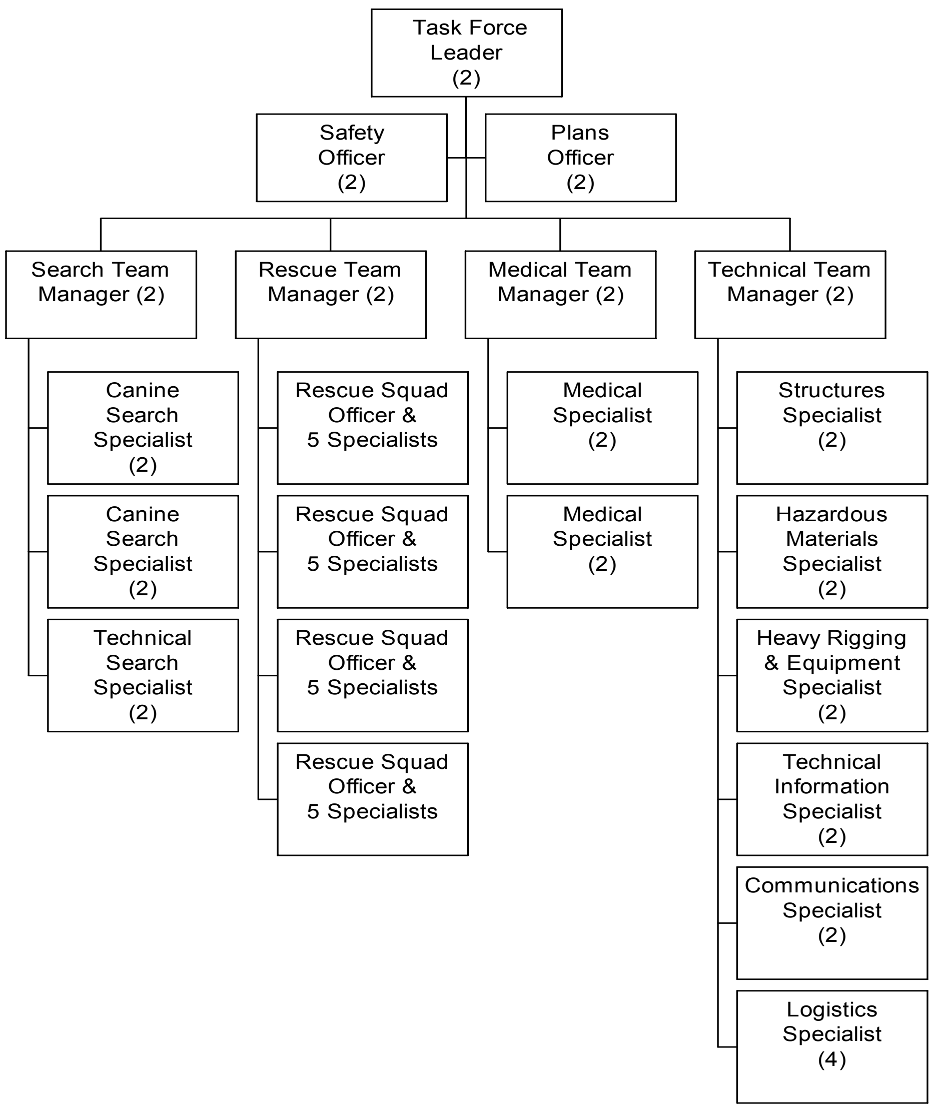


Figure 3-1
US&R State/National Task Force

Private Sector Resources

Private sector resources can provide resources such as construction and demolition contractors (with heavy equipment and various technical specialists), search dogs and handlers, structural engineers, trained volunteer and industry teams, (e.g., confined space, high-angle rope rescue, technical search), EMS providers, equipment rental and supply companies, utility companies, and trained community volunteers (CERT's).

It is important to know what resources are available from the private sector in each jurisdiction. A survey of these resources needs to be conducted as part of the response planning process in each agency with responsibility for structural collapse or technical rescue.

Resource Typing

The State of California has developed a US&R resource typing system. Resource typing increases the effectiveness of the IC by providing specified levels of capability for a given objective and task assignment. The system has been developed using the four levels of capability (basic, light, medium, and heavy) with specified minimum levels of staffing and equipment. Resources are categorized as:

- US&R company;
- US&R crew; and
- State/National task forces.

The type of resource describes the performance capability. For example, a Type 1 US&R resource has more capability than a Type 2 (see Table 3-1). Resources usually are typed by a number, with 1 being the highest capability. The highest available capability, however, is not necessarily the right resource for the job to be done. For example, a Type 1 heavy rescue company may be available with the most capability, but for a wooden structure collapse, a Type 2 medium or Type 3 light rescue capability would be more suitable to accomplish the search and rescue operation.

Table 3-1
Urban Search and Rescue Resources

Always use the prefix US&R for Urban Search and Rescue resources. Order Single Resource or Strike Team by Type (Capability--Heavy, Medium, Light, or Basic).				
Type	**Type 1 (Heavy)**	**Type 2 (Medium)**	**Type 3 (Light)**	**Type 4 (Basic)**
(Capability)	• Reinforced concrete • Steel structure • Confined space rescue	• Reinforced and URM tilt-up construction • Heavy timber	• Light-frame construction • Basic rope rescue	• Surface rescue • Nonstructural entrapment in noncollapsed structure(s)

Resource	**Radio**	**Component**	**Types**			
			1	**2**	**3**	**4**
US&R company	US&R company (Phonetic)	Equipment Personal equipment	Heavy Inventory 6*	Medium Inventory 4*	Light Inventory 3*	Basic Inventory 3*
US&R crew**	US&R crew (Phonetic)	Personnel trained to appropriate level Supervision transportation	6	6	6	6
State/ National US&R task force	Preassigned two-letter State task force designator and number identifier (CA-TF5)	Equipment Personnel transportation	US&R Task Forces are comprised of 62 people specifically trained and equipped for large or complex urban search and rescue operations. The multidisciplinary organization command, search, rescue, medical, and technical.			

*Requests should include vehicle capabilities when necessary (e.g., four-wheel drive, off-road truck, engine, etc.)
**The agency/department sending an US&R crew will identify the supervisor.

There are three distinct advantages to typing resources:

1. In planning.

   Knowing the specific capabilities of the various kinds of resources helps planners decide the type and quantity of resources best suited to perform activities required by the Incident Action Plan (IAP).

2. In ordering.

   Ordering resources by type saves time, minimizes error, gives a clear indication of exactly what is needed, and reduces nonessential communications between the incident and the offsite ordering point (dispatch center).

3. In monitoring resource use.

   An awareness of the type of tactical resource assigned enables the IC or Operations Chief to monitor for under- or over-capability, and make changes accordingly. Careful monitoring of resource performance can lead to the use of smaller or less costly resources, which can result in increased work performance and reduced cost.

Table 3-2 shows types of resources that can be combined into strike teams.

Table 3-2
Strike Team Types and Minimum Standards

Kind	Strike Team Types	Number/ Type	Minimum Task Capabilities	Strike Team Leader	Per Single Resource	Total Personnel
US&R Company	AR	2-Type 1 (Heavy)	Vehicle(s) equipped for reinforced concrete, steel structures, confined space rescue.	1	6	13
	BR	2-Type 2 (Medium)	Vehicle(s) equipped for reinforced and unreinforced masonry, tilt-up construction, heavy timber.	1	4	9
	CR	5-Type 3 (Light)	Vehicle(s) equipped for light-frame construction and basic rope rescue.	1	3	16
	DR	5-Type 4 (Basic)	Vehicle(s) equipped for surface rescue and nonstructural entrapment in noncollapsed structures.	1	3	16
US&R crew	GR	3-Type 1 (Heavy)	Trained for reinforced concrete, steel structures, confined space rescue.	1	6	19
	HR	3-Type 2 (Medium)	Trained for reinforced and unreinforced masonry, tilt-up construction, heavy timber.	1	6	19
	IR	3-Type 3 (Light)	Trained for light-frame construction and basic rope rescue.	1	6	19
	JR	3-Type 4 (Basic)	Trained for surface rescue and nonstructural entrapment in noncollapsed structures.	1	6	19

Tiered Response System

A concept called "tiered response" is used by many rescue agencies across the country. The concept is to train and equip personnel or units throughout a department to different response levels, or tiers, from a basic rescue level to an advanced rescue capability.

The basic premise of a tiered response system begins with training all personnel to a basic rescue awareness level that familiarizes them with rescue hazards, dangers, and some basic, practical rescue skills. In the event of a complicated rescue, they will request the response of an advanced team and initiate measures within their capabilities until the advanced team arrives. This tiered response system for technical rescue is similar to a tiered EMS response system that uses a basic emergency medical technician to initiate care until a paramedic arrives on the scene, or the similar system used for the haz mat responses.

As an example, Los Angeles uses this approach for water rescue. All of its engine and truck companies are trained and equipped to handle a basic water rescue incident. For a more complicated situation, engine company personnel are trained and equipped to initiate basic rescue measures until the advanced water rescue team arrives.

At the top of the tier in US&R capability are the FEMA and State US&R Task Forces with mobile, multifunctional, 62-person teams equipped for the most complex and diversified rescue operations, yet reliant on support for transportation and sustained operations (beyond 72 hours) in the field. For many reasons, including cost, there are limitations on how many task forces can be developed fully. Therefore, a regional response capability is needed to provide the initial and more rapid response to various types of technical rescues, no matter how complex they may be.

The first level of response is the spontaneous "rescuer." Civilian volunteers, who are normally the first responders, can be trained to perform basic search and rescue operations, such as the CERT's trained in Los Angeles and many other cities and counties throughout the country. The second level, light search and rescue, and third level, medium search and rescue, are made up of trained and equipped fire and rescue agencies.

The regionalization of US&R resources usually allows the formation and response of specialized teams that can perform at the medium or heavy level of response. The FEMA and State Task Forces and properly equipped and staffed search and rescue companies fall into this category, using NFPA Standard 1470 as a guide to levels of capability.

There are several advantages to a tiered response system:

- It provides basic rescue training for all personnel.
- All potential rescuers become more aware of the dangers of different situations and recognize situations that are beyond their capabilities.
- A smaller number of personnel can develop a high level of expertise in a particular area.

- It fits in well with a regional rescue response system where the personnel with basic training can handle a basic incident on their own and have the option of calling an advanced regional rescue team for assistance.

- It eliminates the expense and time required to equip and train all personnel to an advanced rescue level.

Table 3-3 illustrates an **example** of **possible** units and capabilities that may be associated during a tiered rope rescue response.

Table 3-3
Tiered Response Example

Tier Response Level	Units	Capabilities
Level 1	Engines	Basic rappelling only.
Level 2	Ladder trucks	Rappelling; advanced hauling systems using ladders; Stokes basket rescues.
Level 3	Heavy rescue squads or tech. rescue team	Rappelling; advanced hauling systems; entry into confined spaces using rope systems; cliff rescues; rope stabilization systems; Stokes basket rescues.

In the above example, all engine companies in the department are capable of performing a basic rope rescue. If necessary, engine company personnel could rappel to a patient and provide emergency care until a Level 2 or Level 3 team arrives to remove the patient. In a large department, the Level 2 or Level 3 team may be a resource from within the department. In smaller departments, the Level 2 or Level 3 team may come from another jurisdiction, or could be a regional team with members from different jurisdictions. An engine company may be able to handle a simple rope rescue incident on its own, but the higher level team is available with the advanced training and additional equipment, should it be necessary.

Another example of a tiered response system for a structural collapse incident may be organized as follows:

Tier Level 1: engine company with light rescue capability. (Awareness Level)

Tier Level 2: truck company with medium rescue capability. (Operational Level)

Tier Level 3: heavy rescue company with heavy rescue capability. (Technician Level)

Tier Level 4: US&R task force with heavy rescue capability, including search, medical, technical, and support components. (Technician Level)

COORDINATING WITH OTHER AGENCIES

A regional multi-agency coordination system is needed to provide for rapid information processing, decisionmaking, resource deployment, and incident support.

Earthquakes and other natural disasters occur quite often across local jurisdictional boundaries and, in some cases, cross State lines. When this happens, of multijurisdictional authority and responsibility can become issues.

Depending on the type and scope of the disaster, a large number of emergency response or disaster agencies may be involved in response and recovery efforts. For example, fire service, law enforcement, medical, public works, private contractors, military, and many other agencies all may be represented during incidents of this type. Generally, the greater the number of agencies involved, the more complex the problem can become in terms of who is in charge and who is responsible for specific functions required to deal with the situation.

In most cases, the authority for overall command of various types of incidents is defined in statutes or laws governing specific jurisdictional areas. This designation may be different in adjoining jurisdictions affected by the emergency. For example, the fire department may be charged with a responsibility in one community or area, while in the next the same responsibility is placed with a law enforcement agency, and in still another, it belongs to a different government entity.

Unless authority and responsibility for overall command have been defined clearly in formal disaster plans and are understood clearly by all agencies prior to the incident, confusion and conflict can arise.

A structural collapse incident may involve of many agencies and organizations, as did the Murrah Building bombing in Oklahoma City. A system to coordinate the response and onscene operations of these resources is needed for effective incident management.

Levels of coordination may occur

- At the incident with the IC and agency representatives, or at an incident coordination center.

- At the department dispatch center or department operating center. The department operating center is the location where the top staff of the department, e.g., fire or police, gathers to oversee incident operations. The department operating center is remote from the incident and usually is near the dispatch center and local Emergency Operations Center (EOC).

- At the local EOC. The EOC for the local jurisdiction may be activated to provide information and resource coordination for the IC. Representatives from agencies needed to coordinate and support the incident from the local government and outside agencies work at the EOC.

- At the county EOC. The county or regional EOC coordinates and supports the incident within the region.

- At the State multi-agency coordination system and State EOC. The State provides a level of coordination needed to access other regions, agencies, organizations, the National Guard, and the coordination link with the Federal government.

- At the Federal coordinating system. The Federal Response Plan (FRP) is implemented and Federal agencies are coordinated at this level.

- At the city level (mayor or city manager), county level (county executive, etc.).

Regionalized Urban Search and Rescue Response

Successful regionalized response systems have been developed through good planning, innovation, standardization, and the cooperation of many agencies and their chiefs. These efforts have resulted in an effective rescue response system using specialized resources through mutual aid or cooperative agreements to provide the level of response required for the risks in each of the communities involved in the system.

Personnel from various agencies with the appropriate level of training can be brought together with the tools, equipment, supplies, and vehicles to respond as a crew, squad, team, or task force for rescue incidents within the region using standardized operational procedures under an incident command and coordination system.

Developing a Regionalized Response

Developing a regionalized response requires a systematic approach, a good plan, and initial agreements to proceed between the chiefs or administrators of the potential agencies involved.

Assuming that a risk assessment has been performed and a need requirement established, department administrators should agree to a cooperative planning effort consisting of the following:

- establishment of a planning committee;
- determination of current and required capabilities;
- preparation of an operational plan;
- determination of a program management structure;
- development of standards on personnel, staffing, training, equipment, and response;
- estimation of initial and ongoing costs and identification of funding sources; and
- development of response agreements (i.e., automatic or mutual aid, cooperative agreements, etc.).

Many fire departments across the country have established effective regional response systems. The State of California, Office of Emergency Services coordinates the US&R statewide mutual-aid system which is based on a regional response of the nearest appropriate resource. Most of the FEMA US&R Task Forces are composed of personnel and equipment from a combination of agencies and organizations. Other examples include

- the Tidewater Regional Heavy and Tactical Rescue Team from southwest Virginia;
- the Metrocrest Specialty Response Team from the Dallas/Fort Worth Metro Region, north central Texas;
- the Combined Agency Response Team from Illinois;
- the Miami Valley, Ohio, US&R program; and
- the St. Louis, Missouri, Regional Area Technical Rescue Team.

Many other systems too numerous to mention are functioning effectively or are in the formation stages. A few years ago, this was not the case.

Effective regionalization requires people to focus on their mission and on their ability to respond to the special needs of the citizens they protect. It is time to drop the egos, look beyond your "turf," and make the commitment to work together with the best resources that each cooperating agency has to offer.

The fire service has acknowledged the need to provide a specialized rescue capability to the community it serves. During the 1990's this capability has increased at a significant rate. Think about where we were 10 years ago and what we can provide today in these specialized services.

Where will we be in the next century? In some peoples' opinion we will continue to improve our technical rescue capability through cooperation and support from all levels of government, the private sector, and the community, through the use of improved tools and equipment to do our job more effectively, and by increased training in the complexities of technical rescue.

Our goal is to arrive quickly with the right people and equipment to perform the rescue operation safely, effectively, and efficiently.

Activity 3.1

Community Risk Analysis

Purpose

To be able to identify structural collapse hazards and resource capabilities and needs within a community.

Directions

1. Turn to the Technical Rescue Risk/Hazard Capability Analysis Matrix.

2. Your instructor will review the form.

3. Using information from your own community, complete the columns titled "Capability" and "Requirement."

4. You will have 20 minutes to complete this form.

5. This activity also may be completed in small work groups, at the discretion of the instructor.

6. Several students will be asked to report their answers to the class.

Activity 3.1 (cont'd)

Community Risk Analysis

Technical Rescue Risk/Hazard and Capability Analysis Matrix

RISK	HAZARD	CAPABILITY	REQUIREMENT
Earthquake, hurricane, tornado	Collapse, confined space, extrication, rope rescue		
Flood, river, lake	Water, ice rescue		
Mountains, cliffs	Rope rescue, landslide		
New construction	Collapse, confined space		
Old structures	Collapse, confined space		
Fire, explosion	Collapse, extrication		
Highrise	Collapse, confined space, rope rescue		
Industrial	Confined space extrication		
Petro/Chem, haz mat	Confined space, haz mat		
Agricultural	Extrication		
Wells, caves, tunnels, subways	Confined space, extrication, rope rescue		
Tanks, cesspools, excavations	Confined space, rope rescue		

UNIT 4: SCENE MANAGEMENT: FACTORS AND ISSUES

TERMINAL OBJECTIVE

The students will be able to identify critical factors and issues that affect structural collapse scene management.

ENABLING OBJECTIVES

The students will:

1. *Identify factors associated with rapid scene assessment.*
2. *Identify life safety issues.*
3. *Identify key elements of scene control.*
4. *Explain the importance of establishing appropriate incident facilities.*
5. *Describe the potential effects and consequences of the incident on the community.*

INTRODUCTION

The initial actions taken by the Incident Commander (IC) set the tone for the incident. The initial sizeup and structural triage provide information needed to:

- Develop the action plan.

  - Sizeup provides the information needed to develop the Incident Action Plan (IAP).

  - Structural triage helps identify and prioritize the rescue areas with the highest probability of success.

  - Many factors regarding the collapsed structure incident must be considered to develop a rescue operational plan, objectives, priorities, command organization, and resource requirements.

- Provide for the safety of both rescuers and victims.

  - The IC should initiate the risk management process to determine the safe commitment of resources.

  - A personnel accountability system should be used to ensure rescuer safety.

  - Hazards and dangerous working conditions may be reduced or eliminated through effective incident management.

- Increase operational effectiveness.

  - Scene control must be initiated early to establish a safe and functional worksite.

A structural collapse incident may have major effects on a community that include

- media attention;
- psychological and emotional impact on victims, survivors, and rescuers;
- political consequences; and
- economic consequences.

INITIAL SCENE ASSESSMENT

Many factors must be dealt with when the IC arrives at an incident and attempts to size up the situation and begin operations. Incident personnel may need to perform the following activities prior to beginning structural collapse operations.

- Identify buildings individually (i.e., by address, physical location, unique design, etc.).
- General area triage to identify which buildings among many in a given area offer the highest potential for viable rescue opportunities.
- Assess and mark hazards prior to search-and-rescue operations in any specific building.
- Mark particular buildings for search and rescue.

At least two possible situations exist when emergency responders arrive.

1. Civilians already may have identified viable search or rescue opportunities. This information greatly reduces the number of considerations that the IC must address. The IC must keep in mind the following factors:
   - The location and identification of separate buildings may be marked clearly by volunteers.
   - Many other general sizeup activities may have been performed by the local volunteers. The IC may base the action plan and assignment of resources on this information.
   - Information provided by local sources must be reviewed for validity. **The IC should not accept information as fact (when approached by local civilians reporting entrapped victims), but rather should have a complete assessment of the overall situation verified by a team manager, Company Officer (CO), or by personal observation.**
2. There may be little or no reconnaissance information available when the IC arrives.

- The IC may be responsible for a geographic area (several buildings, part of a block, several block area) with no solid information as to where to concentrate efforts. In this case, sizeup of the situation and the decisionmaking process becomes much more complex.

- If no search or rescue requirements are identified immediately, search priorities should be determined based upon victim entrapment in high probability occupancies such as schools, hospitals, multiresidential buildings, etc. (See Structural Triage.)

INCIDENT EMERGENCY MANAGEMENT PLANNING PHASES

An IC may be faced with something as simple as a single site incident (i.e., one building or a single rescue within a building), or multisite devastation.

Depending upon the size and extent of the devastation, the IC may be faced with situations that require immediate decisions regarding the implementation of the operational plan. This initial plan is developed from the sizeup, and the assessment of the incident is continuous throughout the incident.

Once the initial assessment is underway, the IC must begin to identify the overall mission objectives which should include

- assess general situation at the designated rescue site(s);
- plan strategy and priorities;
- assign resources;
- manage ongoing operations; and
- follow up on the progress and make adjustments to the plan.

IAP's follow the phases of response from small incidents through large, complex incidents to demobilization:

1. Initial response plan.

    - sizeup;
    - develop initial plan (objectives and priorities);
    - request and/or assign resources;
    - develop organization; and
    - evaluate operations.

2. Expanded response (use Incident Command System (ICS) 201 Form).

   - sizeup;
   - develop objectives and priorities;
   - request and assign resources;
   - provide logistical support;
   - expand the organization; and
   - evaluate operations.

3. Extended response (use written IAP).

   - sizeup;
   - develop objectives and priorities;
   - request and assign resources;
   - provide logistical support;
   - expand the organization;
   - add to IAP as needed (safety, medical, transportation plans, etc.); and
   - evaluate operations.

4. Demobilization (continue IAP).

   - sizeup;
   - develop objectives and priorities;
   - assign and release resources;
   - provide logistical support;
   - reduce the organization;
   - evaluate operations;
   - provide critical incident stress management (CISM);
   - collect all records; and
   - secure site and release all resources.

Sizeup

Sizeup involves obtaining information about the incident so that a plan can be developed.

The sizeup should include

- The problem's cause (how the structure collapsed).

- Hazards involved (i.e., additional collapse, fire, haz mat, utilities, flooding, dust, toxic or flammable atmosphere, etc.).

- Incident conditions (i.e., structural stability, time, weather, access).

- Victims (how many exist as well as their location, number, and degree of rescue difficulty.).

- Internal or external exposures.

Appendix D provides an example of a Structural Collapse Scene Assessment Checklist. This form is especially useful during initial sizeup and development of a response plan.

The sizeup of the collapsed structure and victim potential is much like that of a structure fire sizeup. Consideration must be given to rescuer risk versus the benefit of rescuing a victim.

Sizeup Considerations

The following sizeup considerations must be addressed when assessing a rescue problem.

Time

The time of day is an important aspect when attempting to locate possible victims. In a residential structure during night hours, victims may be found where bedrooms were located. At other times of the day, residential structures may have less of an occupant load. Commercial buildings may be virtually empty at night, but their occupancy grows exponentially during business hours.

The time of day also may influence the amount and type of other agency resources that may be available to assist in rescue operations.

Occupancy

The occupancy type (residential, commercial, industrial) plays an important role in the sizeup of a collapsed building. The occupancy type coupled with the time factor yields valuable information about occupant load at the time of collapse.

Age/Era of Structure Construction

The age of a building and the era in which it was constructed are important factors. The construction era of a building may reveal if retrofit ordinances were adopted to make up for original building flaws. Understanding the age of a building and possible retrofit programs that it may have been subject to greatly aids rescue workers in making a safe rescue. It cannot be overstressed that unreinforced masonry (URM) buildings, having been through a retrofit program, are still **unreinforced** buildings. Particular attention must be given to ensure rescuer safety prior to attempting rescues in these types of buildings.

Load Shift (Previous versus Current Load)

When a building has partially collapsed, rescuers may be lulled into a false sense of security that the building will not collapse further. The previous structural load was along an axial plane as designed and built prior to collapse, but partial collapse of the building now may spread the load as an eccentric load. Other parts of the structure may be applying a torsional load, making additional collapse of the structure likely in an aftershock, during debris removal, or possibly during normal rescue operations.

During shoring operations, care must be taken to shore the structure in the location that it is resting in. Shoring should not be used to try to push the building back to its original position. Shoring only attempts to distribute the unequal load of the building equally back to the earth.

Construction

Different construction types have inherent strengths and weaknesses. Ordinary construction, wood frame, and stucco offer the highest rescue potential because of the materials involved. In many cases, wood from a collapsed portion of the structure may be used for shoring prior to attempting rescue. This type of construction also is easily penetrated using normal truck company tools. Because of its mass and strength, heavy reinforced concrete provides the biggest challenge for the rescuer attempting to cut, break, breach, and shore.

Each type of building construction and building technique produces characteristic collapse patterns. Knowledge of construction type, construction techniques, and collapse patterns assists responders in assessing the existence of void spaces and victim survival.

Risk Calculations

Collapse patterns, secondary collapse potential, utilities, and potential hazardous material situations influence the risk-versus-gain calculation that must be made prior to rescue attempts. Rescuer safety is paramount and cannot be overstressed.

As with any sizeup, consider the following items when making initial risk calculations.

- placement of apparatus;
- placement of equipment;
- placement of personnel (keep only essential personnel in hazard areas.); and
- placement of support functions for safety and ease of work.

Plan on secondary collapse. Have escape routes planned and make them known. Use all available safety equipment. Appoint a person to act as Safety Officer (SO) and give that person the authority to stop actions deemed unsafe. Appoint a person or persons to constantly recon the area for additional signs of potential secondary collapse and additional hazards such as utilities or hazardous materials that may not have been recognized at the start of rescue operations. Consider surface rescues of partially trapped victims prior to attempting more time-consuming rescue operations. A collapsed structure with victims trapped and their location known may be an extremely emotional situation. Do not allow your emotions or the emotions of someone on your team to go unchecked. Use your head!

Remember for every action there may be an equal and opposite reaction. So slow down…and think things out. Rescuer safety is your number one priority.

Each type of structure has unique characteristics that present different problems and advantages for rescuers in a collapse. In the event of failure, entire walls may fall, creating large piles of bricks or building debris, possibly trapping people on sidewalks and in automobiles. Roofs and floors may collapse completely, forming voids that may enclose trapped victims.

The problems of identifying hazards after structural collapse are extremely difficult. Buildings are often complicated, and there are many different types and configurations. After the event triggering the collapse ends, the danger of further collapse often is still present. Brittle conditions pose one of the greatest threats due to the probability of sudden failure. As many hazards as possible should be identified, and risk factors should be assigned to them. Measures to avoid and mitigate the danger then can be factored into the overall search and rescue effort.

How you proceed will depend on the amount of preplanning that has been done, how well your personnel are trained, and the resources available to effect the rescue. Search and rescue in a collapsed building is dangerous. Take your time, shore and support the structure as you proceed, and keep your wits about you...your survival depends on it and it all starts with the sizeup.

Building Construction Type

There are four general types of building construction. It is important for responders to understand these types in order for them to make an accurate assessment of the hazards, the rescue possibilities, and the types of resources needed for the operation. The construction types and occupancy of structures determine the use of a variety of different techniques and materials. The four general construction categories rescuers will most likely encounter in collapse situations are light frame, heavy wall, heavy floor, and precast concrete construction.

Light-frame Construction

Materials generally are lightweight and provide a high degree of flexibility to applied forces such as earthquakes, hurricanes, and tornadoes. These structures typically are built with a skeletal structural frame system of wood or light-gauge steel components that provide support to the floor or roof assemblies. Examples of this construction type are wood-frame structures used for private residences, lowrise multiple occupancies, and light commercial occupancies up to four stories high. Light-gauge steel-frame buildings include commercial business and light manufacturing occupancies and facilities.

Heavy Wall Construction

Generally materials are heavy and are employed in an interdependent structural or monolithic system. These types of materials and their assemblies tend to make the structural system inherently rigid. This construction type usually does not use a skeletal structural frame. It uses a heavy wall support and assembly system to provide support for the floors and roof assemblies. Occupancies using tilt-up concrete construction are typically one to three stories high and consist of multiple monolithic concrete wall panel assemblies. They also use an interdependent girder, column, and beam system to provide lateral wall support of floor and roof assemblies. Occupancies are typically commercial, mercantile, and industrial. Other examples of this type of construction include reinforced and URM buildings one to six stories high for any type of occupancy.

Heavy Floor Construction

Structures of this type are built using cast-in-place concrete construction consisting of flat slab panel, waffle, or two-way concrete slab assemblies. Pretensioned or posttensioned reinforcing steel rebar or cable systems are common components for structural integrity. The vertical structural supports include integrated concrete columns, concrete enclosed, or steel frame that carry the load of all floor and roof assemblies. This type includes heavy timber construction that may use steel rods for reinforcing. Examples of this type of construction include offices, schools, apartments, hospitals, parking structures, and multipurpose facilities. Heights vary from single story to highrise.

Precast Construction

Structures of this type are built using modular precast concrete components that include floors, walls, columns, and other subcomponents that are field connected upon placement on site. Individual concrete components use imbedded steel reinforcing rods and welded wire mesh for structural integrity. Steel beam, column, or concrete framing systems may be used for the overall structural assembly and building enclosure. These structures rely on single or multipoint connections for floor and wall enclosure assembly and are a safety and operational concern during collapse operations. Examples of this type of construction include commercial, mercantile, office, and multi-use or multifunction structures, including parking structures and large occupancy facilities.

Construction Techniques

Light Frame--Wood and Stucco

Wood is tough, lightweight, and fire supporting. Wood performs well when nailed with many connections, as long as splitting is avoided. Connections can be bolted. Plywood sheathing of wood structures makes them very tough and resistant to earthquakes, as long as the sheathing is nailed properly. Wood-frame buildings are seen in single-family dwellings and up to four-story buildings. They also include older balloonframe structures and nonuniform buildings, which are corner- or odd-shaped buildings (E-, H-, L-, T-, or U-shaped).

Problems with these buildings include slipping of foundations and failure of chimneys, air conditioners, and facades. In odd-shaped buildings, cracks or separations occur at the overstressed inside corners. The more plywood shear panels used in construction, the less damage seen.

Masonry Construction

URM construction exists throughout the world. Even in earthquake-prone California, there are approximately 40 to 50 thousand URM buildings and 7 to 8 thousand URM buildings in Los Angeles alone. Walls are made from three or more bricks laid lengthwise, side-by-side, for 4 to 7 courses, then a course with bricks at 90 degrees. The 90-degree brick course is called a king's row or header row. Other recognition factors include arched windows, steel plates or concrete lintels over door and window openings, and thick walls and door openings. Lime and sand mortar is placed between the bricks. The strength and seismic resistance of unreinforced masonry is highly dependent on the mortar strength. The shear strength of mortar can vary from 15 pounds per square inch (psi) to over 150 psi and is determined by the proportion of lime to Portland cement, as well as by the workmanship. Decorative brick veneers are a special seismic problem. A veneer often was laid up with building paper between it and the URM wall and was anchored with iron or galvanized ties. The ties normally corrode within 20 years, leaving a heavy brick face just waiting to peel off when subjected to a lateral load.

These buildings are usually one to six stories high. There is no steel reinforcement on ledges formed for the floors and roof to sit on. Even with the tie plates that anchor the joists and rafters to the exterior walls and plywood sheathing on the roof, these buildings present the greatest risk of collapse during an earthquake. The risk is greatest at the corners, which tend to blow out.

Reinforced masonry construction consists of cinder block or clay brick. The mortar is made of sand and cement. Grout can be used to fill vertical cavities in the block. Horizontal and vertical steel is used for additional strength. Floors and roofs are connected directly to these walls. Things to look for are cracks, out-of-plumb walls, and connection points pulling away from each other.

Reinforced Concrete

Older concrete-frame buildings may or may not have steel reinforcement. Floors are thick and heavy and can pancake collapse as columns punch through each floor.

Precast concrete structures are one to six stories high with concrete floors supported by precast columns and girders. Collapse is initiated by the failure of the joint between the slab and wall or the girder and column.

Tensioned concrete can have rebar for longitudinal tension stress and enclosed-type steel ties that can be tensioned as the structure is assembled. Wall-like structures of cast, precast, and tensioned concrete have out-performed frame construction in most earthquakes.

Tilt-up concrete wall buildings are usually one to two stories high with a lightweight roof. These buildings are made of concrete slabs that have been tilted up to form exterior walls. Prior to 1972, the walls were not placed in footings; after 1972, they **were** placed in footings. Failures occur from separation of walls and roof.

Steel Construction

Steel construction is found in highrise buildings. Steel is tough and strong, but it needs to be fireproofed. It starts to lose strength around 700° F (371° C). It is ductile; that means it can be overstressed and severely bent, but it will retain enough strength to resist failure, giving ample warning of collapse. The weakest points are the connections that are welded, bolted, or riveted in older buildings. Beams must be laterally braced so as not to buckle about their weak axis from foundation shear.

Collapse Voids

Void spaces are created when furniture, machinery, and other strong bulky objects support sections of collapsed floors and walls. Larger spaces and voids are created by collapsed wooden floors, which tend to remain intact in large sections. Collapsed void spaces are divided into four major categories.

1. Lean-to collapse.

2. "V"-type collapse.

3. Cantilever collapse.

4. Pancake collapse.

All four of these collapse patterns create potential void spaces where victims may be found.

Lean-To Collapse

The lean-to collapse creates the greatest chance of victim survival. This type of void space is created when a floor or roof section becomes dislodged, and one end falls to rest on the floor below. The other end of the dislodged section remains attached to the wall member. Care must be taken to shore the wall properly for a torsional load.

"V"-Type Collapse

This type of void space is created when a floor or roof section breaks into two pieces and collapses to the floor. It creates two void spaces, one on either side of the break. In this situation, both exterior walls are loaded with a torsional load and require shoring.

Cantilever Collapse

This type of collapse is common in URM buildings where the exterior wall has been destroyed completely on one side. This may create many void spaces that have a high victim survival rate. The actual cantilevered portion creates an extreme hazard for rescue personnel and must be shored properly to prevent additional collapse.

Pancake Collapse

This type of collapse is a total collapse of many floors of a structure, creating many smaller void spaces where victims may be located. This type of collapse requires tunneling to access the void spaces. Proper shoring techniques must be employed to allow responders to access the void spaces safely.

Operational Considerations

The IC needs to develop an IAP that includes appropriate priorities, objectives, command structure, and resource requirements. The development of this plan should include consideration of the following 24 rational factors:

1. Time.

   The time of day provides information on the occupancy load and location of people in the structure.

2. Location.

   Access is important to an effective operation.

3. Occupancy.

   Knowledge of the occupancy yields information on hazards, occupant use, and types and number of businesses.

4. Height and area.

   Consider all six sides and the area involved.

5. Size of collapse area and structural hazards.

   This assessment will dictate resource requirements and safe methods of rescue.

6. Fire problems and hazardous materials.

   Fire or hazardous materials problems may impede a collapsed structure rescue operation.

7. Exposures.

   Interior and exterior exposures should be considered to prevent additional damage or injury.

8. Utilities.

   Control of gas, water, and electricity is a major safety factor to both rescuers and victims.

9. Weather.

   Temperature variations affect rescuers and victims. Wind and rain certainly may create additional problems inside and outside the structure.

10. Victims.

    Victim location is a priority in the initial rescue plan and may be determined by a variety of methods.

11. Traffic.

    Speed of response and access to the collapse site are critical. Alternate routes and traffic control should be planned.

12. Rail.

    Surface and underground rail systems may be part of the collapse problem or may affect it because of vibration.

13. Personnel.

    Rescue operations require a multidisciplined response from fire, EMS, police, public works, building department, transportation department, volunteers, and many others.

14. Incident command.

    The complexities involved in rescue require an effective Incident Command System (ICS) to manage and coordinate operations, planning and support.

15. Communications.

    Intra-agency and interagency communication capabilities are essential to effective and safe operations.

16. Medical.

    Rescue medical operations need to provide for victims as well as have a component to handle the needs of responders.

17. Safety.

    Safety is the top priority in rescue planning and operations and must be considered throughout the incident.

18. Special equipment.

    Collapsed structure rescue operations may require the use of specialized search equipment, and portable cutting, breaking, and breaching equipment.

19. Construction equipment.

    Large, mechanized construction equipment may be needed to remove debris so that rescue operations can be expedited.

20. Shoring materials.

    A large amount of shoring materials may be required for safe access to victims and for structural stabilization. Pre-incident planning of supply sources is important.

21. Information updates.

    Continuous information updates are needed during every stage of the rescue operation.

22. Staging Areas.

    Staging Areas should be established for incoming resources so that the response into the rescue site can be managed effectively.

23. Responder rest, recovery, and relief.

    Long-term rescue operations necessitate periodic rest periods for rehabilitation of rescue workers, including provisions for relief so that operations may continue without pause.

24. Secondary collapse.

    The hazard of secondary collapse must be considered, whether from an earthquake aftershock or from failure of an already weakened support structure.

Structural Triage

Completing a structural triage helps to identify, select, and prioritize the structures with the highest probability of success with respect to finding and rescuing live victims. The term "triage" used in EMS is used here with the same general meaning: to sort by severity, damage, survivability, etc.

Structural triage is accomplished using the following steps:

- Obtain precollapse intelligence. This includes information from witnesses and victims, building diagrams or plans, and occupancy information.

- Deploy reconnaissance teams to evaluate structural conditions, hazards, and rescue opportunities (may use structural specialist and haz mat specialist). This information will assist in determining hazard versus risk in rescue operations.

- Analyze information and determine the best rescue risk-to-benefit ratio.

- Significant hazards such as collapse, fire, or haz mat may result in a "no go" assessment until the hazard can be mitigated.

- Prioritize rescue sites. These priorities are value judgments based on the information provided at the time. The highest priority sites are those where the most victims can be rescued safely in the shortest amount of time. The victim rescue probability assessment would involve

  - The potential number of victims trapped.

  - Condition of the voids.

  - The time needed to get the victims.

  - The chance of secondary collapse.

  - Other hazards involved in the rescue.

- Continually reevaluate. Conditions change, sometimes improving and, at other times, becoming worse. Intelligence on the site should improve with time, thus assisting the IC with developing additional search and rescue strategies.

Structure Triage, Assessment, and Marking System

At times, an IC may be confronted with the responsibility for a general area that encompasses multiple buildings affected by the event, with little or no search and reconnaissance information. The Structure Triage, Assessment, and Marking System is designed to help identify, select, and prioritize the buildings with the highest probability of success with respect to finding and rescuing live victims. This may not be the building with the largest number of potential victims or the building in the best structural condition.

It is important that information related to building identification, conditions and hazards, and victim status is posted in a standard fashion. The following procedure may be used by an IC during the first hours after arriving at an assigned location if faced with a situation of little or no information.

Structure Triage Operations

Deploy one or two Structure Triage Teams into the area. A team should consist of:

- one structural specialist; and
- one hazardous materials specialist.

Each team conducts a short survey of the buildings in the area. The identification of structure and location is established during the triage process. This assignment could be conducted simultaneously at the inception of the mission while the IC deploys personnel to assess possible sites for locating the Base of Operations (BoO).

The following assumptions relate to the structure triage:

- If a large area or many buildings are involved, triage can be performed by two or more Structure Triage Teams.

  It is imperative that the teams compare assessment criteria before and after triage. This ensures that uniform evaluations are obtained.

- Some buildings may have significant hazards (e.g., structure on fire, collapse hazard, or haz mat spill) that do not allow rescue operations to proceed until the hazards are mitigated. These are given "no go" assessments. Followup marking of the structure must occur during the search and reconnaissance phase.

- Triage assessments are based upon value judgments made with rapidly obtained information. These always should be subject to a common sense review. Adjustments may need to be made by the IC.

- Triage criteria should be reevaluated after the initial search to consider new information on live victim locations.

- Structure marking may or may not occur during the initial structure triage phase. (A standard Structure/Hazards Marking System can be found in Appendix G.)

LIFE SAFETY AND PERSONNEL CONSIDERATIONS

Hazards at a collapse site may be numerous, involving structural failure, nonstructural damage, and environmental conditions requiring specific mitigation and protection for responders and victims. Structural collapse generally is classified as a low occurrence, high-risk incident--and, unfortunately, is where most of our people are killed and/or injured.

Collapse Hazards

Hazards associated with secondary collapse originate in damage caused by the primary event.

Nonstructural damage does not carry the risk of secondary collapse. Indications may be the obvious broken window, cracks in plaster and drywall, and that doors may not open easily.

Structural damage indicates that the stability of the building has been compromised. This can be anything from doors ajar, exterior and interior walls that are racked or tilted, floors and ceilings staffing or bucked. Hazards to be aware of are the possible instability of the building materials in the areas of the structure that are being worked in. Things to look at are the main connection points of the structure.

Nonstructural failures such as those listed below may result in secondary collapse.

- **Chimneys**--Failure may be indicated by cracks and partial collapse, especially in renovated structures. Chimneys may need to be taken down before any rescue work is initiated.

- **Mechanical equipment**--Air conditioners, heaters, and coolers on the roof or in the attic, or signs and billboards on the roof pose a hazard.

- **Parapets, dormers, and facades** can be hazards, especially with newer construction. The connection points are weaker than in older buildings, and facades can collapse totally without warning.

- **Glass** always can be a hazard, especially the larger and thicker pieces. If there is glass around an entry point or where responders are working, break it out to eliminate any chance of it falling during aftershocks.

Utilities and Adjunct Hazards

Natural Gas or Propane

Natural gas and propane, when free in an open-air situation, are not very serious hazards. However, when either is leaking in a closed environment, it can be deadly. If you suspect a gas leak (and you should), it is important to shut off the gas at the meter. If the meter is at the location of the leak, ventilate the area before entering, if possible, and keep all civilians from entering.

When dealing with propane, remember that it is heavier than air, settles in low areas, and may not dissipate like natural gas. When it reaches a source of ignition, it can explode! Natural gas distribution lines found in the street carry from 10 to 55 psi, and the lines that feed a single-family structure are pressurized to 1/3 psi. In commercial applications, pressures can vary depending on the needs of the business; however, it will not exceed the maximum distribution pressure of 55 psi.

Electrical Hazards

Just as in firefighting operations, it is very important to be aware of electrical hazards that could exist after a collapse. Before entering a building, it is important that all utilities are shut off and the area is secured with fire line tape so that no unauthorized persons can enter the area.

Even when no obvious hazard exists, there still can be live wires that pose a hazard. Anything over 750 volts usually is marked on a pole by a "high voltage" sign. Anything that is located on the pole higher than this sign is considered "high voltage." Transmission lines can carry up to 500,000 volts and smaller lines 34,500 volts. Transformers drop the high voltage to service currents of 240, 480, 4,800, and even 34,500 volts in some industrial and commercial applications. If these lines are down, it is very important to treat them as though they are hot.

Hazards Associated with Water

After a collapse, it is not uncommon to find that the utility lines have been severed. Water pooling from broken pipes on upper floors may cause a secondary collapse. Water also may flow into the basement area causing problems for victims trapped in those locations. Water also increases the possibility of electrical shock if the electricity has not been disconnected or severed.

Hazardous Materials Situations

After any event large enough to cause a significant amount of damage, structures displaying a 704 placard should be approached with extreme caution. Chemicals in their normal state have certain properties that are predictable. When they are mixed or are involved in a fire they become totally unpredictable. Always treat any situation involving haz mat as though it were the worst-case scenario. Even buildings that do not have the 704 placard can be potentially dangerous to first responders. Keep your eyes open to what is going on around you and continue to gather information pertinent to the incident.

Fire-related Incidents

Incidents involving fire should be handled in the same manner as a normal firefighting operation, with the following exception: an aggressive interior attack on the fire should be reconsidered. Consider what is burning, what types of life hazards exist (if any), and the condition of the structure, i.e., is a secondary collapse imminent? If any of the above raise concerns in your mind, then discretion is the best way to approach these fires. Make sure that the exposures are covered, handle any life hazards first, and then extinguish the fire in the safest manner.

First responders are capable of doing only so much with the resources that are available at the time. It might be prudent to keep civilians away, keep responders out of these badly damaged buildings, and keep the fire from spreading to adjacent structures.

Dust/Asbestos Atmospheres

In any collapse situation, whether from an earthquake, explosion, or collision, there probably will be a tremendous amount of airborne particulate matter. First responders need to protect themselves from whatever is in the air. There could be asbestos or other harmful things in the air which may not affect responders right away.

Some fire departments provide their members with dust masks. They should be worn at all times in contaminated atmospheres. If you suspect something is in the air, you should at least have a dust mask on.

Flooding (Caused by other than Broken Water Pipes)

Water, from something other than broken water pipes, can pose a problem. A dam letting go or a swimming pool failing above a rescue site would put a crew in a dangerous position.

Risk Management

Risk management is the process of evaluating and mitigating hazards in the environment. The IC must perform this activity to ensure the safety of the rescuers. Although other people within the ICS provide the IC with advice, ultimately it is the IC who is responsible for making the "go/no go" decision.

The risk management process involves five steps:

1. **Situation awareness** involves observing and obtaining accurate information. It is the product of combining long-held attitudes and knowledge with new information as it is gathered to build a new perception. The more accurate and timely the new information, the closer one's awareness is as to the reality of the situation. This is the foundation on which decisions are based. Good information is the key to good decisionmaking.

2. **Hazard assessment** is identifying and evaluating the hazards and their potential. Exercising judgment on the probability of a hazard and its potential severity is inherent in the hazard assessment step. Assess the potential collapse hazards, environmental hazards, and the hazards that result from the tactics selected.

3. **Risk control** is applying measures to reduce or eliminate the hazard. Risk controls can vary from a simple briefing that provides awareness of a hazard to shoring an unstable structure prior to entry. Providing appropriate protective gear and a communication system are also risk controls.

4. **Reaching a decision point** is accomplished by:

   - Evaluating hazards and risk controls.

   - Deciding to commit (or not to commit) resources to the assignment. There are three key questions to ask before starting operations. They should all be answered **yes**!

     - Can personnel work safely in the collapse zone?

     - Does everyone understand the strategy and tactics?

     - Has a briefing been given with feedback opportunity?

5. **Evaluation** is accomplished by:

   - Ensuring that the plan is working.

   - Planning to evaluate continuously.

Leaders earn their pay in this step of the risk management process. You must coordinate the resources working for you so that they can accomplish the objectives of the plan. This means you should follow up during an operation to ensure the plan is working, do continuous reevaluation of the operation to make adjustments as the situation changes, and incorporate lessons learned for future use. Whenever an adjustment is needed, it should be a cue to update the situation awareness. This puts you back at the first step of the risk management process. The structural collapse environment is dynamic, and this means that you must be able to adapt to continuous change.

Personnel Accountability

The IC must ensure that a personnel accountability system is established early during initial response, that the accountability level goes down through the incident organization, and that it is maintained throughout the incident. This system must include accurate information identifying company, crews, and personnel assignments and locations. Good communications and a safety plan are essential elements of this system.

Reporting procedures and signaling systems should be understood well by all.

Continuous documentation is important in resource tracking.

Incident Commander Responsibility for Scene Safety

Hazards and dangerous working conditions may be reduced or eliminated through effective incident command that:

- provides leadership and organization;
- obtains accurate information and develops a plan;
- makes safety a top priority;
- assigns a SO and Rapid Intervention Crew (RIC);
- provides for appropriate protective measures and safety equipment;
- rotates crews and provides rehabilitation;
- plans for contingencies;
- monitors, isolates, confines, contains, and mitigates hazards;
- communicates and uses the chain of command;
- has periodic briefings; and
- plans for injuries and stress management.

ESTABLISHING SCENE CONTROL

Establishing scene control should coincide with the initial sizeup and IAP. Some of the actions the IC should take when managing the scene of a structural collapse include

- isolating the area;
- establishing zones:
  - collapse hazard zone (hot zone),
  - rescue work zone, and
  - operational work area;
- marking and identifying areas;
- evacuating bystanders and nonessential people;
- controlling perimeters is accomplished by:
  - controlling and managing spontaneous responders,
  - providing access/entry routes into worksite,
  - providing for outer perimeter access control,
  - developing a traffic plan, and
  - requesting (and using) law enforcement for this function;
- establishing site security by:
  - requiring authorization to enter site,

- media control, and
- use of law enforcement;
- establishing incident facilities such as:
  - Command Post (CP),
  - Staging,
  - medical triage and treatment area,
  - base,
  - cribbing and shoring work station,
  - evacuation area, and
  - rehabilitation area, etc.;
- investigating the incident by:
  - seeking cause determination (criminal or accidental),
  - preserving evidence, and
  - documenting; and
- requesting assistance.

Rescue Site Management and Coordination

As rescue opportunities are identified, it is important that rescue personnel adhere to a consistent, formalized site management procedure to ensure the safe, effective operation of the rescue squad(s). The following considerations should be addressed.

- Sizeup actions and site control activities should occur simultaneously. The responsible Rescue Group Supervisor should review the situation and safety issues and begin formulating a plan of action to effect the rescue. Assistance may be required from the structural and hazardous materials specialists.

- At the same time, the remaining rescue specialists should begin to take firm control of the immediate site. Their actions should include

  - Assessing and mitigating hazards.

  - Shutting down all utilities.

  - Establishing collapse hazard zone (hot zone).

  - Clearly defining the rescue work zone.

  - Removing all bystanders.

  - Organizing an equipment assembly area and a cutting workstation.

- Sizeup and site control activities should be completed before rescue operations begin.

- Once the sizeup is completed and the plan of action is developed, a short team briefing should be conducted. A "thumbnail" sketch of the site features and rescue operation should be made. Team briefings improve the operation and team effectiveness, allowing all personnel to understand what is to be accomplished and to plan ahead for the required tools, materials, and tactics. In addition, safety considerations, structural concerns, hazard identification, emergency signaling, and evacuation procedures should be addressed.

Rescue Site Setup

When establishing the perimeter of the operational work area, the needs of the following support activities must be provided for and properly identified.

Command Post--area used by the IC to manage and coordinate all search and rescue activities at the site.

Medical Treatment Area--location where the medical team can set up operations and provide treatment to responders and extricated victims.

Personnel Staging Area--where unassigned responders are available for immediate assignment or, as a RIC for immediate response in case rescue workers become trapped.

Rescue Equipment Staging Area--where tools and equipment can be safely stored, maintained, and issued as needed to support the operation.

Cribbing/Shoring Working Area--where building materials, lumber, and other items can be stored and processed as needed to support the onsite search and rescue operations.

Access/Entry Route(s)--A clearly defined avenue should be planned and identified for access to and from the rescue worksite. Personnel, tools, equipment, and other logistics needs are channeled safely through this route. In addition, controlled egress is required to evacuate a victim or injured responder quickly.

For long-term operations, consideration must be given to providing tarps or tents for the security and environmental protection of tools and equipment and for the comfort of the assigned personnel and victims.

Outside the operational work area, Staging Areas may be set up for vehicles and apparatus. An incident base also may be set up.

COMMUNITY CONSIDERATIONS

A structural collapse may produce a variety of reactions and conditions in many segments of the community.

The local population is affected in various ways and to various levels. Possibilities are described below.

- Victims may need medical and emotional care, both short and long term.
- Responders also may need medical and emotional care.
- Relatives of victims may need comfort and support.

Community response may involve volunteers and donated items.

Volunteers

Spontaneous

These types of people respond early to assist in the incident, during the operations, and after the response is over (during the recovery and rebuilding process). Spontaneous volunteers may or may not be trained to perform specific functions. Emergency response personnel should know how to manage these volunteers at a collapsed structure incident.

Trained

These people may be a very useful resource if they are used safely and properly to assist the professional responders. The Red Cross and Salvation Army, for example, may be repositories of trained volunteers who may assist responders, victims, and the general population in many ways.

Donated Items

The community may donate items for victims and rescuers. These may include items such as food provided during incident operations or clothing and medicine provided after the incident. Donated items require a management system so that they may be distributed where needed in a timely manner.

Critical Incident Stress Management

CISM may be needed for responders, victims, and people in the community. A program should be in place to handle these kinds of situations from the agency or jurisdiction involved. Other agencies such as the Red Cross may be needed to assist. CISM should be

- Implemented early in the incident. CISM may include the pre-briefing and defusing of responder personnel.

- Integrated into the recovery phase and in the postincident followup as necessary.

Community Impact

Community impact may be significant in many areas.

The Media

It is important to work with the media so that mutual objectives are accomplished. The media may become a positive resource in providing accurate information to the public on a timely basis. A Public Information Officer (PIO) will need to be assigned to assist with media relations and information. One of his/her duties will be to provide accurate and timely information to the community (through the media).

Political Issues

Political issues may arise from a structural collapse incident due to its magnitude, the victims involved, the responders involved, the type of structure involved, and even the operations involved at the rescue site. The IC should maintain an awareness of these types of ramifications and keep the agency executive informed of incident status and activities. The IC should provide for coordination, interaction, and information at the incident and between the Emergency Operations Center (EOC) and the agency executive.

After the incident, future political action is possible through acknowledgements and awards for those involved, and mitigation against incidents of this type in the future. For example, this may involve the development of new building codes to prevent future building collapse or the purchase of additional rescue equipment for the fire department.

Economic Impact

A collapse involving one or many structures may have severe short-term or long-term economic effect on the community due to many factors.

- The loss of homes, causing people to move to other communities.
- The loss of jobs from the damage to the structure. In the short-term, jobs such as construction may increase due to the repair and rebuilding involved.
- The loss of a special community-dependent facility such as a large manufacturing building. This may result in the loss of part of the community tax base and the movement of business and industry to other areas.
- The recovery phase and rebuilding may take months to years depending on several factors such as the community recovery plan and funding availability and quantity required for the project.

Activity 4.1

Scene Assessment

Purpose

To be able to recognize assessment factors needed to develop an IAP.

Directions

1. The instructor will divide the class into four work teams.

2. Your team will be assigned a breakout area.

3. Your instructor then will review the structural collapse scenario associated with this activity. (You may wish to take notes on what you see and hear during the scenario presentation.)

4. A building floorplan (of the collapsed building) has been provided on the following page.

5. Once relocated in your breakout area, your team will

    a. Elect a team spokesperson.

    b. Complete the Scene Assessment Worksheet.

6. The instructor will give each team one of the questions to report on. All teams will complete question #5.

7. At the conclusion of the allotted time, the instructor will reconvene the class.

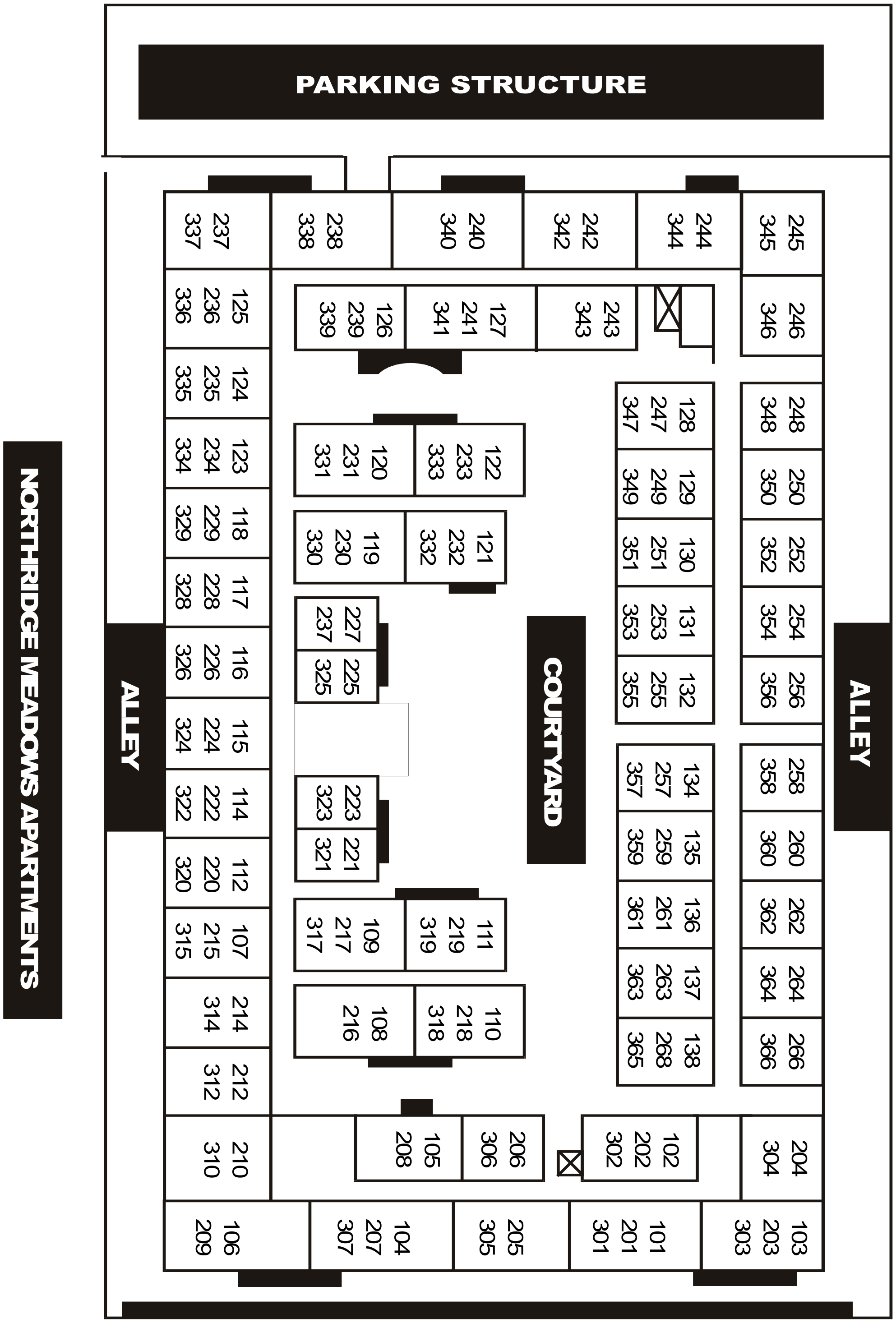
8. Each spokesperson will have 5 minutes to report team answers to the class.

9. The instructor will assist and clarify key points.

10. Teams should keep their materials for the next exercise.

Activity 4.1 (cont'd)

Building Floor Plan



Street

Scenario Information

Time of day: 0700 hours--Saturday.
Weather conditions: clear, 75° F (24ºC), wind 10 mph.
Three-story wood-frame apartment complex.
150 x 325 feet.
163 units.
Collapse caused by an earthquake with a magnitude of seven.

Scene Assessment Worksheet

1. What are the incident conditions upon your arrival?

2. What are the hazards?

3. Where may victims be located?

4. What factors could be used to determine victim location?

5. What elements should be considered in the development of the IAP?

UNIT 5: RESPONSE FUNCTIONS

TERMINAL OBJECTIVE

The students will be able to describe unique operational considerations for a structural collapse incident.

ENABLING OBJECTIVES

The students will identify primary functions used during structural collapse operations.

INTRODUCTION

The Incident Commander (IC) must be able to analyze a collapsed structure incident accurately and develop the appropriate strategy, tactics, and resource requirements to locate and rescue the injured and trapped effectively.

The following response functions may be part of a structural collapse incident:

- command and coordination;
- search;
- rescue;
- medical;
- technical specialists; and
- safety.

RESPONSE FUNCTIONS

Command and Coordination

Command provides the management function for overall incident operations. The process that Command uses consists of the following steps:

- obtain incident information;
- analyze intelligence;
- develop and select primary and alternate strategies (Strategy is "what needs to be done"--or the objectives.); and
- **prioritize** the objectives:
  - life;
  - property;
  - systems;
  - environment; and
  - situation (multiple locations).

DEVELOPING STRATEGY, TACTICS, AND RESCUE REQUIREMENTS

The following is an example of developing tactics and resource requirements from initial objectives.

Initial objectives

- recon site;
- identify and reduce hazards;

- establish scene control;
- search first, second, and third floors;
- rescue surface victims;
- access and explore voids and rescue victims;
- provide Emergency Medical Services (EMS);
- support rescue operation;
- provide for crowd and perimeter control and security; and
- handle media.

How to implement

- deploy recon teams--recon team reports;
- control uses, stabilize, monitor, and mitigate haz mat;
- establish zones (collapse, etc.);
- organize and deploy teams;
- use search and rescue teams;
- rescue team opening access, shoring, and rescuing victims;
- establish Medical Group and triage, treatment Area;
- establish Logistics Section;
- use police and traffic departments; and
- assign Information Officer.

> The general priority to keep in mind is…
>
> *"Do the most good*
> *for the greatest number*
> *in the least amount of time."*

- Set objectives and develop tactics. (Tactics are "**how** it will be done"--your response options.)

- Determine resource requirements. Consider capability, availability, and tasks.

- Task resources. Task operation is "**who** will do it and **when** it will get done" (assign resources to response options).

- Identify logistic support requirements.

- Develop Incident Command System (ICS) organization.

- Prepare and implement plan.
- Deploy resources and order additional resources.
- Evaluate operations and progress toward objectives.
- Revise plan as needed to accomplish objectives.

INCIDENT MANAGEMENT

The IC is charged with the overall responsibility of the personnel, resources, equipment, and operations while on the incident scene. An important aspect of managing a structural collapse incident is the continual monitoring of the effectiveness of performance as it relates to the planned objectives.

- Are the resources committed achieving their objectives?
- If not, the corrective actions and revision to the Incident Action Plan (IAP) are needed.

It then is the responsibility of the IC, in conjunction with the assigned tactical officers, to determine whether adjustments are required. The IC must monitor the effectiveness of the overall performance continually from a number of perspectives.

- Teams must be monitored to ensure they function in a cohesive and effective manner.
- Monitoring must be done to ensure that individual performance is adequate.
- The proper intrateam interaction must take place. The IC must ensure that all elements are operating in concert and that there is sufficient coordination and communication.

The IC, operating at the Command Post (CP), acts as a hub for information from the members operating in the incident area.

- The IAP is based upon known or anticipated search and rescue requirements.

- At times, the IC may be presented with unexpected situations during a mission operation that could overwhelm his/her immediate resources. After a complete evaluation of the situation, it may be necessary to request additional resources at a rescue site location. If additional resources are not available, then a reassignment of present resources may be in order.

The assignment of incident personnel is based upon the developed operational plan and priorities for search and rescue tasks.

The IC must maintain close communications with his/her staff and subordinates. A communication radio channel for tactical, command, and logistics operations is important.

A structural collapse operations report should be filled out for each worksite. Each report should include

- the personnel assigned to that location;
- rescues made or activities undertaken;
- potential rescue sites;
- safety considerations; and
- a drawing of the site.

These reports should be used to brief relief personnel at shift changes to ensure continuity of the operation.

A unit log also should be maintained listing the chronological order of events and activities during the mission.

Phases of Rescue Operations

There are generally five phases of rescue operations at collapse incidents.

1. Phase I: Survey the area for victims and assess the collapse area.

    - Area searched for possible victims (surface/buried).

    - Evaluation of the structure's stability.

    - Utilities must be evaluated and shut down for safety.

2. Phase II: Removal of all surface victims as quickly and safely as possible.

    This may be done during the site survey.

3. Phase III: All voids and accessible spaces searched and explored for viable victims.

    - An audible call-out system can be used during this phase.

    - Only trained canine or specially trained personnel should be used in voids/accessible space searches.

4. Phase IV: Selected debris removal.

    Access using special tools/techniques may be necessary after locating a victim.

5. Phase V: General debris removal.

    - Is usually conducted after all known surviving victims have been removed.

    - It is directed when the IC determines that no other victims are alive.

    - This method uses heavy equipment to demolish the building.

SEARCH

The search function locates victims using various search strategies, tactics, and techniques. This function ranges from basic search operations to the use of technical search equipment and search dogs.

A systematic search enables the IC and rescue teams to increase efficiency and reduce injuries. Subdividing the collapse site into definable areas improves both effectiveness and efficiency.

The search process involves

- reconnaissance (identify victim locations and hazards);
- interviewing witnesses;
- locating surface victims;
- exploration of places likely for survival (e.g., voids);
- marking locations and documenting; and
- prioritizing search and recommending rescue operation priorities.

Search Strategy and Tactics

Search Strategy

The most effective search strategy should blend together all of the identified tactical capabilities into a logical plan of operation.

Following survey and reconnaissance of the area, direct efforts toward search operations in specific collapsed buildings. Small buildings do not present too much of a search problem. Large or multistory buildings are complex, and create difficult search situations. When concentrating efforts on a particular building, start by finding out several pieces of information:

- Building's use.
- Number of occupants.
- Number of victims trapped and their probable location.
- Are rescue operations currently underway?
- Presence of hazards.
  - Gas and utilities.
  - Flammable.
  - Electrical.
  - Flooding from burst mains.
  - Plumbing and sewer disruption.
    - -- Secondary explosions when an explosion caused the initial incident.
- Structural stability of adjoining buildings.

NOTE: Electrical hazards present grave danger to rescuers. Utility companies will be attempting to reinstate power, thus causing possible electrocution hazards or fires.

Victim Location

Victims found on top of the debris or lightly buried should be removed first. All rescue efforts should be directed to the victims who can be seen or heard. Rescue efforts also should be directed to those victims whose locations are known even if you cannot see or hear them.

The initial site assessment will point toward areas of potential voids that may have given a person in the area during the time of the collapse a chance to survive. It is important to gather all information available from witnesses as to how many people were in the building at the time and in what locations. All the information has an influence on the search strategy to be used.

If victim location is not known, seek out casualties by looking in places that could have afforded a reasonable chance for survival. Typical areas that should be searched are

- hallways or exit ways;
- spaces under stairways or in bathrooms;
- basement and cellar locations;
- locations near chimneys or fireplaces;
- voids under floors that are not entirely collapsed;
- undemolished rooms whose egress is barred; and
- voids created by furniture or heavy machinery.

Victim Locator Unit

The Victim Locator Unit (VLU) normally would be activated when the location of potential victims needs to be identified. This would be dictated by incident needs (e.g., persons trapped and people that are unaccounted for). The purpose of the VLU is to locate and identify victims and witnesses involved in structural collapse incidents in order to assist in search and rescue operations.

The VLU usually is assigned to the Planning Section, and information gained needs to be shared with the Search Group. The VLU normally is commanded by a Company Officer (CO) as the unit leader and staffed by the following personnel:

- arson unit investigators;
- paramedic supervisor; and
- police officers.

Unit members interview victims, witnesses, and persons with knowledge of the structure to determine the location of all occupants or other people who could be trapped or injured. Witnesses may include occupants (injured and uninjured), managers, supervisors, employees, or nearby observers. Information regarding victims should be documented with all pertinent information, including diagrams. A complete account must be made to ensure that rescue operations are timely and effective. At significant incidents, Geographical Information System (GIS) technology can be used to map the location of potential victims.

VLU members also may assist in the cause determination investigation and in identifying potential hazards caused by the collapse. Hazard information is a high priority and should be communicated immediately to the IC.

Communications need to be addressed as part of the plan. Safety concerns make it mandatory to establish signals that will call for an immediate evacuation of a site.

Tactical Operations

There are several tactics that can be used for locating trapped victims. No single tactic is sufficiently effective on its own to ensure that a complete search has been conducted. The selection of tactical operations is, of course, limited by what resources may be available.

A practical method used to determine search priorities is based on the type of occupancies affected. Those that present the highest likelihood of survivability in terms of the type of construction and occupancy of the building and the number of potential victims would receive attention first. Occupancies such as schools, hospitals, nursing homes, highrise multiresidential buildings, and office buildings, etc., would be searched first. The most effective search strategy should blend together all of the identified tactical capabilities into a logical plan of operation. These strategies may include

- physical void search;
- use of electronic visual or listening devices; and
- search dogs.

Large-scale Search Priorities

One of the initial determinations that supervisory personnel may have to make at the inception of a mission is what area should be searched first.

This consideration usually deals with larger geographic areas. There may be many damaged structures requiring attention.

Prior experience shows that there are two general strategies to deploy search resources. The first is to divide the area geographically. Depending on the size of the damaged area and the search resources available, any area may be divided into geographic divisions by city block or other easily definable criteria.

The available search resources would be divided and apportioned to each division for search operations. The division strategy may work well for small areas, but it most likely would prove impractical for larger areas (such as an entire city or jurisdiction) in relation to the limited search resources available. The IC may consider expanding into numerically numbered Branches (i.e., "Branch 1," "Branch 2") with divisions within each branch for a more effective and manageable system.

The second method is to determine the search priorities by the type of occupancies affected. Those that present the highest likelihood of survivability (in terms of type of construction) and the number of potential victims, based on occupancy of the building, would receive first attention.

When teams are covering large areas, they must remember that their priority is to conduct search functions to identify the location of all victims and to communicate any finds to the rescue teams while continuing the search activities. This focus on primary objectives assists in rapidly locating all victims.

Search and Reconnaissance Team

At the conclusion of the rapid structure triage, a search and reconnaissance team should be deployed to evaluate each building deemed viable (as a result of the rapid triage) for continued search and/or rescue operations.

Structure and search marking should be performed during this phase and prior to the initiation of rescue operations.

In certain situations, it may be most advantageous for the IC to deploy a full search and reconnaissance (recon) team when initiating operations at an assigned location. At other times, it may be necessary to deploy a search and recon team to a remote location during the course of a mission.

A full, 10-person search and recon team should be staffed with the following 8 positions:

1. **Search team manager--**acts as team supervisor, sketches/records information, communicates details/recommendations to the IC.

2. **Canine search specialists--**conducts canine search operations and redundant verifications of alerts.

3. **Technical search specialist--**conducts electronic search operations.

4. **Medical specialist--**provides treatment for located victims and/or team members.

5. **Structural specialist--**provides analysis and advice regarding building stability, shoring, and stabilization.

6. **Hazardous materials specialist--**monitors atmospheres in and around voids and confined spaces; assesses, identifies, and marks hazardous material dangers.

7. **Rescue specialists--**provides assistance to the search and recon team, including drilling/breaching for electronic viewing equipment and/or deployment of listening arrays.

8. **Safety Officer--**provides overall safety observations during the search and recon operations.

The search and recon team should conduct the following operations:

- General area and building search, reconnaissance, and evaluations.

- Victim location identification--this includes canine, electronic, and physical search operations. Marking the exact location with International Orange spray paint or orange surveyors' tape denotes the location of viable victims.

- Hazard identification and flagging--any type of personal hazard should be assessed and identified. This includes overhanging building components, structural instability or secondary collapse zones, hazardous materials, live utilities, etc. Hazard zones should be conspicuously cordoned off with surveyors' tape or fireline tape.

- Assess general atmospheric conditions in and around confined spaces or voids.

- Sketch the general search area and note all significant issues.

- Communicate findings and recommend priorities to the IC.

Specific equipment and materials are necessary for full support of a deployed search and recon team. This equipment should be segregated and receive priority consideration (cached and marked). This equipment should be available immediately to deploy a search and recon team as soon as possible.

Search Operations

The **"Golden Day."** This is the first 24 hours. The greatest number of victims will be found on the first day (80 to 90 percent) and can be categorized as follows.

Injured, Not Trapped. These also are known as "surface victims" and usually account for about 50 percent of all victims. Injuries usually are caused by falling debris and by the victims hitting the ground. Rescues of this type normally are made by neighbors, coworkers, relatives, and civilians.

Nonstructural Entrapment. These also are known as "light rescue" and usually account for about 30 percent of all victims. Rescue involves locating the victim and lifting building contents or small pieces of debris. Personnel should be able to recognize the unique hazards associated with the collapse of light-frame construction. Rescues usually are made by trained community or business Urban Search and Rescue (US&R) teams or first emergency responders.

Time of Day

If arriving during daylight hours, use available sunlight to prepare for the duration of the operation. Diagram the area to be searched, section off danger areas, and pool necessary resources. Try to visualize everything necessary for a 24-hour operation. Nighttime operations require lighting systems and added safety precautions due to reduced visibility.

Building Use

The potential for building collapse exists in every community. Determine the search priorities in terms of the types of occupancies affected. Those that present the highest likelihood of survivability (in terms of type of construction) and the number of potential victims (in terms of the type of occupancy of the building) would receive attention first, i.e., schools, hospitals, nursing homes, highrise, and multiresidential, etc.

Number of Occupants

Use available information resources to arrive at the actual number of building occupants (as close as possible) to determine search priorities.

Number of Trapped Victims and Location

Victim location identification includes canine, electronic, and physical search operations. It is important to concentrate efforts where there are known victims and where possible victims are most likely to be found. Marking the exact location with International Orange spray paint or orange surveyors' tape denotes the location of viable victims.

Rescue Operations Already Underway

It is essential that every possible search method be employed to locate viable victims before committing rescue resources to any prolonged (although well-intentioned) operation. Body recovery is not the primary mission of a search and rescue team. The first phase is prioritizing the locations of trapped victims by survey and reconnaissance of the entire area. Use victims' information for locating others, and stay focused.

Hazard Identification

Any type of personnel hazard should be assessed and identified. Hazardous materials, live utilities, flammables, etc., should be conspicuously cordoned off with surveyors' tape or fireline tape. Assess general atmospheric conditions in and around confined spaces or voids.

Structural Stability

The structural specialists should provide initial assessments of relative building stability and safety in relation to the ongoing search operations. In addition, recurring assessments should be performed throughout the operations.

An important consideration in the middle to later stages of the mission is the need to reassess previously searched structures. If the profile of a building/structure has been reduced significantly because of debris removal by heavy equipment or secondary collapse, it may become necessary to treat the structure as a new opportunity and repeat the various search procedures.

Search Techniques

Separate Search from Rescue

A search team member's job is to locate victims and bring the rescue team to the identified victim locations.

Search team officers must maintain control of their team and keep the team from becoming involved in a rescue effort. Other victims are depending on the search team to find them.

Search Theory

Search activities in the urban environment most commonly involve locating or attempting to locate people who were in and around a structure at the time of collapse. A searcher conducts his/her efforts for the victim and must remember that he/she works **for** the victims.

Searching is hard work and demands discipline. Discipline allows the searcher to work both safely and effectively. Team members need to recognize both mental and physical fatigue. Becoming tired, bored, and indifferent are all signs of fatigue. Upon recognizing these signs, the searcher must take a break or change positions on the team. Four to six hours is the average usefulness of a searcher in a 24-hour shift.

Search Types

There are four primary types of searches:

1. Hasty.
2. Efficient.
3. Thorough.
4. Grid.

In addition, searches may be made with specialized tools. In all instances, a hasty search must be conducted at the very least, and one type of followup search is required. The net result is that all survivable spaces must be searched. All teams must mark victim locations and map locations for written record. The map is very useful in leading rescue teams to victim locations.

Hasty Search

A hasty search is a fast, organized response to check areas most likely to produce surviving victims. This method must be employed on arrival to find the most obvious victim locations indicated by calls for help, moans, or exposed body parts.

During the hasty search, keep moving. Stop only to call out to victims and listen for a response. You also may stop to mark hazards and to attempt surface rescues. Note: this is the only time the search team may perform rescues. If the number of surface victims is large, let the rescue team assist them. The main criterion for a hasty search is speed, not thoroughness or efficiency.

There are two objectives of the hasty search:

1. Quickly check high-probability areas.

2. Obtain information about search area.

Efficient Search

The efficient search is a relatively rapid systematic search of segments of the area that produce high probabilities of detection.

The main criterion for this search is efficiency, not speed or thoroughness. This method involves moving debris, taking more time while sounding and searching the most survivable areas. Again, rescue teams must be brought in as victims are located.

Thorough Search

This search is the slow, highly systematic search using the most thorough methods to provide the highest probability of detection. The main criterion for this search is thoroughness rather than speed or efficiency.

Grid Search

A grid or line search involves a slow, methodical search of an area and is usually employed to produce clues, not victims. Searchers walk in the same direction at the same pace. They are spaced according to the number of searchers and the amount of area to be covered.

Victim Location

Surface/Lightly Buried

Surface victims are the most easily located. Many of them will have effected self-rescue prior to the arrival of emergency personnel.

Known Locations

Known victim locations are determined through witnesses' statements and by listening for the victims calling for help or signaling from inside the structure and under the rubble.

Potential Voids

Noting the type of collapse, direction the building has moved, and the distance the building has moved helps to identify possible voids. Searching these voids increases the probability of detection.

Possible Safe Areas

Taking into account the time of day and building use, consider the following list as possible areas of relative safety for victims.

- hallways/exits;
- basements/cellars;
- voids from beds and furniture;
- voids from machinery; and
- voids from vehicles.

Physical Void Search

Formation of voids. After a collapse, sections of the floors, walls, and roof may fall in large pieces. These pieces may become wedged or positioned so that spaces of different sizes and shapes are formed beneath them. These are called voids. Victims may be located in these voids--alive. The more common types of voids encountered are referred to as the lean-to floor, lean-to cantilever, the V-shape, the pancake, the overturn collapse, the combination, and the individual void.

Lean-to Floor Collapse

The lean-to floor collapse occurs when one of the supporting walls fails or when floor joists break at one end. With this type of collapse, the collapsed section is usually supported at both ends. That is, the uppermost edge is supported by the wall, and the lower portion is resting on the floor or debris. This type of collapse usually creates a good-sized void.

Lean-to Cantilever Collapse

The lean-to cantilever collapse, or hanging type, occurs when one end of the floor or roof section is still attached to portions of the wall. The other end (or ends) is not supported at all and is hanging free. Without a doubt, this type of collapse is the most dangerous.

V-shaped Collapse

The V-shaped void results when heavy loads cause the floors to collapse near the center. This type of collapse creates voids at each end below the floors.

Common to each of the three types of collapses listed above is the location of the potential victims. Occupants above the collapsed floor will likely be found in or under the debris at the bottom end of the collapse. This is usually due to the contents of the floor sliding toward the collapsed area and taking the occupants with them. The occupants below the collapse may be found in the supported void areas underneath the floor.

Pancake Collapse

The pancake collapse is the result of total bearing wall or column failure of an upper floor causing excessive weight on the next and lower floors, thereby dropping all floors to a lower level. Victims may be found between layers of flooring. The more fortunate may be protected by a strong supporting object.

A-frame Collapse

An A-frame collapse occurs when flooring separates from the exterior bearing walls but is still supported by one or more interior bearing walls or nonbearing partitions. The highest survival rate for trapped victims will be near interior partitions. Other victims may be located in the debris near exterior walls.

Overturn Collapse

The overturn collapse is a condition that occurs when a building is literally laid over on its side. This can be caused by a column tension failure or a shear wall overturning inadequacy. Spaces that were vertical become horizontal and vice versa. Elevator shafts become access hallways. The overturn collapse can be prevalent in liquefaction areas of an earthquake.

Combination Collapse

The combination collapse can be a combination of the types listed already in one structure. This type of collapse can produce many void areas and is very hazardous.

Individual Collapse

Individual voids are created when furniture, machinery, and other strong, bulky objects support sections of floors and walls. It is worthy to note that the larger spaces and voids are created by wooden floors that tend to remain intact and in large sections, and cellar or basement walls, where the thickness and absence of stresses resist tendencies to collapse.

STAGES OF SEARCH AND RESCUE

Immediately after a disaster that may cause structural collapse, the rescue services must function with speed and precision to free trapped victims. Every rescue operation, therefore, should proceed in stages and according to a regular plan.

While hard and fast rules cannot be applied to every situation, a systematic approach to the problem ensures a higher degree of efficiency, resulting in saving more lives and minimizing the danger to rescuers.

Locating and extricating the trapped persons presents the rescuer with a most challenging problem. The speed with which the casualty is removed and the degree of danger to both the rescuer and the rescued depend, to a large extent, on the methods and techniques employed.

The search stages are as follows:

Stage I

- **Reconnaissance--**the general survey and sizeup of the damage area, gathering of facts, and abating of hazards. Find out the building's purpose and use; the number of occupants; the number of victims trapped and their probable location within the building; if there are rescue operations currently underway by others; the nature and extent of damage; the danger of fire traveling in confined spaces; the presence of flammable liquids, poisonous gases, and chemicals; the location of live electrical wires and main electrical panels; the possibility of flooding from burst mains, plumbing, and sewers; and the possibility of additional collapse of the building or adjoining structures.

- **Immediate rescue of surface casualties--**victims found on top of the debris and those partly or lightly buried. Simultaneously with or immediately after the initial survey, all efforts should extend toward rescuing survivors who can be heard or seen, or whose exact location is known, even if they cannot be heard or seen. As victims are removed from the debris, a triage and treatment site must be established. This site should be away from the immediate rescue area so medical treatment and rescue efforts do not conflict. The establishment of Casualty Collection Points (CCP's) should be started as soon as possible in a location away from the collapse site.

- **Scene organization and management--**this is probably the most difficult to establish at the beginning of a large collapse event. The IC must try to manage the chaos and, at the same time, institute a command system. He/She must determine resource needs; organize the rescue effort; organize the triage, treatment; and CCP's, assign resources as they arrive; and direct those civilians currently effecting rescue.

Stage II

Exploration and rescue from likely survival places--Likely survival places may be identified by victims, rescuers, victim locator devices, such as rescue dogs, listening devices, fiber-optic video cameras, infrared video cameras, and sonic and heat-sensing devices.

Rescuers need to search strong or sheltered parts of a structure, even though no definite information is available that victims may be trapped in such places. This does not mean that every possible hole and corner of a building needs to be searched, but rather that likely areas of shelter should be looked for and fully explored. The essential purpose is to recover living casualties by seeking out places that would have afforded a reasonable chance of survival. The exact places thus explored depend, to a large extent, upon the type of collapse, the extent of damage, and whether or not a warning of collapse was given. The possibility of a warning may help pinpoint the location of persons immediately prior to collapse.

Typical areas that should be searched are spaces under stairways, basement and cellar areas (foundation walls may remain intact and form part of a void), locations near chimneys or fireplaces, voids under floors which have not entirely collapsed, undemolished rooms having exits barred by debris, and voids created by heavy furniture or machinery.

Too much emphasis cannot be put on the need for searching areas for victims who may still be alive and effecting their speedy release before any attempt is made to rescue victims with much less chance of survival. Before deciding which of the several victims should be rescued first, the position of each victim and the work involved in his/her rescue should be considered in relation to the position of the others and the difficulty of extricating them. The ideal procedure is, of course, to carry out both tasks simultaneously, if possible.

Stage III

Locating casualties using the hailing system--Place rescuers in calling and listening positions. The rescue officer in charge of the operation calls for complete silence. Silence is very important so the rescuers can concentrate on listening for the faintest sound from victims buried in the rubble.

Going "round-the-clock," each rescue member calls out or taps some object. All others listen to determine a "fix" on any sound they may hear. There should be a short period of time for listening between calling or tapping. After any sound has been picked up, at least one additional "fix" should be attempted from another angle. This should minimize the possibility of a mistake in locating a casualty, as the source of the sound coming from beneath the rubble may be deceptive.

Once communication has been established with a victim, it should be maintained continually. This keeps the victim's morale up, helping him/her withstand pain and discomfort. It also helps rescuers work in the right direction. The victim may be able to give warning of any movement of debris likely to cause further injury and to give direction, advise, and preclude any indiscriminate movement by rescuers.

RESCUE

The rescue function begins with an evaluation of compromised areas, structural stabilization, and access. The rescue process then involves the extrication of victims using a variety of tools appropriate for the task.

The term "Golden Day" describes an 80-percent survival rate for victims extricated within 24 hours. A well-organized and rapid response is critical to the success of the rescue operation.

The factors involved in prioritizing rescue opportunities include

- victim viability and longevity;
- degree of difficulty and duration;
- rescue outcome potential (multiple victims versus single); and
- safety considerations.

Tactical Considerations

Evaluating Rescue Opportunities

The critical responsibilities of the rescue team managers and squad officers are to determine, evaluate, and prioritize rescue extrication operations involving live, trapped victims. There are generally five phases of rescue operations at collapse incidents:

1. Phase 1: assessment of the collapse area. The area is searched for possible victims (surface and/or buried) and the structure's stability and potential danger to rescue personnel is evaluated. All utilities must be evaluated and shut down for safety.

2. Phase 2: removal of all surface victims as quickly and safely as possible. Extreme care must be used during this phase to ensure that rescue personnel do not become victims. Personnel should not be misled by the outward appearance of the structure. What appears to be a settled pile of debris could, in reality, be lacking any genuine support, and a secondary collapse could occur.

3. Phase 3: search/exploration of all voids and accessible spaces (created as a result of the collapse) for viable victims. An audible callout system can be used during this phase. Only trained dogs or specially trained personnel should be used in voids and accessible space searches.

4. Phase 4: removal of selected debris using special tools and techniques, (necessary after location of a victim). It may be necessary to remove only certain obstructions that are impeding access to the victim. Information concerning a victim's location prior to the collapse can be helpful during the selected debris removal phase. Information gathering on other possible victim locations can greatly enhance the operation.

5. Phase 5: removal of general debris (usually conducted after all known victims have been removed). Exceptions would be: 1) when information is obtained that indicates the possibility of other victims not originally accounted for, and 2) when large amounts of debris are impeding or obstructing operations. The decision to use heavy equipment during this phase must be given serious consideration, especially when the possibility exists that there are still live victims in the debris.

Rescue versus Body Recovery

Rescue operations follow a logical sequence of emergency actions. As rescuers progress through these phases, experience demonstrates that the survival of trapped victims is greatly reduced.

Rescue operations in collapsed buildings are usually difficult, lengthy, and dangerous. Rescuers must weigh the time value scale to their operations. Every possible search method must be employed to locate viable victims before committing to any prolonged rescue operation. Body recovery is not the primary mission.

Degree of Collapse

Degree of collapse can be classified as light, medium, and heavy.

Light

Superficial damage has occurred to the building or structure (broken window, plaster, etc.). With this type of collapse, victims most likely will self-rescue. Rescue operations are limited, as are the tools required.

Medium

Structural stability for this type of collapse is questionable. Walls may be tilted or fractured, and walls or foundations may be displaced. For a medium collapse, victims will need to be located; evacuation and extrication prioritized; and rescue operations implemented. Shoring and cribbing must take place as required.

For a medium collapse, a minimum number of rescuers should be within the building. Standard truck company tools can be used (jaws, rotary-chainsaws, pry bars, air bags, hydraulic jacks, etc.).

Heavy

This is characterized by partial or total collapse of floors, walls, ceiling, or roof. Obvious structural instability exists. Locating victims may require specialized tools or devices. Extrications must be well thought out and must consider hazards, equipment, time, etc.

Truck company tools, Federal Emergency Management Agency (FEMA) US&R equipment, and available heavy equipment can be used.

Coordination and safety must be emphasized.

Potential for Further Collapse

When an earthquake or other natural disaster collapses a building, a driving force has overcome the strength of the building materials and its connecting points. Normally walls support the weight of floors and roofs. As shifting occurs, weakening or complete collapse of floors, walls, roofs, and ceilings may occur. Further collapse may occur with normal settling, aftershocks, or rescue operations involving lifting, cutting, and prying. Rescuers must be aware of their surroundings:

- the age and condition of the structure;
- walls out of plumb;
- beams separated from walls;
- large cracks or openings;
- overloading of specific areas; and
- noises and vibrations.

Shore and crib or take other appropriate actions to mitigate the potential for further collapse.

Building Type/Construction

Identifying hazards after a structural collapse is difficult. Varying types, styles and configurations, ages, and uses of buildings only complicate rescue considerations. Rescuers must identify all possible hazards and options.

- six-sided assessment of the hazards involved;
- basic knowledge of the building's construction, characteristics, weaknesses, and strengths;
- awareness of materials used within the construction; and
- collapse patterns and creation of voids within different types and styles of construction.

In general, be aware of three types of hazards within any type of construction:

1. Falling.

2. Collapse.

3. Hazardous materials, natural gas, etc.

Rescue Techniques

One or any combination of rescue techniques may be used for a rescue operation.

- shafting/tunneling;
- trenching;
- breaching walls/floors; and
- support of structure/shoring.

Selection of technique varies with the structural conditions and problems, hazards, equipment manpower availability, and the overall safety of rescuers.

With all of the above techniques, follow some general rules.

- Be aware of surroundings.

- Shore often and properly (lives may depend upon it).

- Attempt to leave a quick means of egress or safety.

- Backup for safety and relieve often.
- Plan, coordinate, and communicate.
- Safety.

Shafting/Tunneling

- Ensure adequate amounts of available cribbing and shoring materials.
- Ventilate if within a confined space or if the space is oxygen deficient.
- Evaluate soil or debris stability and conditions.

Trenching

- Use same precautions as above.
- With use of heavy equipment or tools, consider vibration and exhaust.
- Lip protection.
- Tag lines and limit personnel to qualified and trained rescuers within the trench.

Breaching Walls and Floors

- Consider the consequences of debris falling upon victims, and the reduced integrity of walls and floors.
- Proper tools for the job required.
- Consider possible electrical and/or hazardous atmospheres.
- Remove debris to create a safe working environment.

Support of Structure (Shoring)

An adequate amount of shoring and cribbing materials must be available. Use the site as a resource, and acquire materials that are flat and can support the weight. Form an equipment and resource pool along with a nearby cutting station.

Shore often, properly, and with solid materials from a surface that can withstand the pressure and weight of the supported area.

RESCUE OPERATIONS

Operational plans for a FEMA US&R Task Force upon arrival at an incident is explained below. The functions that take place are useful for any structural collapse operation.

When a task force arrives at an assigned site location, it may find a variety of complex situations that could range from a single site disaster (i.e., collapse of one major structure or a disaster area small in size) to a large multisite emergency. The management and coordination of the task force will depend upon the situation(s) and needs at the location, coupled with the available local resources and whatever progress has been made (if any) to that point. The source of information should be the IC of the local jurisdiction.

At times, it may be necessary for the task force to begin rescue operations in one of the middle phases. In all likelihood, local emergency response personnel probably will have completed at least the first two phases prior to the arrival of a task force. Thus, in the event that a trapped victim has been located in a void, rescue operations may begin during Phase 3 or 4, depending upon the conditions at the site. When this occurs, the Rescue Officer in Charge (OIC) must ensure that all personnel involved in the operation are aware of all actions taking place. Any time rescuers are working in voids or accessible openings, all work in progress above, below, or around the site should cease until rescuers and victims exit the void or opening. Proper communications, both horizontally and vertically in the task force organization, must be maintained during these operations.

The most perplexing strategic decisions probably will involve choices among multiple rescue opportunities that surpass the rescue resources of a task force. In this situation, task force management personnel should prioritize rescue opportunities. Personnel safety and the benefit of the greatest number of people should be the guiding principles. This would involve factoring in victim(s) viability and longevity, degree of difficulty and duration of each rescue opportunity, the possible end results of rescue efforts (e.g., a single rescue operation yielding the extrication of two or more victims, etc.), and safety considerations for rescue personnel (e.g., some sites may prove too dangerous to conduct rescue operations). These factors must be evaluated collectively to arrive at the best possible rescue prioritization.

Decisions regarding personnel deployment and commitment (e.g., shift rotations or full-scale "blitz") as well as the integration of local and military personnel and/or convergent volunteers into the multiple rescue operations must be considered.

Rescue Integration in Search Activities

Task force rescue personnel may be required to assist the canine and technical search personnel with search and recon activities. This may include safety assessments at collapse sites, gaining access to voids and other difficult areas, deploying equipment, conducting physical search operations (either separately or in conjunction with the canine/technical search operations), etc. Certain search operations may require shoring/stabilization operations prior to entry. In addition, either individual void inspections or combined listening operations can be conducted, as necessary. These combined operations would be coordinated between the search team and rescue team managers in conjunction with the rescue squad officers or other appropriate task force personnel.

Rescue personnel may be most effective using electronic viewing equipment (fiberoptics, search camera, etc.), in conjunction with concrete hammer/drills, for pinpointing the exact location of victims. This combination also may be used for general void searches within collapsed buildings. Prior experience has shown success with rescue personnel drilling an array or series of holes (in a floor or wall for example) and an operator(s) subsequently following along with the electronic device(s) making quick assessments through the drilled holes.

The task force staffing within the search element provides two technical search specialists. These personnel usually will use the electronic acoustic/seismic listening devices as their primary tool. Other task force personnel (preferably rescue personnel) may be required to assist the technical search specialists and also act in the overhead function to ensure overall safety.

Another general classification is physical search operations. This includes deploying personnel over and around a collapse site. Rescue personnel may be deployed to make separate visual assessments in voids and confined space areas for any indication of victims. They also may be used in a coordinated fashion as an array of listeners. A bullhorn or hailing device would be used to provide direction to trapped victims. The area is then silenced, and personnel listen and attempt to pinpoint the location of the noise. This operation is less exacting than the others and poses a significant risk to the personnel involved in the operation.

In all cases, personnel conducting search operations should sketch the general features of the structure/area being searched noting any significant information on the sketch for future reference. This information should be forwarded to the task force managers. Rescue personnel may be used to staff one or two search and reconnaissance teams.

Rescue Site Management and Coordination

As rescue opportunities are identified, it is important that rescue personnel adhere to a consistent, formalized site management procedure to ensure the safe, effective operation of the rescue squad(s). The following consideration should be addressed.

Sizeup actions and site control activities should occur simultaneously. The Rescue OIC should review the situation and safety issues and begin formulating a plan of action to effect the rescue. Assistance may be required from the structures and hazardous materials specialists. At the same time, the remaining rescue specialists should begin to take firm control of the immediate site. This should include

- **Hazard assessment and mitigation**. This could be as simple as removing tripping hazards, boards with exposed nails, etc., as well as evaluation and shutoff of utilities, or other necessary actions. The shutdown of all utilities is mandatory, especially when personnel are operating on or in the collapse hazard zone. This important aspect of rescue operations always must be emphasized.

- **A collapse hazard zone (hot zone) should be established** around the compromised structure.

- **The rescue work zone should be clearly defined**.

- **All bystanders should be removed** from inside the cordoned work zone.

- **An equipment assembly area and cutting workstation should be organized** at an advantageous location inside or adjacent to the cordoned work zone.

Sizeup and site control activities should be completed before rescue operations begin.

Once the sizeup is completed and the plan of action is developed, conduct a short team briefing. Make a "thumbnail" sketch of the site features and rescue operation. This can be drawn quickly on a legal pad or reusable marker board, and can be used to apprise all personnel involved in the operation on the plan of action. In this case, a picture is worth a thousand words. The team briefing will improve the operation and team effectiveness, allowing all personnel to understand what is to be accomplished and to plan ahead for the required tools, materials, and tactics. In addition, safety considerations, structural concerns, hazard identification, emergency signaling, and evacuation procedures should be addressed at this time. The Task Force Operations Report may be used for this purpose.

As stated, each functioning rescue site must have a clearly designated Rescue OIC (and Rescue Safety Officer if required) for effective site management and coordination.

Rescue Work Site Setup

In order to ensure safe and effective rescue operations, the responsible Rescue OIC must establish control of the area immediately surrounding the selected worksite. This is done for two primary purposes:

1. To provide a collapse/hazard safety zone (hot zone).

2. To provide an operational work zone for the task force personnel assigned to the site.

A **collapse/hazard safety zone** (hot zone) is established to control all access to the immediate area of the collapse that could be affected by further building collapse, falling debris, or other situations (e.g., aftershocks) hazardous to personnel. The only individuals allowed within this area are the primary task force personnel directly involved in search for or extrication of victims. All other task force personnel must be located outside the hot zone until assigned or rotated. The collapse/hazard zone will be identified by an X-type cordon of flagging or rope (criss-crossed).

An **operational work area** is established to control access to the rescue worksite except for assigned task force members, military personnel, volunteers, and other local rescue personnel involved in an operation, and to provide safe and secure work areas for the personnel supporting the rescue operations. The operational work area will be identified by a single, horizontal cordon of flagging or rope.

Rescue Site Setup

When establishing the perimeter of the operational work area, the needs of the following support activities must be provided for and properly identified.

- Operational post--area used by the Rescue OIC assigned to manage and coordinate all US&R activities at the identified rescue site.
- Medical treatment area--location where the task force medical team can set up operations and provide treatment to task force members and extricated victims. Medical team personnel must identify their space requirements to rescue personnel when this area is being established.
- Personnel Staging Area--where unassigned task force members can rest, eat, and be immediately available in case the assigned rescue workers become trapped or until time of rotation.
- Rescue equipment Staging Area--where assigned tools and equipment can be safely stored, maintained, and issued as needed to support the operation. An appropriate area should be identified where generators and other gasoline-powered equipment can be set up and operated without exhaust gases and excessive noise hindering the operation.
- Cribbing/Shoring working area--where building materials/lumber can be stored and processed as needed to support the onsite search and rescue operations.
- Access/Entry route(s)--a clearly defined avenue(s) should be planned and identified for access to and from the rescue worksite. Personnel, tools, equipment, and other logistics needs would be safely channeled through this route. In addition, controlled egress would be required to quickly evacuate a victim or injured task force member.

Give consideration to the security needs and environmental protection (tents/tarps) for the tools, equipment, and comfort of the assigned personnel and victims.

Rescue Site Personnel Use

Effective use of task force personnel is a major element of the tactics necessary for productive rescue operations. It is imperative that all personnel clearly understand the command structure (those designated as Rescue OIC or other management positions on the rescue site) and their duties and responsibilities.

Rescue assignments for task force personnel generally flow down through the chain of command (e.g., 1: the task force leader assigning worksites to the team manager, 2: the team manager then specifying areas of responsibility for subordinate task force personnel). Assignments may vary from single site operations to multisite operations. The rescue team manager should designate one of the rescue squad officers as the Rescue OIC of any operation requiring the assignment of two (or more) rescue squads to a single, complex operation. The alternate rescue squad officer should assume the position of rescue safety officer.

The assignment of rescue personnel is the responsibility of the Rescue OIC and must be understood clearly by all team members. At times, considerations requiring rescue team responsibilities and assignments must be based upon the challenges being faced and the qualifications and expertise of the team members. Effective use of team personnel must be the prime consideration of the officer making assignments.

Some operations in which rescue personnel are involved in victim search or extrication may pose the threat of secondary collapse on the rescue personnel (e.g., working in the collapse "hot zone," below-grade operations, operating in voids or accessible openings, etc.). In these situations, a standby rescue team must be stationed at the designated Personnel Staging Area in a full state of readiness, in the event that rescue personnel become trapped or require other assistance.

At least one rescue specialist should be assigned to the Rescue Equipment Staging Area at the rescue site. The rescue squad officer should appoint this position at the time of the initial squad briefing, prior to beginning rescue operations. Procedures for accountability of equipment are conducted in accordance with the Property Accountability and Resource Tracking System. In the event that a request for the loan of tools or equipment to other than task force members is made, the designated Equipment Staging Area manager will make proper notifications, documentation, and ensure followup for the return of the items.

INTERDISCIPLINE COORDINATION

As the rescue team managers and squad officers focus on the appropriate tactics and procedure related to victim extrication, they also must address the interrelation of other task force disciplines in the ongoing operations. This would include

Structure Specialists

These people must be involved in ongoing rescue extrication operations, especially those involving significant cutting, breaching, moving, and lifting operations. The Rescue OIC should request structural assessment assistance in the development of the rescue plan of action initially, and receive periodic review during the course of the operation.

Hazardous Materials Specialists

Should assist search and rescue personnel with initial site analysis prior to search or rescue operations. This would include identification of any hazardous products as well as evaluation of the general atmosphere around and within the involved structure. Periodic review may be necessary during extended operations.

Medical Specialists

Provide medical assessment, intervention, and stabilization which are essential to the eventual survival of the entrapped victims both during course of extrication and after release. Rescue personnel should ensure that Medical Team personnel have access to the victim as soon as possible. This may require temporary cessation of rescue operations. The benefits of immediate medical intervention and stabilization of the victim greatly offsets any time lost.

Of significant importance is the coordination of any actual weight removal from live entrapped victims. This must be closely coordinated with the medical personnel. The effects of crush syndrome, whereby toxins and other byproducts of blood flow restriction are suddenly released into the rest of the victim's system, can lead quickly to death. Medical intervention and appropriate IV therapy can offset this condition.

Medical personnel also are responsible for monitoring all personnel involved in the operations for excessive critical incident stress, exhaustion, water intake and hydration, injuries, and any other detrimental conditions that may require intervention.

Heavy Equipment and Rigging Specialists

These people may provide recommendations that should be considered during rescue operations requiring the integration of cranes, large-scale lifting operations heavy equipment movement, etc. In addition, the heavy equipment and rigging specialists must act as liaison between the rescue squads conducting the rescue and non-task force equipment operators who may not fully understand the subtleties involved.

Technical Information Specialists

Services provided by these people should, in certain situations, be requested by rescue team officers to document significant aspects of a rescue. This may include both still and video photography of operations, as well as information collection of building plans, capturing timeframes of the duration of operations, exposure records for rescue personnel, etc.

Rescue team officers may have to integrate the services of other non-task force personnel into ongoing operations. This may include local utilities personnel (gas, electric, water), law enforcement, military, and convergent volunteers. The assistance of these entities should not be overlooked when needed.

SITE/PERSONNEL SAFETY

Safety of the task force personnel is the single most important consideration during mission operation. Rescue team officers must ensure that this remains so throughout rescue operations and mission in general. This not only includes the input and advice of the technical team specialists as outlined, but in the development of rescue action plans, choice of tactics, and management and coordination of operations. As a minimum, the following considerations should be addressed for rescue operations:

- The assessment of relative safety of personnel operating around collapsed or compromised structures is at best, difficult. This assessment must be maintained continually throughout rescue operations. Safety and hazard identification issues must be addressed in the briefings conducted prior to any operations. Personnel hazards and mitigation should receive top priority in the briefings.

- Emergency signaling and evacuation procedures must be understood and immediately recognized, not only by task force personnel, but by all others (heavy equipment operators, military personnel, local utility, and emergency workers, etc.) assisting in the operations. Effective emergency signaling and evacuation procedures are essential for the safe operation of all personnel operating at the disaster site. These procedures must be clear and universally understood by all task force personnel and others involved in the operations. Air horns or other appropriate hailing devices shall be used to sound the appropriate signals.

Cease Operation/All Quiet	1 long blast (3 seconds)
Evacuate the Area	3 short blasts (1 second each)
Resume Operations	1 long and 1 short blast

- Personnel rest and rehabilitation (R&R) is fundamental to the safe, effective, and sustained operation of the task force. Task force deployment and personnel work cycles must be determined, enforced, and continually reassessed by the task force managers as previously discussed. In addition, it is incumbent on all personnel to understand and maintain a constant awareness of the need for water, food, and rest. Team managers and rescue squad officers must evaluate the need of their personnel, integrate these requirements into the ongoing operations, and ensure that all personnel comply accordingly. The rotation of personnel out of ongoing operations to address these issues should be handled on a scheduled basis and not at their own discretion. Fluid and food intake as well as rest periods and sleep cycles are vital to the safety and effectiveness of all personnel.

- Team managers and rescue squad officers also must maintain an awareness of and monitor personnel for the mental stresses involved in disaster operations--critical incident stress. Medical team managers and specialists are directly tasked with assessing this effect in all task force personnel during mission operations. Critical Incident Stress Debriefing (CISD) or defusing intervention may be required.

- Task force managers must maintain a continued awareness of the detrimental effects of fatigue on the effectiveness and capabilities of all task force personnel. Taking into account mobilization, travel, and setup activities, personnel may be operating at reduced efficiency (possibly 70 to 50 percent or less) quite early in the mission. Also, a single rescue operation can easily span 8 to 10 hours or more. In addition to the physical fatigue, it is equally important to understand that mental acuity is affected: decisionmaking abilities are slower and made more difficult.

- Rescue officers and personnel should request or offer advice and reassessment of each other's concerns. Team and/or squad "pep talks" (regrouping) may be required during prolonged operations to redefine responsibilities and ensure that the squad's focus is maintained on the plan of action, management structure, and safety considerations.

- Hygienic considerations must not be overlooked during mission operations. This would include not only the personal hygiene of all task force members, but exposure and/or contact with victim body fluids, inhalation or ingestion of dusts and contaminated atmospheres, water, etc., and minor injuries. Medical team managers and specialists must be prepared to address these issues, including cleansing and treatment. All task force personnel must ensure that they maintain a ready change of personal clothing and the proper use of all personal protective equipment (PPE) and clothing.

- Task force managers must understand all procedures related to the treatment and/or transport of task force personnel sustaining injuries during rescue operations.

MEDICAL

The medical function provides for initial care of victims rescued from collapsed structures. Rapid intervention for those trapped in the collapse is critical to survival. Special medical techniques may be required for the victims such as crush syndrome treatment.

Paramedics and Emergency Medical Technicians (EMT's) trained in structural collapse rescue may need to enter the rescue zone to provide early care for entrapped victims. They also must be available to provide treatment for rescue personnel.

A medical sizeup is important in developing the response plan. Factors include

- number, location, and condition of survivors;
- short-term versus long-term survival potential;
- hazards and environmental conditions; and
- onscene medical and hospital capability and availability.

Deceased victims will require response by law enforcement, coroner, or medical examiner.

Medical Operations

Structural collapse situations produce rescue problems not routinely encountered by EMS personnel. Furthermore, prior to and during the actual rescue, trapped victims require special medical management of their injuries and illnesses.

Crush injury and crush syndrome, along with other problems, are common in trapped victims of collapsed structures.

Postextrication medical deterioration and death occur from potentially treatable mechanisms associated with crush injury and crush syndrome. These injuries are a primary reason to provide the victim with prompt and continued care within the collapsed structure.

The goal is to rescue the patient who returns to full pre-injury level of function and have all the rescuers return home safely.

Through proper training and discipline, we can accomplish our goal. We must learn to recognize early the medical problems that exist in collapse and to be aggressive with our treatment. Whether it be trench collapse or structural collapse, crush syndrome, without early recognition and aggressive treatment, is the cause for patient deterioration.

Most importantly though, we must have discipline to maintain safety at all times. Do not be in a hurry. Do a thorough sizeup, recognize the hazards, and maintain safety throughout the rescue.

Definitions

Direct Mechanical Crush

- mechanical disruption of tissue secondary to severe force; and
- immediate cellular effect/injury.

Crush Injury

- muscle cell disruption due to compression;
- time/pressure relationship; and
- cellular mechanism of injury controversial.

Compartments Syndrome

- crush injury caused by swelling of tissue inside confining fibrous sheath of muscle's compartments; and
- causes further destruction of intracompartmental muscle and nerves.

Crush Syndrome

- The **systemic** manifestation caused by crushed muscle tissue.
- Occurs when crushed muscle is released from compression.
- Muscle tissue is extremely vulnerable to sustained pressure.
- Compression may be caused by debris or by the patient's own body weight, especially if lying on a hard surface.
- Timeframe until crush injury depends upon the amount of pressure and patient factors:

  - As short as 1 hour if compression is severe.

  - Four to six hours is the more common period until significant crush occurs.

  - Amount of tissue to cause crush syndrome variable.

  - Usually lower extremities, buttocks, or entire upper extremity/pectoral area.

EXTRICATION (MOST DANGEROUS FOR RESCUE AND MEDICAL REASONS)

Extrication, in most cases, is a lengthy process. Many decisions have to be made. In making these decisions, teamwork is the greatest tool for success. The following are some aspects to evaluate to help make a successful rescue.

Rescue Aspects

- Debris unstable.

  The debris can be extremely unstable, making for a dangerous working area. Always be aware of footing. Make clear and safe work areas.

- Equipment activity dangers.

  With many tools and equipment in use, maintaining safety is paramount. Remember, always evaluate the end result before cutting or lifting.

- Haz mat factors.

  Determine what, if any, types of hazardous materials such as escaping gases, chemicals, etc., might be in the vicinity of the rescue.

- Utilities.

  Utilities must be shut off and associated hazards mitigated (ruptured water, gas, sewer, and electrical).

Medical Sizeup

- Time of entrapment.

- Estimated amount of weight. Estimate the amount of weight that the victim is being compressed under.

- Estimated time of release. Take into consideration all factors; the tendency is to fall short.

Medical Aspects

- Incomplete assessment.

  Depending upon the entrapment, it can be extremely difficult to assess a victim. Remember the basics--if the patient is talking, there is a lot of information to gather. If only a limb is accessible, check the pulse, skin signs, capillary refill, neurologic signs, hydration/dehydration, etc.

- Entrapment/Release causes rapid changes in physiology.

  Remember when a limb is released, crush syndrome begins to set in. The released limb, in time, can become extremely painful. Continue to monitor the patient.

- Dust.

  Keep the dust to a minimum. Dust problems can occur with the victim very easily. Treat it early with oxygen mask or dust mask. Rescuers also can succumb to longterm respiratory problems. A simple dust mask is an essential piece of protective equipment.

DISASTER VICTIMS AND TIME

The Phases of the Golden Day

- First 3 hours. Most live victims are rescued.

- Four to six hours. This timeframe is the most common period before significant crush occurs.

- Twelve to twenty-four hours. Airway, hypovolemia, hypothermia, dehydration.

- Survival declines. Remember, treat the victim before you extricate.

Phases of Trauma Death

- First phase (rapid death).

  Rapid death occurs mostly for two reasons: severe crush and asphyxiation.

- Second phase (hours after injury).

  Some of the problems within hours of entrapment are dust, impaction, and hypovolemia.

- Third phase (late death).

There are usually two reasons for late death: infection and organ failure. The victim stands a better chance of survival from these two problems after early recognition and aggressive treatment. Infection in the field can be treated by early recognition and care of injuries. Organ failure is seen with crush syndrome. Be aggressive and treat early.

DISASTER INJURY PATTERNS

Below are injuries found most commonly in confined space entrapments:

- lacerations;
- contusions;
- fractures;
- multisystem trauma;
- crush injury;
- respiratory injury;
- cardiac problems;
- hypo/hyperthermia;
- psychological factors;
- hypovolemia and dehydration;
- compartment syndrome; and
- crush syndrome.

STAGES OF MEDICAL CARE

Initial Access

- ABC's--always first consideration.

- Protect airway--don't forget about the dust problem. Treatment: oxygen mask, dust mask.

- Bleeding control--stop the bleeding and remember infection.

- Psychological support--a very important aspect that is sometimes overlooked. Remember the victim is depending on you to get him/her out. The victim will experience feelings of fear and doom. Act professionally and continually reassure the victim.

- Assess for crush injury--time of entrapment, estimate amount of weight, estimated time of release. All of these factors, along with patient findings, are to be assessed.

- If crush potential is identified:

  - Basic Life Support (BLS)--you can give water by mouth.

  - Advanced Life Support (ALS)--establish IV access.

  - ALS--fluid replacement prior to lifting compression.

  - ALS--considered pre-alkalizing with bicarbonate.

  - ALS--cardiac monitor--run a baseline strip.

Secondary Access

- Immobilization.

  When possible, don't forget the Collar and spinal immobilization. Also, fractures must be splinted and stabilized.

- Hypo/Hyperthermic.

  This can depend on weather conditions, but don't be fooled. Victims in confined spaces, especially for long periods of time, can become either hyperthermic or hypothermic.

Long-term Care

Victims of confined space may be in your care for hours. One important thing to remember is to take care of your own. It's a good idea to work in shifts when involved in long extrications.

MEDICAL PROBLEMS (IN INDIVIDUAL VICTIMS)

Crush Syndrome

- Caused by compression of limb(s) or body part.

- Membranes of injured cells break down and rupture.

- Cellular contents become available to circulation when crushing pressure is released.

Myoglobin

- Myoglobin is an oxygen-carrying element within muscle tissues.
- Ruptured muscle cells release myoglobin.
- Myoglobin blocks working elements of kidney.
- Myoglobin causes reddish-brown urine in high concentration.

Lactic Acid

Lactic acid is a byproduct of anaerobic metabolism. This is caused by the lack of blood flow due to entrapment. With the buildup of lactic acid, this will cause myocardial irritability and vascular system depression.

Recognizing Crushed Limbs

- Area initially may appear normal.
- Pulses initially may seem normal.
- Neuro may be positive or negative.
- Painless crushed extremity.
- Hypesthesia or anesthesia.

Postrelease

- agitation;
- continued hypesthesia/anesthesia or severe pain in crushed extremity;
- muscle function decreased/paralysis;
- progressively marked swelling of the area; and
- systemic problems.

Crush Injury Diagnosis

- high index of suspicion;
- identifying potential crush mechanism;
- looking for subtle signs and symptoms; and
- urinary myoglobin postrelease.

Dust Inhalation

Leading cause of death in concrete construction following trauma. Remember, this is also a major hazard for the rescuers. There is a high incidence of respiratory infection unless proper steps are taken (e.g., dust mask, proper ventilation).

Carbon Monoxide Inhalation

Mostly caused by the operation of gas-powered tools in confined spaces.

Secondarily Induced Trauma

There is a high incidence of secondary injury to the victim caused by rescuer.

- Walking on debris--be careful where and how you walk.
- Pulling victim out--remember, ensure that all limbs are free before you extricate (be patient).
- Location of the patient--before you begin extrication, try to determine exactly how the patient is situated.

PROVIDING CARE IN HIGH-RISK CONDITIONS

Confined Space Operations

It is important to determine the location of your safe area. Always leave yourself an out.

- Communication. It is extremely hard to communicate in a confined space. Use all of your options; radio, setting up a relay system, the use of runners, etc.
- Teamwork (the biggest key to success). There's always a different approach to solving a problem. Evaluate all ideas prior to deciding on a course of action.
- Extended operations. Don't forget care for the rescuers. Relieve one another on a continual basis during an extended operation.
- Environmental extremes.

- Dehydration--continually hydrate yourself.

- Hypo/Hyperthermia--rescuers are not immune.

CONFINED SPACE PATIENT MOVEMENT

- Priorities in movement: if multiple limbs are trapped, determine which to release first. Remember crush syndrome.

- Victim packaging.

    - Kendrick Extrication Device.

    - Sled.

    - Lashing.

    - Improvisation.

It is important to know your equipment and how it works. Practice with what you have and be prepared to improvise.

Historically patients that have been entombed within a collapsed structure have died quickly following extrication. Victim survival can be enhanced dramatically by early recognition of medical needs and by providing medical care as soon as the victim is reached; then throughout the entire rescue process.

Technical Specialists

These people may be needed if the incident is complex. These people support incident operations. A variety of specialists may be needed. The determination is dependent upon the situation and need for expertise in a given area.

Examples of technical specialists that could be used at a structural collapse incident include

- **Structures specialist:** structural engineers who can evaluate structural conditions and recommend safe access and structural mitigation to minimize risks. (Works with rescue team.)

- **Hazardous materials specialist:** Monitor environmental conditions and implement defensive measures to protect victim and rescuer. (Works with search and rescue team.)

- **Heavy equipment and rigging specialists:** These specialists have expertise in the use of heavy equipment and can interact, advise, and coordinate between heavy equipment operators and rescue personnel. (Works with rescue team.)

- **Weather specialist:** Monitors weather conditions on site and in region. Provides forecasts during incident operations.

- **Canine specialist:** Has expertise in the use and care of various types of search dogs. Provides recommendations on the use of dogs at an incident.

- **Equipment specialist:** This specialist may be used to provide recommendations on the use of, or to operate, unique or specialized tools for rescue operations.

Safety

Safety must be the top priority and everyone's job. Safety concerns at a collapsed structure worksite include

- hazard identification and risk analysis;
- incorporating safety into the IAP;
- monitoring operations for safety;
- providing appropriate protection;
- monitoring radio communications;
- enforcing personnel accountability;
- enforcing personnel rotation and rehabilitation;
- monitoring personnel for fatigue and stress; and
- investigating and documenting injuries.

Personnel Safety in Rescue Operations

Safety of rescue personnel is the first priority within all search and rescue operations. Members involved must be constantly aware of the numerous factors that must be evaluated and reevaluated throughout ongoing operations.

- Assess the scene.

  Building construction, six sides, evaluate for access, egress, structural stability, terrain, and debris, etc.

- Assess hazards.

  Utilities, flammable liquids, water, flooding, plumbing and sewer, electrical, etc. (Electricity may be re-energized by department of water and power at any time.)

- Changing conditions.

  Aftershocks, landslides, weather conditions, flooding, structural shifting, winds, etc.

- Preplanning.

  - Operations must be preplanned and personnel trained, qualified, and team oriented.

  - Risks taken by rescuers must be calculated and in favor of the rescuers.

  - Rescuers must operate in a safe manner at all times; think before acting.

- Fatigue.

  Must recognize signs of fatigue, mental and physical, both for you and other team members.

- Rescuer safety.

  Never lay short! Safety lines in rope rescue, shoring--frequently and properly; do not go in too deep without a quick means of egress or a safe zone.

- Preposition rescue equipment, in event of a rescuer needing rescue.

SAFE OPERATIONS AFFORD A GREATER NUMBER OF SUCCESSFUL RESCUES

Activity 5.1

Incident Objectives

Purpose

To conduct size up of the incident and develop incident objectives.

Directions

1. You will stay in the same group and use the same scenario from Activity 4.1, the apartment house collapse.

2. You should use page 2 of the ICS 201 form as a tool for writing your objectives. These objectives should be developed for the first hour of response from the initial assessment made in Activity 4.1.

3. Each group should transfer the information to an easel pad.

4. A spokesperson from each group will present the list of objectives. The initial resource assignment is three engines, two trucks, and one battalion chief.

Activity 5.2

Developing Strategy, Tactics, and Rescue Requirements

Purpose

To experience addressing operational concerns critical to the development of an IAP.

Directions

1. You will complete this small group activity as a member of the same group used in Activity 5.1.

2. Your group will use the same breakout area used during the last activity.

3. This activity will **build on** the scenario given to you in Activity 5.1. The groups in this activity will be accomplishing activity tasks. Your group should respond from the perspective of the IC.

4. Your instructor will present additional details on the same scenario used in Activities 4.1 and 5.1.

5. Once relocated in your breakout area, your group will

   a. Elect a group spokesperson.

   b. Divide your group's easel pad paper into two columns.

      - In the column on the left, build a list of initial incident objectives. (Objectives are to be in response to the problem/situation--i.e., search first, second, and third floors).

      - In the column on the right, list **how** each objective will be implemented (what resources will be used).

   c. Build a separate list of specialized equipment needed.

   d. Develop an Incident Command System (ICS) organization chart (based on incident complexity and resource availability).

6. Your group will have 20 minutes to complete these tasks.

7. At the conclusion of the allotted time, the instructor will reconvene the class.

8. Each spokesperson will have 5 minutes to report your group's answers to the entire class.

9. The instructor will assist and clarify key points.

Additional Information

- Resources assigned: three engines, two trucks, and one battalion chief. Maximum resources available for exercise (first 2 hours of response): eight engines, four trucks, one heavy rescue, four ambulances (two Advanced Life Support (ALS) and two Basic Life Support (BLS)), three battalion chiefs with aides, one police sergeant, six police units, and one police search dog.

- An estimated 40 units on first floor are heavily damaged under a pancake collapse.

- Many victims are trapped on the first floor and require extrication (estimated 80 to 100 people).

- Many victims are trapped and injured on the second and third floors (estimated 150 to 200 people).

- There have been two large aftershocks causing additional collapse.

- Some cars in the garage are leaking gasoline.

- Weather reports the temperature rising to 95°F (35ºC) today.

- Additional resources will be delayed due to widespread damage.

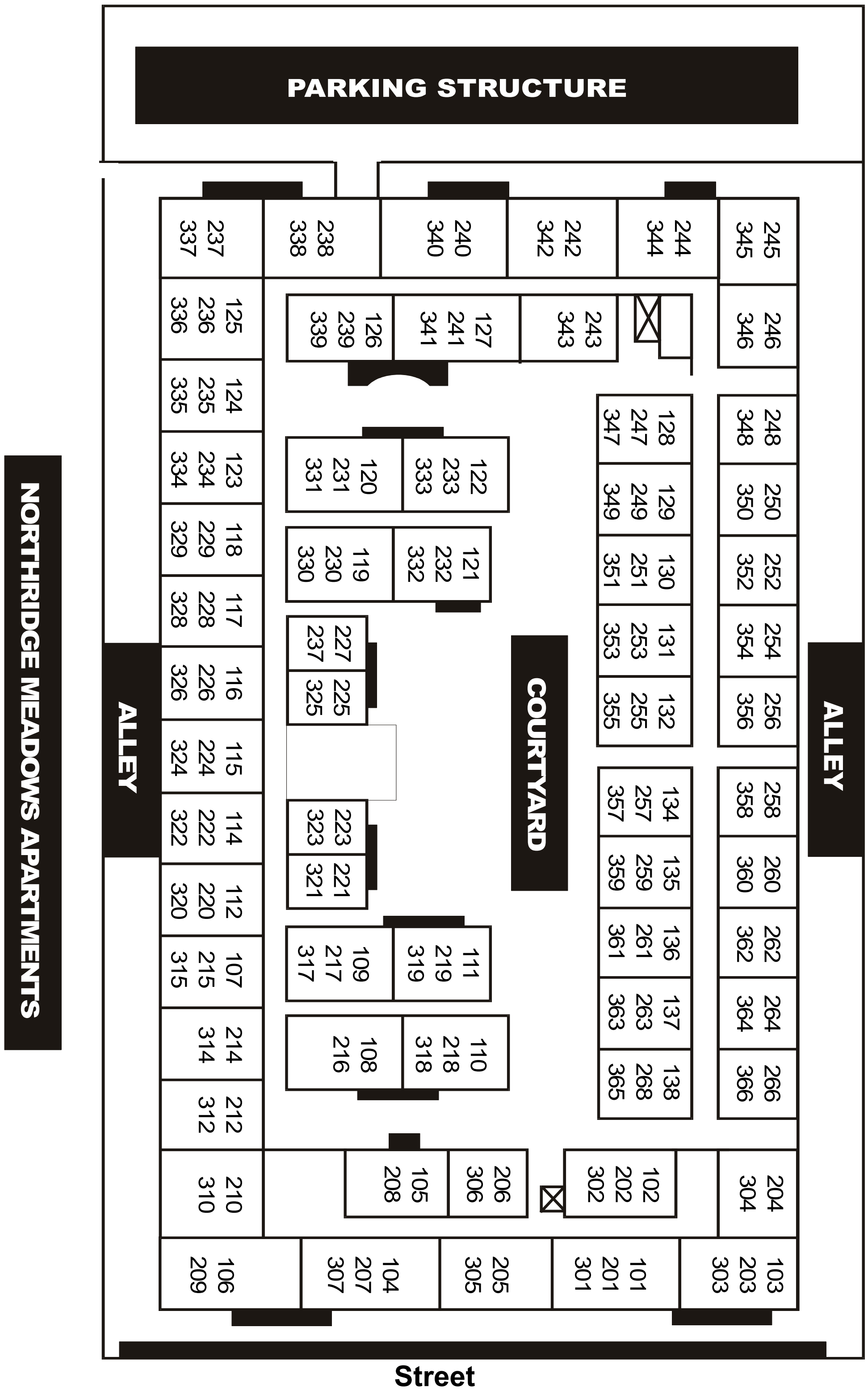
- Floor construction: lightweight concrete over plywood.

- Large crowd and news media at the scene.

- Staffing levels:
  three per engine
  four per truck
  four per heavy rescue
  two per ambulance
  two per police unit

Activity 5.2

Developing Strategy, Tactics, and Rescue Requirements



UNIT 6: STRUCTURAL COLLAPSE: OPERATIONAL PHASES

TERMINAL OBJECTIVE

The students will be able to describe all operational phases associated with a structural collapse incident.

ENABLING OBJECTIVES

The students will:

1. *Define five operational phases.*
2. *Describe the conditions that trigger transition of operational phases.*
3. *Demonstrate an ability to develop an appropriate Incident Command System (ICS) organization to command and control a structural collapse incident.*
4. *Identify, request, and apply specialize urban search and rescue (US&R) resources.*
5. *Explain the application of critical scene management issues and factors in the appropriate operational phase.*

INTRODUCTION

A major structural collapse incident can progress through a total of five phases. **This first phase--the initial response**--involves initiation of the following actions by the first Incident Commander (IC):

! establishing Command;
! conducting a sizeup;
! developing an action plan; and
! deploying resources.

The incident then can proceed to the second phase--the **reinforced response. This type of response** requires a larger incident organization and additional support requirements.

The third phase is referred to as an **extended response** (involving 24-hour operations). This phase requires

- a detailed Incident Action Plan (IAP);
- augmented organization; and
- an effective coordination system.

These three response phases are followed by **demobilization** (Phase 4) and **return to a state of readiness** (Phase 5).

FIVE OPERATIONAL PHASES--OVERVIEW

The response and buildup to a major incident as well as downgrading, closure and return to normal activities can be defined by the following five phases:

- **Phase 1**: initial response;
- **Phase 2**: expanded (reinforced) response;
- **Phase 3**: extended response (24-hour operation);
- **Phase 4**: demobilization; and
- **Phase 5**: return to a state of readiness.

PHASE 1: INITIAL RESPONSE

This initial phase involves the following six actions:

1. **Establishing Command. This is accomplished by:**

    - announcing Command;

- assuming all Command and General Staff responsibilities;
- providing a brief radio report (i.e., location, type of structure, and situation) to the dispatch center. (Responding companies should be monitoring this report); and
- establishing an Incident Command Post (ICP).

2. **Performing a sizeup.** Sizeup involves the following tasks:

   - surveying the site;
   - determining the type of problem;
   - identifying hazards;
   - assessing conditions;
   - determining victim locations and viability;
   - identifying exposures; and
   - assessing potential for escalation.

The Structural Collapse Operational Checklist (provided in Appendix E) is a good administrative tool to use during sizeup.

3. **Developing an IAP.** Essential steps in action planning are

   - understanding the situation;
   - establishing objectives and strategy;
   - developing tactical direction and assignments;
   - preparing the plan (at this point it may not be written);
   - implementing the plan; and
   - evaluating the plan.

An IAP helps establish priorities, points out hazards, and reviews items such as risk/benefit and safety.

The initial IAP may involve the use of a form that begins the written plan. The ICS Form 201 (Incident Briefing) may be used for this purpose and as a briefing form for the transfer of Command to another officer. This form includes a map or diagram of the area involved, incident objectives and actions taken, and the incident organization and resource summary.

Appendix A provides a sample ICS 201.

4. **Requesting resources.**

   Once the IAP is developed and objectives have been established, request the resources required to achieve the objectives. For example, to achieve the objective "search the first and second floor for victims," request an engine company and a truck company.

5. **Deploying and organizing resources.**

- The initial response may include from one to five single resources.

- The ICS organization at an initial response level consists of the IC and the single resources assigned to specific tasks (as illustrated in Figure 6-1).

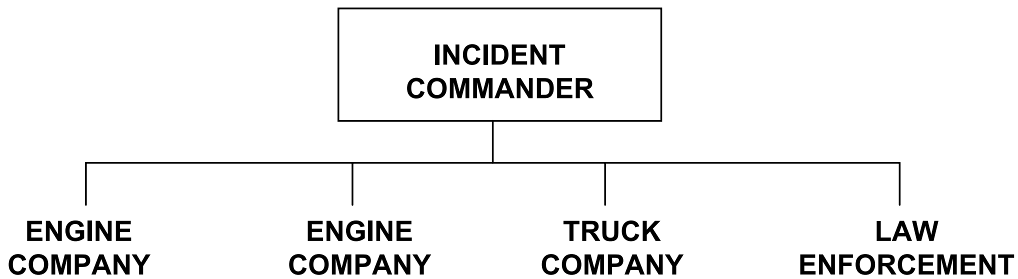


Figure 6-1
Initial Response

- The IC must deploy appropriate resources to the incident in order to accomplish priority objectives.

- Scene management must be initiated early by isolating the area and establishing zones, e.g., "the collapse zone."

6. **Evaluating response.**

- Evaluation requires accurate information and good communication (status/progress reports).

- Determine resource effectiveness from the evaluation by comparing progress to objectives.

PHASE 2: EXPANDED (REINFORCED) RESPONSE

An expanded (or reinforced) response is initiated when the IC determines that initial resources are insufficient to handle the incident. The expanded (reinforced) response involves

- **A sizeup.** It must

  - be continuous;
  - anticipate the need for an extended operation; and

- document information.

- **Transfer of Command.** Transfer of Command may take place during the expanded response phase.

During transfer of Command, the officer assuming Command communicates with the officer being relieved and a briefing takes place (ICS Form 201 should be used). This briefing covers

- incident conditions;
- IAP;
- progress toward completing objectives;
- safety considerations;
- resource assignments;
- need for additional resources; and
- critical issues.

The officer being relieved then is reassigned and a change in Command is communicated.

- **Evaluating the current situation.** The following factors should be considered during the evaluation of incident operations.

  -What has happened?
  -What progress has been made?
  -How good is the current plan?
  -What is the incident growth potential?
  -What is the present and future resource and organizational capability?

- **Developing a risk management plan.**

  - hazards need to be assessed and controlled or avoided; and
  - risks need to be managed.

- **Establishing scene control.** Establishing scene control includes accomplishment of the following:

  - zone establishment;
  - bystander evacuation;
  - controlling perimeters;
  - establishment of site security; and
  - establishment of incident facilities:
    -- suitable ICP,
    -- Staging Area(s), and
    -- triage and treatment area.

- **Developing an IAP.** A more detailed IAP may be needed for an expanded response.

  - clear statement of objectives and actions;
  - basis for measuring work effectiveness and progress; and
  - basis for providing accountability.

Essential plan elements are

- statement of objectives;
- description/review of incident organization;
- tactics and resource assignments; and
- support plans (traffic, medical, communications, safety, demobilization, and others as needed).

IAP objectives always should be

- Achievable--Make sure that you can accomplish the objectives with the resources you have.

- Measurable--Place a time required for the completion of each objective.

- Flexible.

Dynamic incidents change, so the plan needs to be flexible and broad enough to accommodate change.

Written IAP's should be used when:

- two or more jurisdictions are involved;
- operational periods are required;
- many organizational elements exist;
- required by an agency; and
- the IC decides to use a written plan.

An example of a multidivision IAP has been included as Appendix F in your SM.

- **Expanding the ICS organization.** The ICS organization may be expanded based on the size and magnitude of the incident. Expansion is based on resource and management needs.

Figure 6-2 illustrates an ICS for expanded response, showing how the system builds, and subsequent resource assignments.

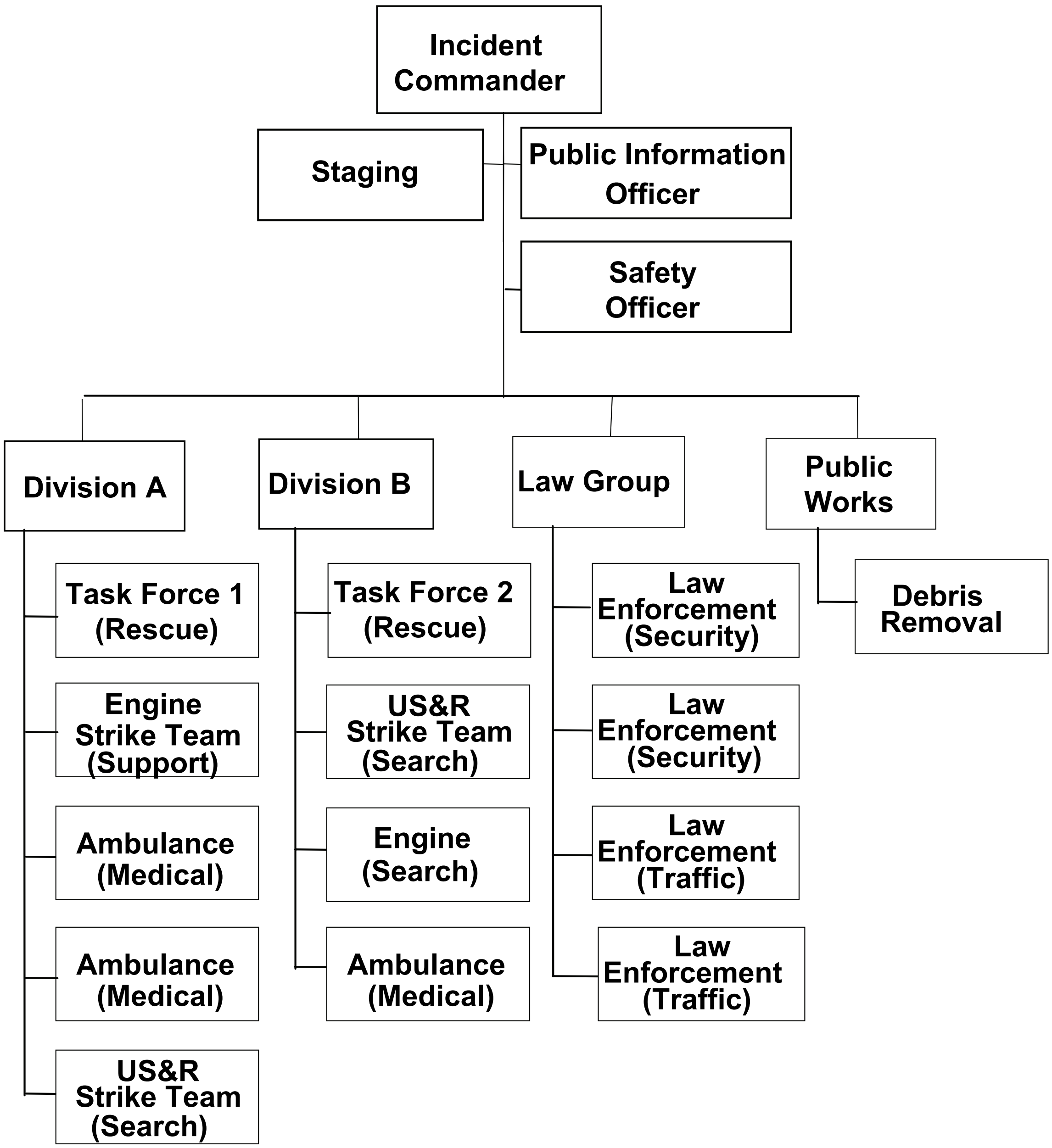


Figure 6-2
Expanded Response

In the example of an expanded response organization displayed in Figure 6-2, the initial response organization has been reinforced with the arrival of additional fire department resources and resources from law enforcement and public works agencies:

- The IC has assigned a Safety Officer to ensure personnel safety and an Information Officer to work with media.
- A Staging Area has been established to checkin arriving resources.
- Public Works has been assigned to debris removal.
- The incident has been divided into two divisions to manage resources better:

  - Original engine and truck companies are grouped together to form one task force.

  - Second to arrive local engine and truck companies are grouped together to form another task force.

Figure 6-3 illustrates a multigroup/division response that manages span of control with General Staff, geographic, and functional assignments.

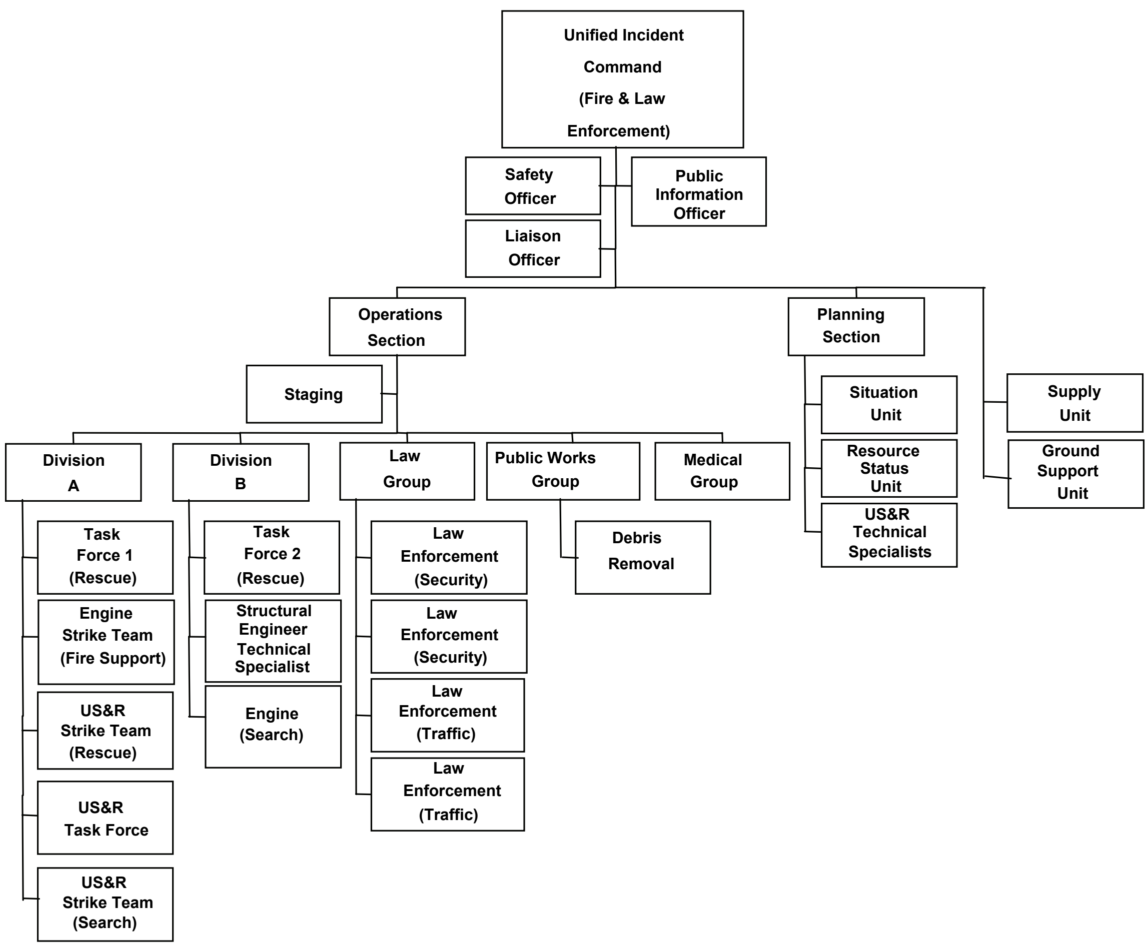


Figure 6-3
Multigroup/Division Response

In the example of the multigroup/divisional response organization displayed in Figure 6-3, the IC has formed a Unified Command with the senior law enforcement official on scene due to the major involvement of both agencies.

The IC has added

- A Liaison Officer to coordinate assisting agencies.
- An Operations Section Chief (OSC) to manage the tactical operations of a combination of divisions and groups.
- A Planning Section Chief (PSC) to manage situation and resource status units (SITSTAT and RESTAT) and the technical specialists assigned.
- A Law Group to handle security, traffic control, and evacuation.
- A Medical Group to handle triage, treatment, patient transportation, and the deceased.
- Several operational elements have been formed in the Operations Section to improve span of control, management, and coordination:
    - A structural specialist to assist in Division B.
    - A Hand Crew Strike Team to remove debris in Division B.
    - One State/national US&R Task Force assigned to Division A.
- A US&R Technical Specialist has been assigned to the Planning Section.
- Although a Supply Unit and a Ground Support Unit have been established, a Logistics Section Chief (LSC) is not yet required.

PHASE 3: EXTENDED RESPONSE (24-HOUR OPERATION)

An extended response involves operations over a 24-hour period.

Detailed IAP

A detailed IAP is necessary for incidents with an extended response involving operational periods and multiple agency or multijurisdiction involvement. The plan documents the activities developed for a given period of time and, when all attachments are included, specifies

- control objectives;
- tactics (to meet those objectives);
- resource assignments;
- incident organization;
- required maps and information specific to the incident;
- a communications plan;
- a medical plan;
- a safety plan; and
- a traffic plan.

The IAP serves as a guide so that operational effectiveness can be evaluated based on the objectives set for the operational period. As work progresses, priorities change based upon a continual evaluation of the incident. Flexibility is important and contingency plans are a necessity in dynamic and hazardous incidents.

Operational Periods

Operational periods are planned time periods needed to achieve objectives. Rapidly changing incidents require shorter operational periods.

The planning process for an operational period involves the following 10 steps:

1. State incident objectives.
2. Give situation and resource briefing.
3. State primary and alternative strategies to meet objectives.
4. Designate branch, division, group boundaries and functions.
5. Describe tactical operations and tactics.
6. Make tactical resource assignments.
7. Specify reporting locations and additional facilities needed.
8. Develop the resources, support, and overhead personnel requirements.
9. Consider additional support requirements needed because of communications, traffic, safety, medical, etc.
10. Finalize, approve, and implement the plan.

Logistic Support

Logistic support is critical to maintaining extended rescue operations. An incident of major complexity and size involving possibly hundreds of response personnel requires a Logistics Section capable of meeting the needs of the incident through demobilization.

For example, long-term operations may require

- lighting for night operations or reduced visibility;
- large food and water supplies;
- major equipment repair and supply functions;
- special equipment acquisitions;
- other support functions specific to a structural collapse incident (e.g., heavy equipment, structural stabilization resources, security measures including barricades, fencing);
- coordinated communications and technical equipment;
- expanded facilities; and
- additional facilities for rehab and critical incident stress management (CISM), air operations, etc.

Incident Facilities

Incident facilities such as the ICP and a Staging Area should be set up early in the best possible locations. Incident facilities used for an extended operation at a major structural collapse may require

- several Staging Areas for specific resources (as an example, one for heavy equipment);
- a large base to accommodate personnel through rehab, rest, and feeding cycles, and vehicle and specialized equipment fueling and repair functions;
- a supply and equipment distribution system;
- an ICP with the capability to sustain a large Command Staff and effective communications;
- a larger triage and treatment area;
- a morgue; and
- a decontamination area.

Integrated Communications

Communications at the incident are managed through the use of a common communications plan and an incident-based communications center established solely for the use of tactical and support resources assigned to the incident. All communications between organizational elements at an incident should be in plain English, "clear text." No codes should be used, and all communications should be confined only to essential messages. The Communications Unit is responsible for all communications planning at the incident. This includes incident-established radio networks, onsite telephone, public address, and off-incident telephone/microwave/radio systems.

Radio Networks

Radio networks for large incidents normally are organized as follows:

- **Command Net.** This net should link together Incident Command, key staff members, section chiefs, division and group supervisors.
- **Tactical Nets.** There may be several tactical nets. They may be established around agencies, departments, geographical areas, or even specific functions. The determination of how nets are set up should be a joint Planning/Operations function. The Communications Unit Leader develops the plan.
- **Support Net or Logistics Net.** A support net is established primarily to handle status changing for resources as well as for support requests and certain other nontactical or Command functions.
- **Ground-to-Air Net.** A ground-to-air tactical net may be designated, or regular tactical nets may be used to coordinate ground-to-air traffic.
- **Air-to-Air Net.** Air-to-Air nets normally are pre-designated and assigned for use at the incident.

Extended Incident Command System Organization

The extended ICS organization for a structural collapse incident of major magnitude may require

- an incident organization involving resources from many agencies; and
- a Unified Command organization.

Figure 6-4 shows a multibranch organization chart illustrating how a major ICS may be organized for an extended operation.

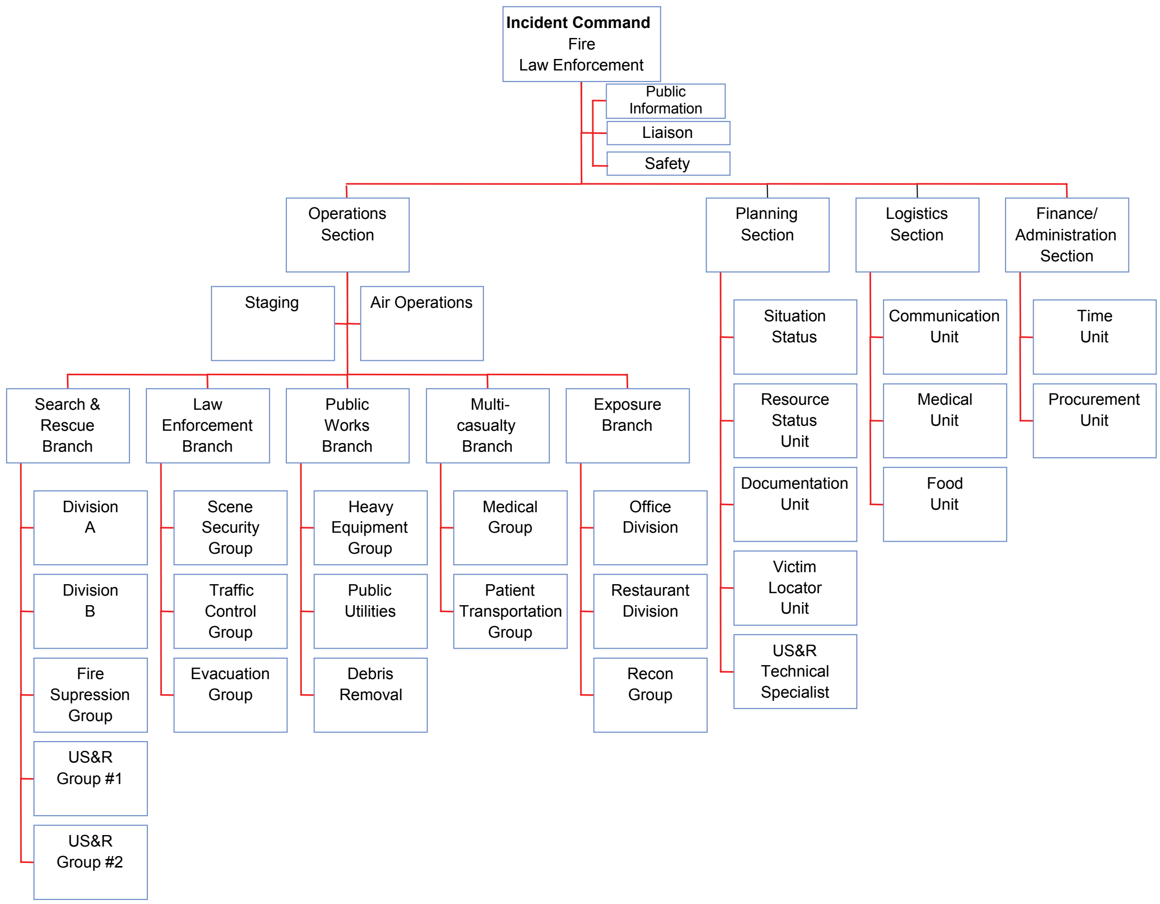


Figure 6-4
Multibranch Response

The multibranch response organization displayed in Figure 6-4 has provided for a larger expansion to accommodate additional resources and functions needed for extended operations.

The IC has assigned a LSC and a Finance/Administration Section Chief.

The Operations Section has established five branches with similar functions to better coordinate and manage resources and maintain an effective span of control.

The Planning, Logistics, and Finance/Administration Sections have several units operational to support the large amount of resources at the incident.

Incident Command System/Emergency Operations Center Interface

An Incident Command/Emergency Operations Center (EOC) interface is needed to provide for effective information flow and coordination between the incident site and the EOC.

- An EOC is a location from which centralized emergency management can be performed. The activation and level of activity and staffing depends on the size and complexity of the emergency.
- The local government EOC is activated when field response agencies need support and to facilitate overall coordination of multiagency operations.
- Local government EOC's serve as the central point for coordination within and outside the jurisdiction. These EOC's gather and disseminate information and assist in supporting field operational Incident Commands.
- Field-level (ICP) coordination with the local EOC may go through the dispatch center to the EOC, or in some jurisdictions, the ICS field command may have direct communications with or receive policy direction from the EOC. Coordination may be with other agencies, organizations, the media, and citizens within and outside of the local government involved.
- EOC's may be managed using the five primary ICS functions of Command, Operations, Planning, Logistics, and Finance/ Administration.
- The IC would most likely interact with the EOC OSC. In some jurisdictions, local policy may provide for direct IC to EOC management interaction. This may occur when there is a large single incident that has major impact on the community.
- It may be useful in some situations to have direct coordination between incident sections and their counterpart EOC section (i.e., Planning Section to Planning Section).
- Under Unified Command, the EOC interactions are similar to those described above using their department's contact in the Operations Section.

PHASE 4: DEMOBILIZATION

Demobilization planning must start early. Each section of the ICS must participate by providing information needed to ensure a smooth demobilization process. Important information elements include

- resource information (location, operation, designation, type, and kind);
- agency agreements (use conditions or time used requirements);
- physical condition of personnel (determines if personnel need rehabilitation before re-release);
- transportation (requirements for transportation from incident);
- costs (cost accounting for time and use of resources); and
- priority (or critical) needs (priority of need for resource to return to home agency or another incident).

Development of the demobilization plan must begin early in the incident. The plan should include

- Information on the demobilization procedure.

- Responsibilities for incident personnel:

  - Planning Section provides information on resources.

  - Liaison Officer knows terms of agreements on release.

  - Safety Officer considers physical condition of personnel and transportation.

  - Logistics Section handles transportation, communications, and maintenance.

  - Operations Section knows continuing needs for tactical resources.

  - Finance Section processes claims, time records, and costs.

- Release procedures (may include rehabilitation for personnel, maintenance and re-supply). Agency dispatch centers give priorities for the timely release of resources. Release priorities should include priority factors as follows:

  - type of resource.
  - critical need elsewhere.
  - cost.
  - travel distance.

- Personnel should be debriefed or defused as necessary in accordance with the incident CISM plan.

- All forms and records should be collected.

PHASE 5: RETURN TO A STATE OF READINESS

Emergency response organizations must be able to return to a state of readiness as soon as possible to provide protection to the community they serve.

- Rehabilitating personnel should be the first step. Provisions should be in place for a CISM program (so members may receive debriefings, defusings, or followup care).

- Repair or replace equipment.

- Forward records, reports, and other information for processing.

- Complete an after-action analysis as necessary depending on size, complexity, or other circumstances such as agency requirements. The purpose of this analysis is to evaluate the response and to capture lessons learned for application to future operations.

- Adjust operating procedures to incorporate lessons learned.

Activity 6.1

Implementing Initial Incident Command System Organization

Purpose

To demonstrate the ability to design and implement an initial IAP and associated ICS organization.

Directions

1. You will perform this activity in the same work group used for the last activity.

2. Your group will use the same breakout area.

3. While accomplishing this activity, your group should respond from the perspective of being the **first-arriving officer on scene**.

4. Turn to the incident map provided on the following page of this SM. Your instructor will present you with details on this new scenario.

5. Once you have heard the scenario details and relocated in your breakout area, your group will

    a. Elect a team spokesperson and recorder.

    b. Perform an incident sizeup.

    c. Develop an initial IAP using the ICS Form 201 provided (following this activity description). (Note: when building your organization chart, show only what is **on scene**.)

6. Your group will have 40 minutes to complete these tasks. At the conclusion of the allotted time, the instructor will reconvene the class.

7. Your spokesperson will have 5 minutes to present **one** element of your assignment. (Your instructor will inform the group spokesperson of his/her presentation element immediately prior to the presentation.)

8. Your instructor will comment on each presentation, summarize group findings, and respond to questions.

9. Keep your ICS Form 201, as it will be needed in future activities.

Additional Information

- On a Wednesday at 1000 hours an explosion occurred in a nine-story multitenant office building. The building was reinforced concrete and measured 70 x 200 feet.

- Major damage is visible.

- An estimated 100 are injured.

- Bodies are visible, cars are on fire, there are smoke, dust, and debris.

- A large crowd has gathered--some are assisting the injured.

- An office building and restaurant on 5th Street are damaged.

- Temperature is 60ºF (15.6ºC), wind speed is 5 to10 mph.

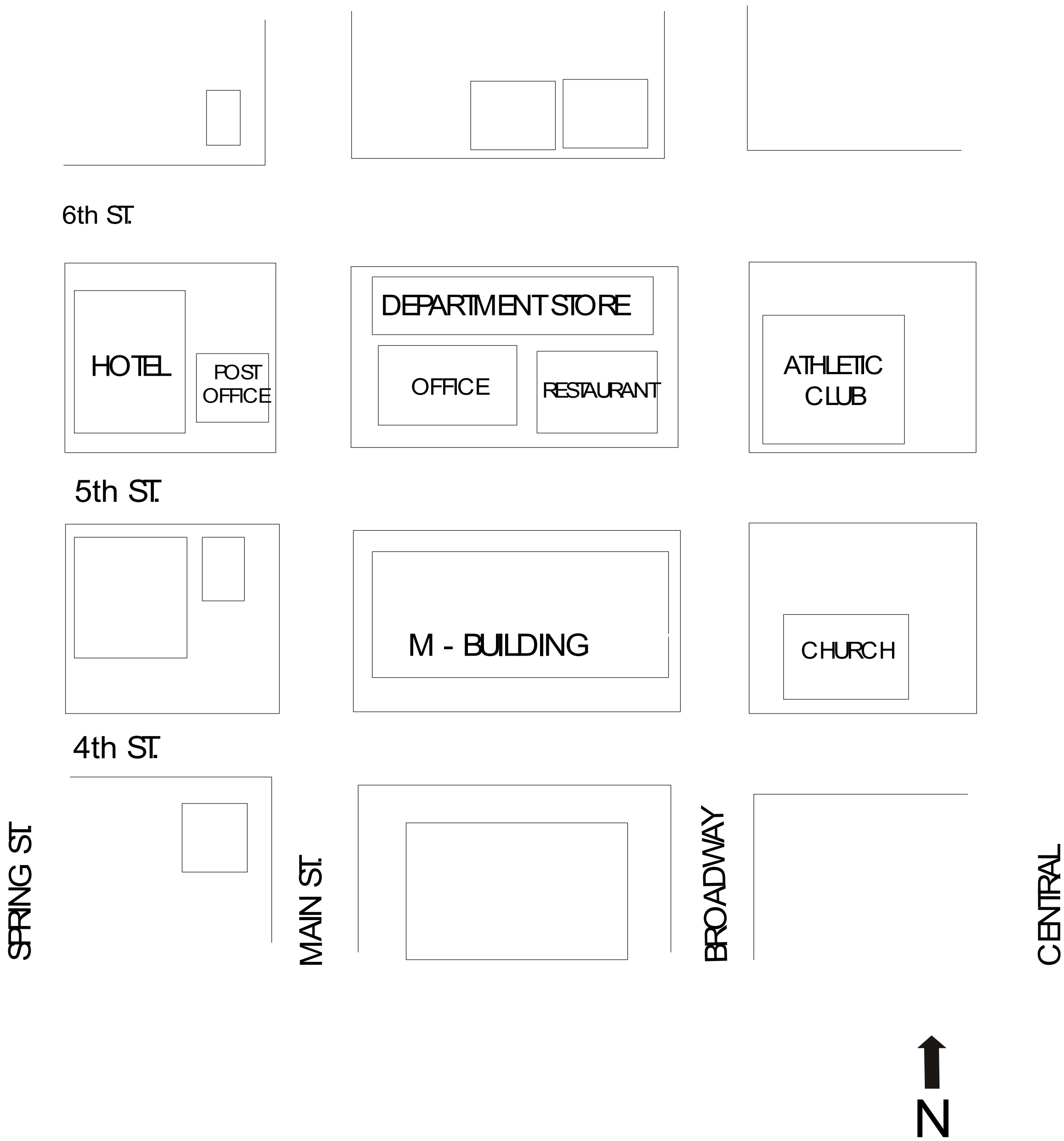
- The responding fire department (Orange City) consists of 1,000 members. It has 30 engines, 12 trucks, 6 rescue squads, and 1 haz mat squad. They have 275 members on duty per shift.

- Emergency Medical Services (EMS) has 35 ambulances.

- The type and number of resources available for this exercise are
  - seven engines
  - five trucks
  - two rescue squads
  - five ambulances
  - three battalion chiefs
  - three police units

  Staffing levels:
  - three per engine
  - four per truck
  - four per rescue squad
  - two per ambulance
  - four per haz mat squad
  - battalion chief with staff assistant
  - two per police unit

Incident Area Map



Instructions for completing the Incident Briefing (ICS Form 201)

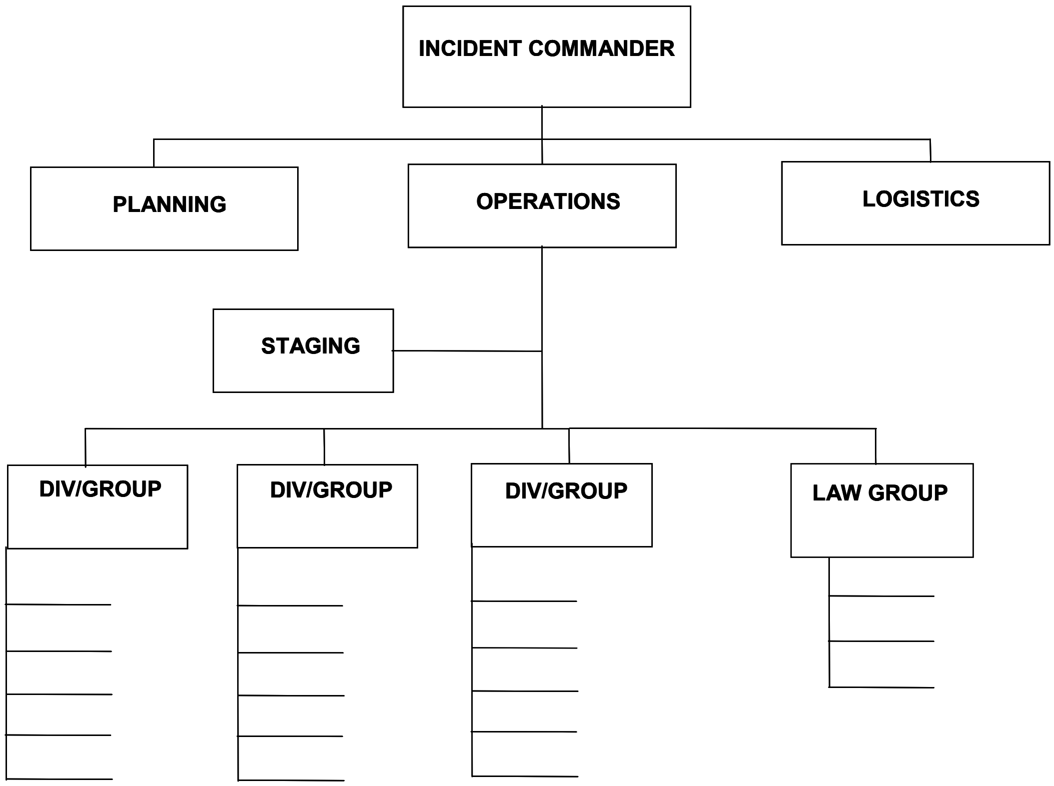
Item Number 1	Incident Name	Enter name of incident.
Item Number 2	Date Prepared	Enter date (month/day/year).
Item Number 3	Time Prepared	Enter time prepared (24-hour clock).
Item Number 4	Map Sketch	Show: perimeter, control lines, structures resource assignments, incident facilities, and other special information on a sketched map (or attached to a map).
Item Number 5	Prepared By	Enter the name and position of the person completing the form.
Item Number 6	Summary of Current Objectives and Actions	Enter the strategy and tactics used on the incident and note any specific problem areas.
Item Number 7	Current Organization	Enter on the organization chart the names of the organization individuals assigned to each position. Modify chart as necessary.
Item Number 8	Resource Summary	Enter the following information about the summary resources ordered: - Resources ordered (enter the number and type of resources ordered). - Resource identification (enter the agency identifier: S/T, TF, kind and type). - ETA/On scene (enter the estimated time of arrival. Place the arrival time or a checkmark in the "on scene" column upon arrival). - Location/Assignment (enter the assigned location of the resource and/or the actual assignment).

Note: additional pages may be added to this form if needed.

INCIDENT BRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
4. MAP SKETCH			
ICS 201	**PAGE 1**	**5. PREPARED BY (NAME AND POSITION)**	

6. SUMMARY OF CURRENT OBJECTIVES AND ACTIONS		
CURRENT OBJECTIVES:		
CURRENT ACTIONS:		
ICS 201	**PAGE 2**	

7. CURRENT ORGANIZATION



ICS 201	PAGE 3	

8. RESOURCES SUMMARY				
RESOURCES ORDERED	**RESOURCE IDENTIFICATION**	**ETA**	**ON SCENE** 4	**LOCATION/ASSIGNMENT**
ICS 201	**PAGE 4**			

Activity 6.2

Implementing an Expanded Incident Command System Organization

Purpose

To demonstrate an ability to **expand** an incident command organization.

Directions

1. You will reassemble in the same work group that you were in for Activity 6.1.

2. Your group will use the same breakout area.

3. This activity will **build on** the scenario presented to you in Activity 6.1.

4. The **difference in approach** (between this activity and the last) is that, while accomplishing activity tasks, your group is to respond from the perspective of the **IC**.

5. Turn to the incident map that your group used in Activity 6.1.

6. Your instructor will present the class with **additional** details on the scenario.

7. Once relocated in your breakout area, your group will

   a. Elect a group spokesperson and recorder.

   b. Return to the organization chart and objectives created in Activity 6.1 (ICS Form 201).

   c. Based on the **additional** incident details provided, perform the following tasks:

      - **Expand** your ICS organization chart.
      - **Expand** your list of objectives.

      (Record your findings on easel pad paper.)

8. Your group will have 35 minutes to complete these tasks. At the conclusion of the allotted time, your instructor will reconvene the class.

9. The instructor then will ask each group spokesperson to name one (or more) organization chart elements (and associated objective(s)).

10 Your instructor will summarize group findings and respond to questions.

11. Keep the organization chart and list of objectives created during this activity as they will be used later in this course.

Additional Information

- Number of injured changes to approximately 300 with 40 known dead.

- Four additional buildings have been affected:
  - post office (5th Street).
  - hotel (5th Street).
  - athletic club (5th Street).
  - department store (6th Street).

- These four buildings have sustained heavy to moderate damage.

- The power is out in the immediate area.

- The crowd continues to grow. Onlookers continue to offer assistance and stand by to observe.

- The media is arriving and requesting information.

- The police need access to the site to begin investigation.

- Nearby hospital staff is arriving (to assist).

- Additional resources for this exercise:
  - 15 engines
  - 5 trucks
  - 4 rescue squads
  - 20 ambulances
  - 1 haz mat squad
  - 4 battalion chiefs
  - 1 deputy chief
  - police
  - utility companies
  - 3 heavy rescue companies
  - 1 search dog team
  - 3 cranes

Activity 6.3

Organizing Extended Operations

Purpose

To understand and be able to develop a fully expanded ICS organization.

Directions

1. The instructor will show additional slides and present the following scenario details which build from Activity 6.2.

2. You should remain in your workgroups.

Discussion

The instructor will facilitate a class discussion on the following:

1. Operational objectives for the extended operation.

2. An expanded ICS organization chart.

3. Resource requirements necessary to meet operational objectives.

4. Incident facilities needed for the incident.

The instructors will list examples of items #1, #3, and #4.

Additional Information

- The time is now approximately 1700 hours.

- Number of injured is 500--all but 20 have been transported.

- Many victims are known to still be trapped in void spaces.

- Approximately 30 victims are in the M Building, 20 in the office building, and 5 in the restaurant.

- 100 are known dead.

- 200 are missing.

- Buildings within a 10-block area are damaged (mainly from broken glass/windows).

- The M Building appears to be unstable.

- Weather predictions for the night (and morning) call for rain, wind at 30 mph, and a temperature of 40ºF (4.4ºC).

- Additional resources for this exercise:
  - 30 engines
  - 10 trucks
  - 1 haz mat squad
  - 15 ambulances
  - 8 battalion chiefs
  - 2 deputy chiefs
  - 1 assistant chief
  - 5 heavy rescue companies
  - 4 US&R task forces
  - 2 search dog teams
  - coroner
  - Federal Bureau of Investigation (FBI)
  - support and technical staff
  - public works
  - private contractors

APPENDIX A

ICS FORM 201

Instructions for completing the following Incident Briefing (ICS Form 201)

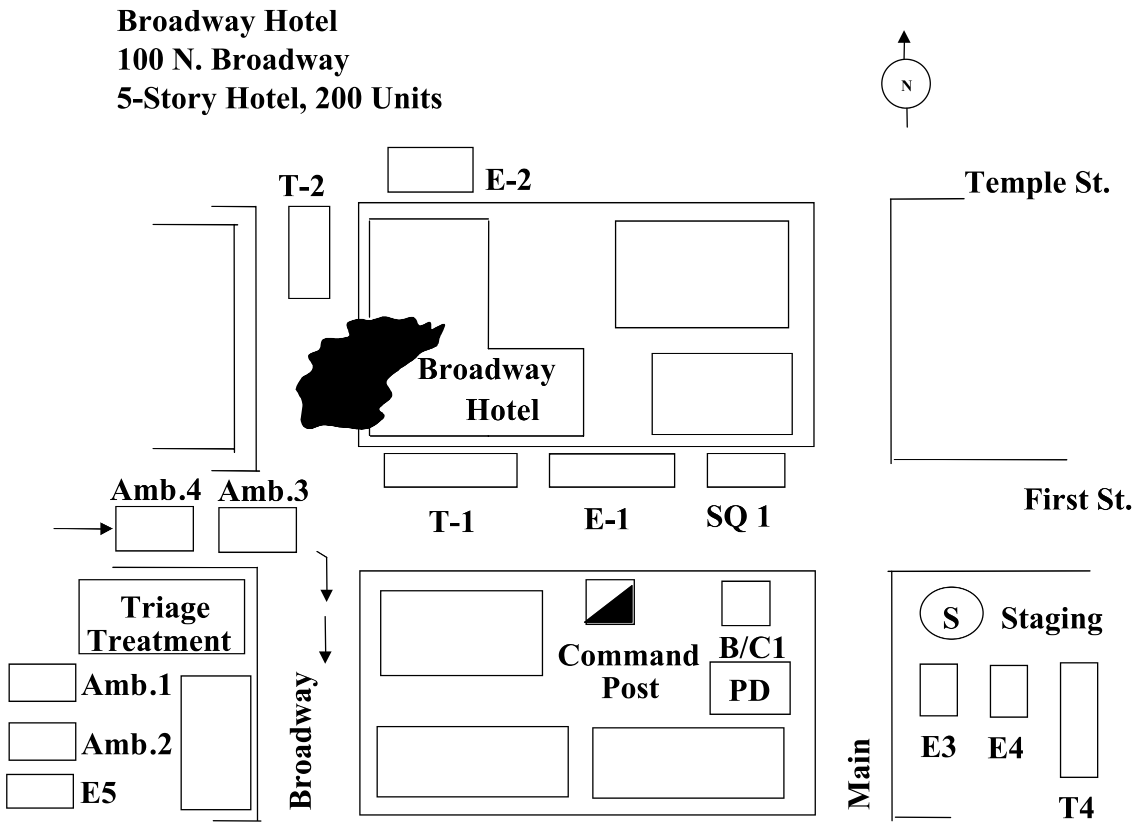
Item Number 1	Incident Name	Enter name of incident.
Item Number 2	Date Prepared	Enter date (month/day/year).
Item Number 3	Time Prepared	Enter time prepared (24 hour clock).
Item Number 4	Map Sketch	Show: perimeter, control lines, structures, resource assignments, incident facilities, and other special information on a sketch map (or attached to a map).
Item Number 5	Prepared by	Enter the name and position of the person completing the form.
Item Number 6	Summary of Current Objectives and Actions	Enter the strategy and tactics used on the incident and note any specific problem areas.
Item Number 7	Current Organization	Enter on the organization chart the names of the organization individuals assigned to each position. Modify chart as necessary.
Item Number 8	Resource Summary	Enter the following information about the summary resources ordered: - Resources ordered (enter the number and type of resources ordered). - Resource identification (enter the agency identifier: S/T, TF, kind and type). - ETA/on scene (enter the estimated time of arrival. Place the arrival time or a checkmark in the "on scene" column upon arrival). - Location/assignment (enter the assigned location of the resource and/or the actual assignment).

Note: additional pages may be added to this form if needed.

A-4

INCIDENT BRIEFING	1. INCIDENT NAME **BROADWAY**	2. DATE PREPARED **OCTOBER 5, 1999**	3. TIME PREPARED **0300 HRS.**

4. MAP SKETCH



ICS 201	PAGE 1	5. PREPARED BY (NAME AND POSITION) **FFTR. W. RICHARDSON, SITSTAT**

6. SUMMARY OF CURRENT OBJECTIVES AND ACTIONS

CURRENT OBJECTIVES:

1. Recon collapse site.

2. Establish collapse zone and evacuate.

3. Set up triage/treatment area.

4. Set up traffic control and perimeter--one block square.

5. Perform search and rescue--surface victims.

6. Start search and rescue--interior.

7. Control utilities and hazards.

CURRENT ACTIONS:

1. E-1 completed recon and evacuating people from collapse zone.

2. T-1, T-2, and E-2 performing search and rescue--surface victims.

3. AMB 1 set up triage/treatment area and transport.

4. SQ 1 initiated interior search.

5. T-4 controlling hazards.

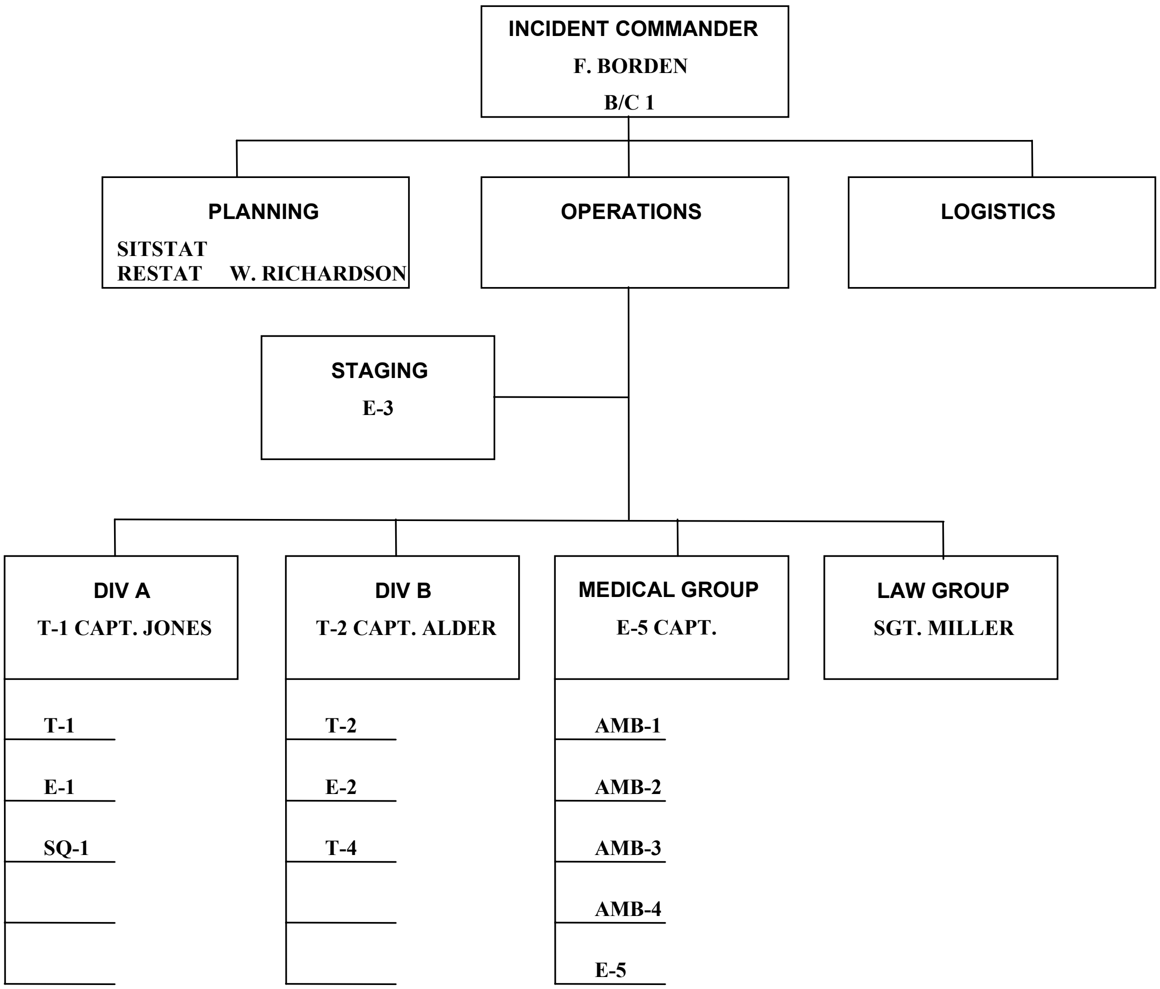
6. Police set up perimeter control.

7. Requested E-4 to set up as rapid intervention crew (RIC).

8. Requested: 3 E, 2 T, 1 heavy rescue, 4 amb., 2 chiefs, utilities, structural engineer, and technical search team.

ICS 201	PAGE 2	

7. CURRENT ORGANIZATION



ICS 201	PAGE 3	

8. RESOURCES SUMMARY				
RESOURCES ORDERED	RESOURCE IDENTIFICATION	ETA	ON SCENE ✓	LOCATION/ASSIGNMENT
B/C	B/C 1		3	I/C CP @ 1ST AND MAIN
E	E 1		3	DIV. A--RECON/EVAC.
T	T 1		3	DIV. A CAPT., S&R
E	E 2		3	DIV. B, S&R
T	T 2		3	DIV. B CAPT., S&R
E	E 3		3	STAGING MGR.
E	E 4		3	STAGING → RIC
T	T 4		3	DIV. B--HAZARD CONTROL
SQ	SQ 1		3	DIV. A--S&R
E	E 5		3	MED. GROUP, CAPT.--SUPERVISOR
AMB.	AMB. 1--ALS		3	MED. GROUP--TRIAGE
AMB.	AMB. 2--ALS		3	MED. GROUP--TREATMENT
AMB.	AMB. 3--ALS		3	MED. GROUP--TRANS.
AMB.	AMB. 4--BLS		3	MED. GROUP--TRANS.
E	E 10	0310		
E	E 11	0315		
E				
T	T 27	0320		
T				
HR				
CHIEF	B/C 2			
CHIEF				
ICS 201	PAGE 4	PREPARED BY: W. RICHARDSON		

8. RESOURCES SUMMARY				
RESOURCES ORDERED	**RESOURCE IDENTIFICATION**	**ETA**	**ON SCENE ✓**	**LOCATION/ASSIGNMENT**
AMB--ALS	R/A 33	0310		
AMB-ALS				
AMB--BLS				
AMB--BLS				
STR. ENGR.	DAVID HAMMOND	0400		
TECH SEARCH				
POLICE	SGT. MILLER	0250	3	LAW GROUP PERIMETER CONTROL
POWER CO.		0330		
GAS CO.				
WATER CO.				
TEL. CO.				
ICS 201	PAGE 4 (cont'd)	PREPARED BY: W. RICHARDSON		

APPENDIX B

ICS FORMS CATALOG

INCIDENT COMMAND SYSTEM

NATIONAL TRAINING CURRICULUM

ICS FORMS CATALOG

OCTOBER 1994

INCIDENT COMMAND SYSTEM
NATIONAL TRAINING CURRICULUM

ICS FORMS CATALOG

OCTOBER 1994

PREFACE

Within this ICS Forms Catalog are forms developed by the National Wildfire Coordinating Group (NWCG) for use on wildfires. Over the years they have been modified slightly so that they may be used in other application areas, such as search and rescue, law enforcement, etc.

Evaluate the forms from your particular application area to see if they meet your needs. They are intended as a tool to assist in completing a specific job(s) on an incident and have been proven to be very effective on wildfires.

INCIDENT BRIEFING (ICS FORM 201)

Purpose. The Incident Briefing form provides the Incident Commander (and the Command and General Staffs assuming command of the incident) with basic information regarding the incident situation and the resources allocated to the incident. It also serves as a permanent record of the initial response to the incident.

Preparation. The briefing form is prepared by the Incident Commander for presentation to the incoming Incident Commander along with a more detailed oral briefing. Proper symbology should be used when preparing a map of the incident.

Distribution. After the initial briefing of the Incident Commander and General Staff members, the Incident Briefing is duplicated and distributed to the Command Staff, Section Chiefs, Branch Directors, Division/Group Supervisors, and appropriate Planning and Logistics Section Unit Leaders. The sketch map and summary of current action portions of the briefing form are given to the Situation Unit while the Current Organization and Resources Summary portion are given to the Resources Unit.

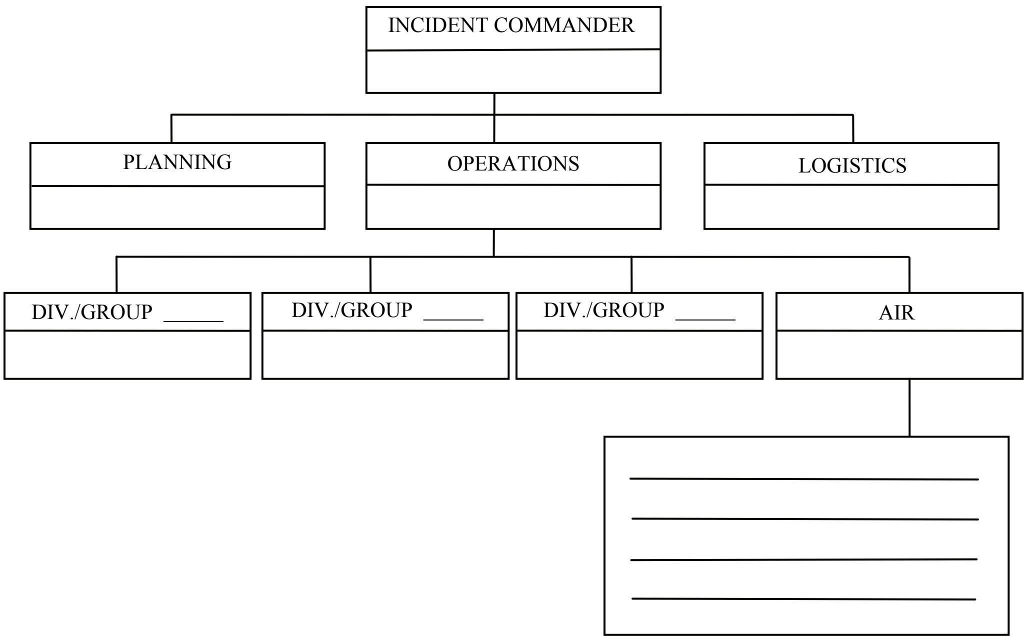
INCIDENT DEBRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

4. MAP SKETCH

ICS 201 (12/93) **NFES 1325**	PAGE 1	5. PREPARED BY (NAME AND POSITION)

6. SUMMARY OF CURRENT OBJECTIVES AND ACTIONS		
CURRENT OBJECTIVES:		
CURRENT ACTIONS:		
ICS 201	**PAGE 2**	

7. CURRENT ORGANIZATION



ICS 201 (12/93) **NFES 1325**	PAGE 3	

8. RESOURCES SUMMARY				
RESOURCES ORDERED	**RESOURCES IDENTIFICATION**	**ETA**	**ON SCENE √**	**LOCATION/ASSIGNMENT**
ICS 201 (12/93) **NFES 1325**	PAGE 4			

Instructions for Completing the Incident Briefing (ICS Form 201).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Map Sketch	Show perimeter and control lines, resources assignments, incident facilities, and other special information on a sketch map or attached to the topographic or orthophoto map.
5.	Resources Summary	Enter the following information about the resources allocated to the incident. Enter the number and type of resource ordered.
	Resources Ordered	Enter the number and type of resource ordered.
	Resource Identification	Enter the agency three-letter designator, S/T, Kind/ Type and resource designator.
	ETA/On Scene	Enter the estimated arrival time and place the arrival time or a checkmark in the "on scene" column upon arrival.
	Location/ Assignment	Enter the assigned location of the resource and/or the actual assignment.
6.	Current Organization	Enter on the organization chart the names of the individuals assigned to each position. Modify the chart as necessary.
7.	Summary of Current Actions	Enter the strategy and tactics used on the incident and note any specific problem areas.
8.	Prepared By	Enter the name and position of the person completing the form.
*Note		Additional pages may be added to ICS Form 201 if needed.

INCIDENT ACTION PLAN AND INCIDENT OBJECTIVES FORM

Purpose. An Incident Action Plan documents the actions developed by the Incident Commander and Command and General Staffs during the Planning Meeting. When all attachments are included, the plan specifies control objectives, tactics to meet the objectives, resources, organization, communications plan, medical plan, and other appropriate information for use in tactical operations.

INCIDENT ACTION PLAN

1. Incident Objectives (ICS Form 202)
2. Organization Assignment List (ICS Form 203)
3. Incident Map (top section or sketch)
4. Assignment List (ICS Form 204)
5. Radio Communications Plan (ICS Form 205)
6. Traffic Plan (internal and external to the incident)
7. Medical Plan (ICS Form 206)

Preparation. An Incident Action Plan is completed following each formal planning meeting conducted by the Incident Commander and the Command and General Staff. The plan must be approved by the Incident Commander prior to distribution.

Distribution. Sufficient copies of the Incident Action Plan will be reproduced and given to all supervisory personnel at the Section, Branch, Division/Group, and Unit leader levels.

The Incident Objectives Form (ICS Form 202) is the first page of an Incident Action Plan. The Incident Objectives Form describes the basic incident strategy, control objectives, and provides weather information and safety considerations for use during the next operational period.

INCIDENT OBJECTIVES	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
4. OPERATIONAL PERIOD (DATE/TIME)			
5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)			
6. WEATHER FORECAST FOR OPERATIONAL PERIOD			
7. GENERAL SAFETY MESSAGE			

8. ATTACHMENTS (√ IF ATTACHED)

o ORGANIZATION LIST (ICS 203)	o MEDICAL PLAN (ICS 206)	o ______________
o ASSIGNMENT LIST (ICS 204)	o INCIDENT MAP	o ______________
o COMMUNICATIONS PLAN (ICS 205)	o TRAFFIC PLAN	o ______________

202 ICS 3-80	9. PREPARED BY (PLANNING SECTION CHIEF)	10. APPROVED BY (INCIDENT COMMANDER)

Instructions for Completing the Incident Objectives (ICS Form 202).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
		Note: ICS Form 202, Incident Objectives, serves only as a cover sheet and is not considered complete until attachments are included.
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Operational Period	Enter the time interval for which the form applies. Record the start time and end time and include date(s).
5.	General Control Objectives (include alternatives)	Enter short, clear, and concise statements of the objectives for managing the incident, including alternatives. The control objectives usually apply for the duration of the incident.
6.	Weather Forecast for Operational Period	Enter weather prediction information for the specified operational period.
7.	General/Safety Message	Enter information such as known safety hazards and specific precautions to be observed during this operational period. If available, a safety message should be referenced and attached.
8.	Attachments	The form is ready for distribution when appropriate attachments are completed and attached to the form.
9.	Prepared By	Enter the name and position of the person completing the form (usually the Planning Section Chief).
10.	Approved By	Enter the name and position of the person approving the form (usually the Incident Commander).

ORGANIZATION ASSIGNMENT LIST (ICS FORM 203)

Purpose. The Organization Assignment List provides ICS personnel with information on the units that are currently activated and the names of personnel staffing each position/unit. It is used to complete the Incident Organization Chart (ICS Form 207) which is posted on the Incident Command Post display.

Preparation. The list is prepared and maintained by the Resources Unit under the direction of the Planning Section Chief.

Distribution. The Organization Assignment List is duplicated and attached to the Incident Objectives form and given to all recipients of the Incident Action Plan.

ORGANIZATION ASSIGNMENT LIST	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
	OPERATIONAL PERIOD (DATE/TIME)		

POSITION	NAME
4. INCIDENT COMMANDER AND STAFF	
INCIDENT COMMANDER	
DEPUTY	
SAFETY OFFICER	
INFORMATION OFFICER	
LIAISON OFFICER	
5. AGENCY REPRESENTATIVES	
AGENCY	**NAME**
6. PLANNING SECTION	
CHIEF	
DEPUTY	
RESOURCES UNIT	
SITUATION UNIT	
DOCUMENTATION UNIT	
DEMOBILIZATION UNIT	
TECHNICAL SPECIALISTS	
7. LOGISTICS SECTION	
CHIEF	
DEPUTY	
a. SUPPORT BRANCH	
DIRECTOR	
SUPPLY UNIT	
FACILITIES UNIT	
GROUND SUPPORT UNIT	
b. SERVICE BRANCH	
DIRECTOR	
COMMUNICATIONS UNIT	
MEDICAL UNIT	
FOOD UNIT	

8. OPERATIONS SECTION		
CHIEF		
DEPUTY		
a. BRANCH I - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
b. BRANCH II - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
c. BRANCH III - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
d. AIR OPERATIONS BRANCH		
AIR OPERATIONS BR. DIR.		
AIR TACTICAL GROUP SUP.		
AIR SUPPORT GROUP SUP.		
HELICOPTER COORDINATOR		
AIR TANKER/FIXED-WING CRD.		
FINANCE SECTION		
CHIEF		
DEPUTY		
TIME UNIT		
PROCUREMENT UNIT		
COMPENSATION/CLAIMS UNIT		
COST UNIT		

203 **ICS** 1-82	9. PREPARED BY (RESOURCES UNIT)

NFES 1327

Instructions for Completing the Organization Assignment List (ICS Form 203).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
		An Organization Assignment List may be completed any time the number of personnel assigned to the incident increases or decreases or a change in assignment occurs.
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
	Operational Period	Enter the time interval for which the assignment list applies. Record the start time and end time and include date(s).
4. thru 8.		Enter the names of personnel staffing each of the listed positions. Use at least first initial and last name. For Units indicate Unit Leader and for Divisions/Groups indicate Division/Group Supervisor. Use an additional page if more than three branches are activated.
9.	Prepared By	Enter the name of the Resources Unit member preparing the form. Attach form to the Incident Objectives.

ASSIGNMENT LIST (ICS FORM 204)

Purpose. The Assignment List(s) is used to inform Operations Section personnel of incident assignments. Once the assignments are agreed to by the Incident Commander and General Staff, the assignment information is given to the appropriate Units and Divisions via the Communications Center.

Preparation. The Assignment List normally is prepared by the Resources Unit using guidance by the Incident Objectives (ICS Form 202), Operational Planning Worksheet (ICS Form 215), and Operations Section Chief. The Assignment List must be approved by the Planning Section Chief. When approved, it is attached to the Incident Objectives as part of the Incident Action Plan.

Distribution. The Assignment List is duplicated and attached to the Incident Objectives and given to all recipients of the Incident Action Plan. In some cases, assignments may be communicated via radio.

ASSIGNMENT LIST

1. BRANCH	2. DIVISION/GROUP

3. INCIDENT NAME	4. OPERATIONAL PERIOD DATE ____________ TIME ____________

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF ______________________ DIVISION/GROUP SUPERVISOR ______________________

BRANCH DIRECTOR ______________________ AIR TACTICAL GROUP SUPERVISOR ______________________

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME

7. CONTROL OPERATIONS

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME

ICS 204 1-82

Instructions for Completing the Assignment List (ICS Form 204).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
		A separate sheet is used for each Division or Group. The identification letter of the Division is entered in the form title. Also enter the number (roman numeral) assigned to the Branch.
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Operational Period	Enter the time interval for which the form applies. Record the start time and end time and include date(s).
5.	Operations Personnel	Enter the name of the Operations Chief, applicable Branch Director, and Division Supervisor.
6.	Resources Assigned Strike Team/Task Force/Resource Designator	List resource designators, leader name, and total number of personnel for strike teams, task forces, or single resources assigned.
7.	Control Operations	Provide a statement of the tactical objectives to be achieved within the operational period. Include any special instructions for individual resources.
8.	Special Instructions	Enter statement calling attention to any safety problems or specific precautions to be exercised or other important information.
9.	Division Communication Summary	The Communications Unit provides this information on the form for Command, Division, Tactical, Support, and Ground-to-Air frequencies.
10.	Prepared By	Enter the name of the Resources Unit Member preparing the form.
11.	Approved By	Enter the name of the person approving the form (usually the Planning Section Chief).

INCIDENT RADIO COMMUNICATIONS PLAN (ICS FORM 205)

Purpose. The Incident Radio Communications Plan provides in one location information on all radio frequency assignments for each operational period. The plan is a summary of information obtained from the Radio Requirement Worksheet (ICS Form 216) and the Radio Frequency Assignment Worksheet (ICS Form 217). Information from the Radio Communications Plan on frequency assignments normally is placed on the appropriate Assignment List (ICS Form 204).

Preparation. The Incident Radio Communications Plan is prepared by the Communications Unit Leader and given to the Planning Section Chief. Detailed instructions on preparing this form may be found in ICS 223-5, Communications Unit Position Manual.

Distribution. The Incident Radio Communications Plan is duplicated and given to all recipients of the Incident Objectives form, including the Incident Communications Center. Information from the plan is placed on Assignment Lists.

INCIDENT RADIO COMMUNICATIONS PLAN

1. INCIDENT NAME	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME

4. BASIC RADIO CHANNEL UTILIZATION

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS

205 ICS 9/86	5. PREPARED BY (COMMUNICATIONS UNIT)

NFES 1330

Instructions for Completing the Incident Radio Communications Plan (ICS Form 205).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date/Time Prepared	Enter date (month, day, year) and time prepared (24-hour clock).
3.	Operational Period Date/Time	Enter the date and time interval for which the Radio Communications Plan applies. Record the start time and end time and include date(s).
4.	Basic Radio Channel Utilization System/Cache	Enter the radio cache system(s) assigned and used on the incident (e.g., Boise Cache, FIREMARS, Region 5 Emergency Cache, etc.).
	Channel Number	Enter the radio channel numbers assigned.
	Function	Enter the function each channel number is assigned (i.e., command, support, division tactical, and ground-to-air).
	Frequency	Enter the radio frequency tone number assigned to each specified function (e.g., 153.400).
	Assignment	Enter the ICS organization assigned to each of the designated frequencies (e.g., Branch I, Division A).
	Remarks	This section should include narrative information regarding special situations.
5.	Prepared By	Enter the name of the Communications Unit Leader preparing the form.

MEDICAL PLAN (ICS FORM 206)

Purpose. The Medical Plan provides information on incident medical aid stations, transportation services, hospitals, and medical emergency procedures.

Preparation. The Medical Plan is prepared by the Medical Unit Leader and reviewed by the Safety Officer.

Distribution. The Medical Plan may be an attachment to the Incident Objectives, or information from the plan pertaining to incident medical aid stations and medical emergency procedures may be taken from the plan and placed on Assignment Lists.

MEDICAL PLAN	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS	
		YES	NO

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS	
			YES	NO

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS	
		YES	NO

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME		PHONE	HELIPAD		BURN CENTER	
		AIR	GRND		YES	NO	YES	NO

8. MEDICAL EMERGENCY PROCEDURES

206 **ICS** 8-78	9. PREPARED BY (MEDICAL UNIT LEADER)	10. REVIEWED BY (SAFETY OFFICER)

NPES 1331

Instructions for Completing the Medical Plan (ICS Form 206).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Operational Period Date/Time	Record the date and time of the operational period for which this plan is in effect.
5.	Incident Medical Aid Stations	Enter name and location of incident medical aid stations (e.g., Cajon Staging Area, Cajon Campground) and indicate with a √ if paramedics are located at the site.
6.	Transportation	
	A. Ambulance Services	List name and address of ambulance services (e.g., Shaeffer, 4358 Brown Parkway, Corona). Provide phone number and indicate if ambulance company has paramedics.
	B. Incident Ambulances	Name of organization providing ambulances and the incident location. Also indicate if paramedics are aboard.
7.	Hospitals	List hospitals which could serve this incident. Incident name, address, the travel time by air and ground from the incident to the hospital, phone number, and indicate with a √ if the hospital is a burn center and has a helipad.
8.	Medical Emergency Procedures	Note any special emergency instructions for use by incident personnel.
9.	Prepared By	Enter the name of the Medical Unit Leader preparing the form.
10.	Reviewed By	Obtain the name of the Safety Officer who must review the plan.

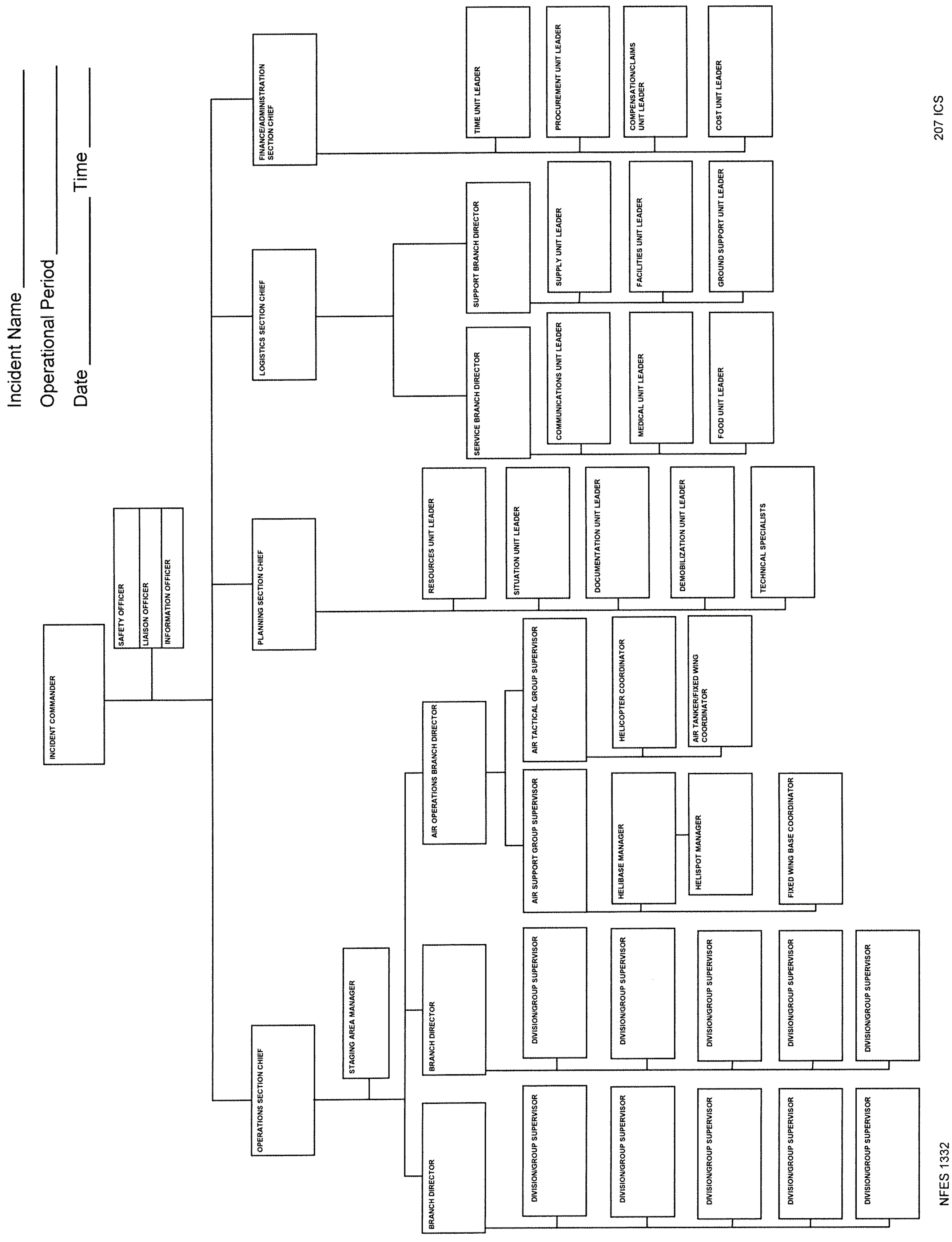
INCIDENT ORGANIZATION CHART (ICS FORM 207)

Purpose. The Incident Organization Chart is used to indicate what ICS organizational elements are currently activated and the names of personnel staffing each element. The attached chart is an example of the kind of Organizational Chart used in the ICS. Personnel responsible for managing organizational positions would be listed in each box as appropriate.

Preparation. The organization chart is prepared by the Resources Unit and posted along with other displays at the Incident Command Post. A chart is completed for each operational period and updated when organizational changes occur.

Distribution. When completed, the chart is posted on the display board located at the Incident Command Post.

Wall Size Chart. The ICS Form 207 WS is a large chart that is used primarily to post on the Command Post display board for better visibility.



Incident Name
Operational Period
Date
Time
INCIDENT COMMANDER
SAFETY OFFICER
LIAISON OFFICER
INFORMATION OFFICER
OPERATIONS SECTION CHIEF
STAGING AREA MANAGER
BRANCH DIRECTOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
BRANCH DIRECTOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
AIR OPERATIONS BRANCH DIRECTOR
AIR SUPPORT GROUP SUPERVISOR
HELIBASE MANAGER
HELISPOT MANAGER
FIXED WING BASE COORDINATOR
AIR TACTICAL GROUP SUPERVISOR
HELICOPTER COORDINATOR
AIR TANKER/FIXED WING COORDINATOR
PLANNING SECTION CHIEF
RESOURCES UNIT LEADER
SITUATION UNIT LEADER
DOCUMENTATION UNIT LEADER
DEMOBILIZATION UNIT LEADER
TECHNICAL SPECIALISTS
LOGISTICS SECTION CHIEF
SERVICE BRANCH DIRECTOR
COMMUNICATIONS UNIT LEADER
MEDICAL UNIT LEADER
FOOD UNIT LEADER
SUPPORT BRANCH DIRECTOR
SUPPLY UNIT LEADER
FACILITIES UNIT LEADER
GROUND SUPPORT UNIT LEADER
FINANCE/ADMINISTRATION SECTION CHIEF
TIME UNIT LEADER
PROCUREMENT UNIT LEADER
COMPENSATION/CLAIMS UNIT LEADER
COST UNIT LEADER
NFES 1332
207 ICS

INCIDENT STATUS SUMMARY (ICS FORM 209)

Purpose. The Incident Status Summary serves the following purposes:

1. It is used by Situation Unit personnel for posting information on Incident Command Post displays.

2. When duplicated and provided to Command Staff members, it provides them with basic information for use in planning for the next operational period.

3. It provides basic information to the Information Officer for preparation of media releases.

4. It provides incident information to agency dispatch and off-incident coordination centers.

Preparation. The Incident Status Summary is prepared by the Situation Unit. Resource information should be obtained from the Resources Unit. It is scheduled for presentation to the Planning Section Chief and other General Staff members prior to each Planning Meeting and may be required at more frequent intervals by the Incident Commander or Planning Section Chief.

Distribution. When completed, the form is duplicated and copies are distributed to the Incident Commander and staff, and all Section Chiefs, Planning Section Unit Leaders, and Agency Dispatch Centers. It is also posted on the display board located at the Incident Command Post.

Completion of the Incident Status Summary will be as specified by agency or municipality. Report by telephone, teletype, computer, or facsimile to the local agency or municipality headquarters by 2100 daily on incidents as required by agency or municipality (reports are normally required on life-threatening situations, real property threatened or destroyed, high resource damage potential, and complex incidents that could have political ramifications). Normally wildland agencies require a report on all Class D (100 acres plus) and larger incidents (unless primarily grass type in which case report Class E, 300 acres or larger). The first summary will cover the period from the start of the incident to 2100 the first day of the incident, if at least four hours have elapsed; thereafter the summary will cover the 24-hour period ending at 1900 (this reporting time will enable compilation of reporting data and submission of report to local agency or municipality headquarters by 2100) daily until incident is under control. Wildland fire agencies will send the summary to the National Interagency Fire Center by 2400 Mountain Time.

INCIDENT STATUS SUMMARY
(*See reverse for general instructions.*)

1. Date	Time	2. INITIAL θ UPDATE θ FINAL θ	3. Incident Name (12)	4. Incident Number (8)

5. Incident Commander (12)	6. Jurisdictions (5)	7. County (14)	8. Type Incident (20)	9. Location (64)	10. Started Date ________ Time ________ (6/4)

11. Cause (28)	12. Area Involved (28)	13. % Contained (4)	14. Expected Containment Date Time (6/4)	15. Ext. Control Date ______ Time ______ (6/4)	16. Declared Controlled Date ______ Time ______ (6/4)

17. Current Threat (66)	18. Current Problems (64)

19. Est. Loss (12)	20. Est. Savings (12)	21. Injuries (4)	Deaths (4)	22. Line Built (6)	23. Line to Build (6)

24. Current Weather WS Temp WD RH (14)	25. Predicted Weather WS Temp WD RH (14)	26. Costs to Date (12)	27. Est. Total Cost (12)

28. AGENCIES

29. RESOURCES (4)													**TOTALS**

KIND OF RESOURCE	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	SR	ST	
ENGINES																									
DOZERS																									
CREWS																									
HELICOPTERS																									
AIR TANKERS																									
TRUCK COS.																									
RESCUE/MED.																									
WATER TENDERS																									
OTHER																									
OVERHEAD PERSONNEL																									
TOTAL PERSONNEL																									

30. Cooperating Agencies

(52)

31. Remarks

(8 Lines/80)

32. Prepared By (12)	33. Approved By (12)	34. Sent To Date Time By

NFES 1333 9/86 ICS 209

GENERAL INSTRUCTIONS

Completion of the Incident Status Summary will be as specified by Agency or municipality. Report by telephone, teletype, computer, or facsimile to the local Agency or municipality headquarters by 2100 daily on incidents as required by Agency or municipality (reports are normally required on life-threatening situations, real property threatened or destroyed, high resource damage potential, and complex incidents that could have political ramifications). Normally wildland agencies require a report on all Class D (100 acres plus) and larger incidents (unless primarily grass type in which case report Class E, 300 acres or larger). The first summary will cover the period from the start of the incident to 2100 the first day of the incident, if at least four hours have elapsed; thereafter, the summary will cover the 24-hour period ending at 1900 (this reporting time will enable compilation of reporting data and submission of report to local Agency or municipality headquarters by 2100) daily until incident is under control. Wildland fire agencies will send the summary to the National Interagency Fire Center by 2400 Mountain Time.

1. Enter date and time report completed (mandatory).
2. Check appropriate space (mandatory-no computer entry).
3. Provide name given to incident by Incident Commander or Agency (mandatory).
4. Enter number assigned to incident by Agency (mandatory).
5. Enter first initial and last name of Incident Commander (optional).
6. Enter Agency or Municipality (mandatory).
7. Enter County where incident is occurring (optional).
8. Enter type incident, e.g., wildland fire (enter fuel type), structure fire, hazardous chemical spill, etc. (mandatory).
9. Enter legal description and general location. Use remarks for additional data if necessary (mandatory).
10. Enter date and Zulu time incident started (mandatory--maximum of 6 characters for date and 4 characters for time).
11. Enter specific cause or under investigation (mandatory).
12. Enter area involved, e.g., 50 acres, top 3 floors of building, etc. (mandatory).
13. Enter estimate of percent of containment (mandatory).
14. Enter estimate of date and time of total containment (mandatory).
15. Enter estimated date and time of control (mandatory).
16. Enter actual date and time fire was declared controlled (mandatory).
17. Report significant threat to structures, watershed, timber, wildlife habitat, or other valuable resources (mandatory).
18. Enter control problems, e.g., accessibility, fuels, rocky terrain, high winds, structures (mandatory).
19. Enter estimated dollar value of total damage to date. Include structures, watershed, timber, etc. Be specific in remarks (mandatory).
20. Enter estimate of values saved as result of all suppression efforts (optional).
21. Enter any serious injuries or deaths which have occurred since the last report. Be specific in remarks (mandatory).
22. Indicate the extent of line completed by chains or other units of measurement (optional).
23. Indicate line to be constructed by chains or other units of measurement (optional).
24. Indicate current weather conditions at the incident (mandatory).
25. Indicate predicted weather conditions for the next operational period (mandatory).
26. Provide total incident cost to date (optional).
27. Provide estimated total cost for entire incident (optional).
28. List agencies which have resources assigned to the incident (mandatory).
29. Enter resource information under appropriate Agency column by single resource or strike team (mandatory).
30. List by name those agencies which are providing support, e.g., Salvation Army, Red Cross, law enforcement, National Weather Service, etc. (mandatory).
31. The Remarks space can be used to (1) list additional resources not covered in Section 28/29; (2) provide more information on location; (3) enter additional information regarding threat control problems, anticipated release, or demobilization, etc. (mandatory).
32. This will normally be the incident Situation Unit Leader (mandatory).
33. This will normally be the incident Planning Section Chief (mandatory).
34. The ID of the Agency entering the report will be entered (optional--no computer entry).

FOR THOSE AREAS USING EXISTING COMPUTER SYSTEM REFER TO USER'S MANUAL.
Maximum number of characters allowed for each block are specified in parenthesis on front of form.

Instructions for Completing the Incident Status Summary (ICS Form 209).

ITEM NUMBER	INSTRUCTIONS
1.	Enter date and time report completed (mandatory).
2.	Check appropriate space (mandatory-no computer entry).
3.	Provide name given to incident by Incident Commander or Agency (mandatory).
4.	Enter number assigned to incident by Agency (mandatory).
5.	Enter first initial and last name of Incident Commander (optional).
6.	Enter Agency or Municipality (mandatory).
7.	Enter County where incident is occurring (optional).
8.	Enter type incident, e.g., wildland fire (enter fuel type), structure fire, hazardous chemical spill, etc. (mandatory).
9.	Enter legal description and general location. Use remarks for additional data if necessary (mandatory).
10.	Enter date and Zulu time incident started (mandatory--maximum of 6 characters for date and 4 characters for time).
11.	Enter specific cause or under investigation (mandatory).
12.	Enter area involved, e.g., 50 acres, top three floors of building, etc. (mandatory).
13.	Enter estimate of percent of containment (mandatory).
14.	Enter estimate of date and time of total containment (mandatory).
15.	Enter estimated date and time of control (mandatory).
16.	Enter actual date and time fire was declared controlled (mandatory).
17.	Report significant threat to structures, watershed, timber, wildlife habitat, or other valuable resources (mandatory).
18.	Enter control problems, e.g., accessibility, fuels, rocky terrain, high winds, structures (mandatory).
19.	Enter estimated dollar value of total damage to date. Include structures, watershed, timber, etc. Be specific in remarks (mandatory).
20.	Enter estimate of values saved as result of all suppression efforts (optional).

21.	Enter any serious injuries or deaths which have occurred since the last report. Be specific in remarks (mandatory).
22.	Indicate the extent of line completed by chains or other units of measurement (optional).
23.	Indicate line to be constructed by chains or other units of measurement (optional).
24.	Indicate current weather conditions at the incident (mandatory).
25.	Indicate predicted weather conditions for the next operational period (mandatory).
26.	Provide total incident cost to date (optional).
27.	Provide estimated total cost for entire incident (optional).
28.	List agencies which have resources assigned to the incident (mandatory).
29.	Enter resource information under appropriate Agency column by single resource or strike team (mandatory).
30.	List by name those agencies which are providing support, e.g., Salvation Army, Red Cross, law enforcement, National Weather Service, etc. (mandatory).
31.	The remarks space can be used to (1) list additional resources not covered in Section 28/29; (2) provide more information on location; (3) enter additional information regarding threat control problems, anticipated release, or demobilization, etc. (mandatory).
32.	This will normally be the incident Situation Unit Leader (mandatory).
33.	This will normally be the incident Planning Section Chief (mandatory).
34.	The ID of the Agency entering the report will be entered (optional-no computer entry).

STATUS CHANGE CARD (ICS FORM 210)

Purpose. The Status Change Card is used by the incident Communications Center Manager to record status change information received on resources assigned to the incident.

Preparation. The form is completed by radio/telephone operators who receive status change information from individual resources, Task Forces, Strike Teams, and Division/Group Supervisors. Status information could also be reported by Staging Area and Helibase Managers and fixed-wing facilities.

Distribution. The Status Change Card is a two-part form. The original copy is given to the Resources Unit, and the second (pink) copy is retained by the Communications Unit.

DESIGNATOR
NAME/ID.NO. ________________________________

STATUS

θ ASSIGNED θ AVAILABLE θ O/S REST

θ O/S MECHANICAL θ O/S MANNING

____________ ETR (O/S=Out-of-Service)

FROM	LOCATION	TO
	DIVISION/GROUP	
	STAGING AREA	
	BASE/ICP	
	CAMP	
	EN ROUTE	ETA
	HOME AGENCY	

MESSAGE

TIME ________________ RESOURCES PROCESS θ

ICS FORM 210 6/83 STATUS CHANGE CARD

KU.S. GOVERNMENT PRINTING OFFICE: 1986-695-272

Instructions for Completing the Status Change Card (ICS Form 210).

ITEM TITLE	INSTRUCTIONS
Designator Name/ID No.	Enter the appropriate designator for the kind of resource. The resource type codes are in ICS 020-1, Resource Listings.
Status	Determine the current status of the resource. If out-of-service status is checked, enter the time when the resource will return to service (ETR).
From/Location/To	Place a checkmark in the FROM column indicating the current location of the resource (where it came from). Also place a check in the TO column indicating the assigned location of the resource. When more than one Division, Staging Area, or Camp is used, identify the specific location (e.g., Division A, Redfern Staging Area, Camp Hood).
Message	Enter any special information provided by the resource or dispatch center such as individual designators of strike teams and task forces.
Time	Enter the time of the status change (24-hour clock).
Resources Process	This box is checked by Resources Unit personnel after the Unit has transferred the information to a Resource Status Card (ICS Form 219).

CHECK-IN LIST (ICS FORM 211)

Purpose. Personnel and equipment arriving at the incident can check in at various incident locations. Check-in consists of reporting specific information which is recorded on the Check-In List. The Check-in List serves several purposes:

1. Used for recording arrival times at the incident of all overhead personnel and equipment.

2. Used for recording the initial location of personnel and equipment and thus a subsequent assignment can be made.

3. Used to support demobilization by recording the home base, method of travel, etc., on all check-ins.

Preparation. The Check-in List is initiated at a number of incident locations, including

1. Staging areas, base, camps, helibases, and ICP. Managers at these locations record the information and give it to the Resources Unit as soon as possible.

2. Incident Communications Center Manager located in the Communications Center records the information and also gives it to the Resources Unit as soon as possible.

3. Check-in at the ICP will be done by a recorder at the Resources Unit.

Distribution. Check-in Lists, which are completed by personnel at the various check-in locations, are provided to both the Resources Unit and the Finance Section. The Resources Unit maintains a master list of all equipment and personnel that have reported to the incident.

CHECK-IN LIST	1. INCIDENT NAME	2. CHECK-IN LOCATION ☐ BASE ☐ CAMP ____ ☐ STAGING AREA ☐ ICP RESOURCES ☐ HELIBASE	3. DATE/TIME

CHECK-IN INFORMATION

4. LIST PERSONNEL (OVERHEAD) BY AGENCY & NAME OR LIST EQUIPMENT BY THE FOLLOWING FORMAT:					5.	6.	7.	8.	9.		10.	11.	12.	13.	14.	15.	16.
AGENCY	SINGLE T/F S/T	KIND	TYPE	I.D. NO./NAME	ORDER/ REQUEST NUMBER	DATE/TIME CHECK-IN	LEADER'S NAME	TOTAL NO. PERSONNEL	MANIFEST YES	NO	CREW WEIGHT OR INDIVIDUAL'S WEIGHT	HOME BASE	DEPARTURE POINT	METHOD OF TRAVEL	INCIDENT ASSIGNMENT	OTHER QUALIFICATION	SENT TO RESOURCES TIME/INT.

17. Page ______ of ______ ICS 211 1-82	18. PREPARED BY (NAME AND POSITION) USE BACK FOR REMARKS OR COMMENTS

NFES 1335

Instructions for Completing the Check-in List (ICS Form 211).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
		Incident Dispatchers, upon receipt of a check-in message by radio, record the information on the Check-in List (ICS Form 211) and then give the information to the Resources Unit.
		Resources Unit Recorders, upon receipt of information on an in-person check in, record the information directly onto the Check-in List form.
1.	Incident Name	Print the name assigned to the incident.
2.	Check-in Location	Place a checkmark in the appropriate box indicating where the resource or person checked in at the incident.
3.	Date/Time Prepared	Enter date (month, day, year) and time prepared (24-hour clock).
4.	List Personnel (Overhead) by Agency & Name	Use this section to list agency three-letter designator and individual names for all overhead (supervisory) personnel. When listing equipment, use three-letter designator, indicate if resource is a single resource, task force or strike team; enter kind of resource (letter for single resources, Number 1-3 for Strike Team); enter type of resource (1-4), and designated identification number.
5.	Order/Request Number	Order number will be assigned by Agency dispatching the resources or personnel to the incident.
6.	Date/Time Check-In	Self-explanatory.
7.	Leader's Name	Self-explanatory.
8.	Total Number Personnel	Enter total number of personnel in strike teams, task forces, or manning single resources. Include leaders.
9.	Manifest	Indicate if a manifest was prepared.
10.	Crew Weight or Individual's Weight	Self-explanatory.
11.	Home Base	Location at which the resource/individual is normally assigned. (May not be departure location.)
12.	Departure Point	Location from which resource/individual departed for this incident.

13.	Method of Travel	Means of travel to incident (bus, truck, engine, personal vehicle, etc.).
14.	Incident Assignment	Assignment at time of dispatch.
15.	Other Qualifications	List any other ICS position the individual has been trained to fill.
16.	Sent to	Enter initials and time that the information pertaining to that entry was sent to the Resources Unit.
17.	Page	Indicate page number and number of pages being used for Check-In at this location.
18.	Prepared by	Enter name of Check-In Recorder.

GENERAL MESSAGE (ICS FORM 213)

The General Message form in use within the ICS is a three-part form.

Purpose. The General Message form is used by:

1. Incident dispatchers to record incoming messages which cannot be orally transmitted to the intended recipients.

2. Command Post and other incident personnel to transmit messages to the Incident Communications Center for transmission via radio or telephone to the addressee.

3. Incident personnel to send any message or notification to incident personnel which requires hard-copy delivery.

Initiation of Form. The General Message form may be initiated by incident dispatchers for any other personnel on an incident.

Distribution. Upon completion, the General Message may be:

1. Hand carried to the addressee.

2. Hand carried to the incident Communications Center for transmission.

*U.S. GPO: 1009-783-875

GENERAL MESSAGE

TO:	POSITION	
FROM	POSITION	
SUBJECT	DATE	

MESSAGE:

DATE	TIME	SIGNATURE/POSITION

213 ICS 1/79
NFES 1336

PERSON RECEIVING GENERAL MESSAGE KEEP THIS COPY

SENDER REMOVE THIS COPY FOR YOUR FILES

Instructions for Completing the General Message (ICS Form 213).

ITEM TITLE	INSTRUCTIONS
To	Indicate Unit/Person the General Message is intended for. Be specific.
Office	Indicate the location where the Unit/Person is located, e.g., Ground Support Unit Leader, Simpson Camp, Communications, etc.
From	Indicate appropriate designation and location of sender.
Subject	Fill in if applicable.
Date	List the date and time.
Message	Briefly complete. Think through your message before writing it down. Try to be as concise as possible.
Reply	This section is intended to be used by the Unit/Person who receives the message to reply to your message.
Date	Record the date and time of reply.
Signature	Record the signature and title of person replying.
White Copy/Pink Copy	Both copies are sent by person who initiates the message.
Yellow Copy	Retained by the person who initiates the message.
Pink Copy	May be returned to the person who initiates the message.

UNIT LOG (ICS FORM 214)

Purpose. The Unit Log is used to record details of unit activity including strike team activity. The file of these logs provides a basic reference from which to extract information for inclusion in any after-action report.

Initiation of Log. A Unit Log is initiated and maintained by Command Staff members, Division/Group Supervisors, Air Operations Groups, Strike Team/Task Force Leaders, and Unit Leaders. Completed logs are forwarded to supervisors who provide copies to the Documentation Unit.

Distribution. The Documentation Unit maintains a file of all Unit Logs. It is necessary that one copy of each log be submitted to the Documentation Unit.

UNIT LOG	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

4. UNIT NAME/DESIGNATORS	5. UNIT LEADER (NAME AND POSITION)	6. OPERATIONAL PERIOD

7. PERSONNEL ROSTER ASSIGNED		
NAME	ICS POSITION	HOME BASE

8.	ACTIVITY LOG (CONTINUE ON REVERSE)
TIME	MAJOR EVENTS

NFES 1337

Instructions for Completing the Unit Log (ICS Form 214).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date prepared (month, day, year).
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Unit Name	Enter the title of the organizational unit or resource designator (e.g., Facilities Unit, Safety Officer, Strike Team).
5.	Unit Leader	Enter the name of the individual in charge of the Unit.
6.	Operational Period	Enter the time span covered by the log (e.g., 1800 Oct. 12 to 0600 Oct. 13).
7.	Personnel Roster	List the name, position, and home base of each member assigned to the unit during the operational period.
8.	Activity Log	Enter the time and briefly describe each significant occurrence or event (e.g., task assignments, task completions, injuries, difficulties encountered, etc.).
9.	Prepared By	Enter the name and title of the person approving the log. Provide log to immediate supervisor at the end of each operational period.

OPERATIONAL PLANNING WORKSHEET (ICS FORM 215)

Purpose. The purpose of the Operational Planning Worksheet is to communicate the decisions made during the Planning Meeting concerning resource assignments to the Resources Unit. The Worksheet is used by the Resources Unit to complete Assignment Lists and by the Logistics Section Chief for ordering resources for the incident.

Initiation of Form. The Operational Planning Worksheet is initiated by the Incident Commander and General Staff at each Planning Meeting. It is recommended that the format be drawn on the chalkboard, and when decisions are reached, the information is recorded on the Operational Planning Worksheet.

Distribution. When the division work assignments and accompanying resource allocations are agreed to, the form is distributed to the Resources Unit to assist in the preparation of the Assignment Lists. The Planning Section will use a copy of this worksheet for preparing requests for resources required for the next operational period.

OPERATIONAL PLANNING WORKSHEET

1. INCIDENT NAME	2. DATE PREPARED	3. OPERATIONAL PERIOD (DATE/TIME)
	TIME PREPARED	

4. DIVISION OR OTHER LOCATION	5. WORK ASSIGNMENTS	6. RESOURCES BY TYPE (SHOW STRIKE TEAM AS ST)							7. REPORTING LOCATION	8. REQUESTED ARRIVAL TIME
		RESOURCE								
		TYPE								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
		REQ								
		HAVE								
		NEED								
215 ICS 9-66	9. TOTAL RESOURCES REQUIRED	SINGLE RESOURCES / STRIKE TEAMS							10. PREPARED BY (NAME AND POSITION)	
	TOTAL RESOURCES ON HAND									
	TOTAL RESOURCES NEEDED									

NFES 1338

Instructions for Completing the Operational Planning Worksheet (ICS Form 215).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date/Time Prepared	Enter date (month, day, year) and time prepared (24-hour clock).
3.	Operational Period	Enter the time interval for which the information applies. Record the start time and end time and date(s).
4.	Division or Other Location	Enter the Division letter or location of the work assignment for the resources.
5.	Work Assignments	Enter the specific work assignments given to each of the Divisions.
6.	Resource	Complete resource headings, both for kind and type appropriate for the incident. Enter, for the appropriate resources, the number of resources by type (engines, crew, etc.) required "REQ," and the number of resources available "HAVE" to perform the work assignment. Then record the number of resources needed "NEED" by subtracting the number in the "HAVE" row from the number in the "REQ" row.
7.	Reporting Location	Enter the specific location the "needed" resources are to report for the work assignment (staging area, location on the fire line, etc.).
8.	Requested Arrival Time	Enter time resources are requested to arrive at the reporting location.
9.	Total Resources Required, On Hand, Ordered	Enter the total number of resources by type (engines, crews, dozers, etc.) required, on hand, and ordered.
10.	Prepared By	Record the name and position of the person completing the form.

RADIO REQUIREMENTS WORKSHEET (ICS FORM 216)

Purpose. The Radio Requirements Worksheet is used to develop the total number of personal portable radios required for each Division/Group and Branch. It provides a listing of all units assigned to each Division, and thus depicts the total incident radio needs.

Initiation of Form. The worksheet is prepared by the Communications Unit for each operational period and can only be completed after specific resource assignments are made and designated on Assignment Lists. This worksheet need not be used if the Communications Unit Leader can easily obtain the information directly from Assignment Lists.

Distribution. The worksheet is for internal use by the Communications Unit and therefore there is no distribution of the form.

RADIO REQUIREMENTS WORKSHEET

1. INCIDENT NAME	2. DATE	3. TIME

4. BRANCH	5. AGENCY	6. OPERATIONAL PERIOD	7. TACTICAL FREQUENCY

8. DIVISION/GROUP ______ AGENCY ______			DIVISION/ GROUP ______ AGENCY ______			DIVISION/ GROUP ______ AGENCY ______			DIVISION/ GROUP ______ AGENCY ______		
9. AGENCY	ID NO.	RADIO RQMTS	AGENCY	ID NO.	RADIO RQMTS	AGENCY	ID NO.	RADIO RQMTS	AGENCY	ID NO.	RADIO RQMTS

216 ICS 3-82	PAGE	10. PREPARED BY (COMMUNICATIONS UNIT)

NFES 1339

* GPO 1985-0-593-005/14028

Instructions for Completing the Radio Requirements Worksheet (ICS Form 216).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date	Enter date (month, day, year) prepared.
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Branch	Enter the Branch number (I, II, etc.) for which radio requirements are being prepared.
5.	Agency	Enter the three-letter designator of the agency staffing the Branch Director position (e.g., VNC, CDF, ANF, LFD, etc.).
6.	Operational Period	Enter the time interval for which the assignment applies. Record the start date/time and end date/time.
7.	Tactical Frequency	Enter the radio frequency to be used by the Branch Director to communicate with each Division/Group Supervisor in the Branch.
8.	Division/Group	Enter for each Division/Group in the Branch the Division/Group identifier (A, B, etc.) and the agency assigned (e.g., LAC, VNC, etc.).
9.	Agency/ID No./Radio Requirements	List all units assigned to each Division/Group. Record the agency designator, unit or resource identification, and total number of radios needed for each unit or resource.
10.	Prepared By	Enter the name and position of the person completing the worksheet.

*Note: Detailed instructions for the completion of the Worksheet are found in ICS 223-5 Communications Unit Position Manual, Chapter 3.

RADIO FREQUENCY ASSIGNMENT WORKSHEET (ICS FORM 217)

Purpose. The Radio Frequency Assignment Worksheet is used by the Communications Unit Leader to assist in determining frequency allocations.

Preparation. Cache radio frequencies available to the incident are listed on the form. Major agency frequencies assigned to the incident should be added to the bottom of the worksheet.

Distribution. The worksheet, prepared by the Communications Unit, is for internal use.

RADIO FREQUENCY ASSIGNMENT WORKSHEET

1. INCIDENT NAME	2. DATE	3. OPERATIONAL PERIOD (DATE/TIME)

4. INCIDENT ORGANIZATION / 5. RADIO DATA: SOURCE	FUNCTION	CH#	FREQUENCY	BRANCH	DIVISION	DIVISION	DIVISION	BRANCH	DIVISION	DIVISION	DIVISION	BRANCH	DIVISION	DIVISION	DIVISION	INCIDENT COMMANDER	SAFETY OFFICER	OPERATIONS SECTION CHIEF	AIR OPERATIONS	AIR TACTICAL SUPERVISOR	PLANNING SECTION CHIEF	GROUND SUPPORT UNIT	BASE UNIT							COMM CENTER	TOTAL BY REQ.
6. AGENCY: ID		CH#	FREQUENCY																												
7. TOTAL RADIOS REQUIRED																															

217 ICS 3-78

8. PREPARED BY (NAME/POSITION)

Instructions for Completing the Radio Frequency Assignment Worksheet (ICS Form 217).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Date	Enter date (month, day, year) prepared.
3.	Operational Period	Enter the time interval for which the assignment applies. Record the start date/time and end date/time.
4.	Incident Organization	List frequencies allocated for each channel for each organizational element activated, record the number of radios required to perform the designated function on the specified frequency.
5.	Radio Data	For each radio cache and frequency assigned, record the associated function. Functional assignments are Command Support Division tactical Ground-to-air
6.	Agency	List the frequencies for each major agency assigned to the incident. Also list the function and channel number assigned.
7.	Total Radios Required	Total each column. This provides the number of radios required by each organizational unit. Also total each row, which provides the number of radios using each available frequency.
8.	Prepared By	Enter the name and position of the person completing the worksheet.

SUPPORT VEHICLE INVENTORY (ICS FORM 218)

Purpose. The Support Vehicle Inventory form provides an inventory of all transportation and support vehicles assigned to the incident. The information is used by the Ground Support Unit to maintain a record of the types and locations of vehicles on the incident. The Resources Unit uses the information to initiate and maintain status/resources information on these resources.

Preparation. The form is prepared by Ground Support Unit personnel at intervals specified by the Ground Support Unit Leader.

Distribution. Initial inventory information recorded on the form should be given to the Resources Unit. Subsequent changes to the status or location of transportation and support vehicles should be provided to the Resources Unit immediately.

SUPPORT VEHICLE INVENTORY (USE SEPARATE SHEET FOR EACH VEHICLE CATEGORY)	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

4. VEHICLE INFORMATION

a. TYPE	b. MAKE	c. CAPACITY/SIZE	d. AGENCY/OWNER	e. I.D. NO.	f. LOCATION	g. RELEASE TIME

218 ICS 8-78	PAGE	5. PREPARED BY (GROUND SUPPORT UNIT)

NFES 1341

Instructions for Completing the Support Vehicle Inventory (ICS Form 218).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
		Note: a. The Ground Support Unit Leader may prefer to use separate sheets for each type of support vehicle (e.g., buses, pickups, and food tenders). b. More than one line may be used to record information on each vehicle. If this is done, separate individual vehicle entries with a heavy line. c. Several pages may be used. When this occurs, number the pages consecutively (in the page number box at bottom of the form).
1.	Incident Name	Print the name assigned to the incident.
2.	Date Prepared	Enter date (month, day, year) prepared.
3.	Time Prepared	Enter time prepared (24-hour clock).
4.	Vehicle Information	Record the following vehicle information:
	Type	a. Specific vehicle type (e.g., bus, stakeside, etc.).
	Make	b. Vehicle manufacturer name (e.g., GMC, International).
	Capacity/Size	c. Vehicle capacity/size, (e.g., 30-person bus, 3/4 ton truck).
	Owner	d. Owner of vehicle (agency or private owner).
	ID Number	e. Serial or other identification number.
	Location	f. Location of vehicle.
	Release Time	g. Time vehicle is released from the incident.
5.	Prepared By	Enter the name and position of the person completing the form.

RESOURCE STATUS CARD (ICS FORM 219)

Purpose. Resource Status Cards are used by the Resources Unit to record status and location information on resources, transportation, and support vehicles and personnel. The Resource Status Cards provide a visual display of the status and location of resources assigned to the incident.

Format. There are eight different status cards (see below). Each card is a different color and used for a different purpose. The format and content of information on each card will vary depending upon the use of the card.

ICS FORM 219	USE	COLOR
1	Labels	Gray (used only as label cards in racks)
2	Handcrews	Green
3	Engines	Rose
4	Helicopter	Blue
5	Personnel	White
6	Aircraft	Orange
7	Dozers	Yellow
8	Task Forces Miscellaneous Equipment	Tan

Preparation. Information to be placed on the cards may be obtained from several sources including, but not limited to:

1. ICS Briefing (ICS Form 201).
2. Check-In List (ICS Form 211).
3. Status Change Card (ICS Form 210).
4. Agency supplied information.

Detailed information on preparing status cards is found in Resources Unit Position Manual (ICS 221-3).

Distribution. The cards are displayed in resource status racks where they can be easily retrieved. Cards will be retained by the Resources Unit until demobilization. At demobilization all cards will be turned into the Documentation Unit.

GREEN CARD STOCK (CREW)

AGENCY	ST	KIND	TYPE	I.D. NO.

ORDER/REQUEST NO.	DATE/TIME CHECK IN
HOME BASE	
DEPARTURE POINT	
LEADER NAME	
CREW ID. NO./NAME (FOR STRIKE TEAMS)	

NO. PERSONNEL	MANIFEST ☐ YES ☐ NO	WEIGHT

METHODS OF TRAVEL

☐ OWN ☐ BUS ☐ AIR

OTHER

DESTINATION POINT	ETA

TRANSPORTATION NEEDS

☐ OWN ☐ BUS ☐ AIR

OTHER

ORDERED DATE/TIME	CONFIRMED DATE/TIME

REMARKS

ICS 219-2 (REV. 4/82) CREWS NFES 1344

AGENCY	TF	KIND	TYPE	I.D. NO./NAME

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

☐ ASSIGNED ☐ O/S REST ☐ O/S PERS.
☐ AVAILABLE ☐ O/S MECH ☐ ETR

NOTE

*U.S. GPO: 1990-794-001

Instructions for Completing the Resource Status Card

An example of each kind of card is shown in the following list. Instructions for filling in each block on the card are included where necessary and are not repeated on each example unless needed for clarification.

ICS 219-1 LABEL CARD. The label cards (gray) are used to designate either location or status in the card racks. The organization of the card racks will vary depending upon the type and size of incident. Resources Unit personnel can print location data (e.g., BRANCH 1 DIVISION C, SUNSET BASE), and/or status information (e.g., AVAILABLE, EN ROUTE, OUT-OF-SERVICE, etc.) on the tops of the cards with felt-tip pens. The label cards may then be placed into the racks at appropriate locations as determined by Resources Unit Personnel.

ICS 219-2 HANDCREWS--GREEN-COLORED CARD

The Handcrew Card is depicted below. (Incident location data on the Handcrew Card is on the back of the card and not shown in the example.)

ORDER/REQUEST NO.
Number assigned by dispatching agency.

HOME BASE
Location at which Handcrew is normally located.

DEPARTURE POINT
Location from which Handcrew left to reach this incident.

CREW ID. NO./NAME (FOR STRIKE TEAMS)
List commonly used names or numbers to identify the crews which make up the Strike Team.

NO. PERSONNEL
Total number of personnel (including Leader) in Crew or in Strike Team (as appropriate).

MANIFEST
Was a manifest prepared for the Crew/Strike Team?

WEIGHT
Total weight (including equipment and personal belongings) of the Crew/Strike Team.

DESIGNATION POINT
Next location to which Crew/Strike Team is being sent from the incident.

BLUE CARD STOCK (HELICOPTER)

AGENCY	ST	KIND	TYPE	I.D. NO.

ORDER/REQUEST NO.	DATE/TIME CHECK IN

HOME BASE

DEPARTURE POINT

PILOT NAME

DESTINATION POINT	ETA

REMARKS

INCIDENT LOCATION

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

ICS 219-4 (REV. 4/82) HELICOPTER NFES 1346

AGENCY	TYPE	MANUFACTURER	I.D. NO.

INCIDENT LOCATION	TIME

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

- ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
- ❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

*U.S. GPO: 1988-594-771 NFES 1346

ICS 219-3 ENGINE--ROSE-COLORED CARD

The Engine Card when used for Strike Teams will have the right tab blacked out. This provides an immediate indication to Resources Unit that the card represents a Strike Team.

RESOURCE ID. Numbers: Names

For Strike Teams, list all individual engine numbers which make up the Strike Team. Engine Co. Captains may be included as appropriate. For mixed agency Strike Teams, list the 3-letter ID. for each resource.

INCIDENT LOCATION

Write in the location that the resource is assigned to on the incident (e.g., DIVISION A, SUNSET BASE, etc.).

STATUS

Check appropriate line. If Engine is O/S (out-of-service), give the ETR (estimated time of return) when known.

NOTE

Provide any information that may be needed or useful (e.g., Engine MRV 6183 carries a 120 channel synthesizer).

ICS 219-4 HELICOPTER--BLUE-COLORED CARD

MANUFACTURER NAME/NO.

e.g., Bell 206.

INCIDENT LOCATION

Assigned location information on helicopters may be the same as other resources (e.g., Division A). However, location could also indicate a "general" working location (e.g., water-dropping in Branch 1; or Crew Transport - Wilson Staging Area).

ICS 219-5 PERSONNEL--WHITE-COLORED CARD

TRANSPORTATION NEEDS

If an individual was picked up and brought to the incident, it is important to check what transportation is needed to return home.

DATE/TIME ORDER

Important to show the specific means by which personnel will depart the incident. Note that this may vary from the way the individual arrived.

REMARKS (Include other qualifications)

Use this space to indicate ICS positions individuals may fill in addition to Incident Assignment (e.g., Situation Unit Leader, Demobilization Unit Leader, etc.).

ORANGE CARD STOCK (AIRCRAFT)

AGENCY	TYPE	MANUFACTURER	I.D. NO.

ORDER/REQUEST NO.	DATE/TIME CHECK IN
HOME BASE	
DATE TIME RELEASED	
INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

ICS 219-6 (4/82) AIRCRAFT

AGENCY	TYPE	MANUFACTURER NAME/NO.	I.D. NO.

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

INCIDENT LOCATION	TIME

STATUS

❑ ASSIGNED ❑ O/S REST ❑ O/S PERS.
❑ AVAILABLE ❑ O/S MECH ❑ ETR

NOTE

*U.S. GPO: 695-162-1966

ICS 219-6 AIRCRAFT--ORANGE-COLORED CARD

INCIDENT LOCATION
Reflect the area of the incident to which the aircraft is primarily assigned (e.g., Branch 1).

ICS 219-7 DOZERS--YELLOW-COLORED CARD

RESOURCE ID. NUMBERS/NAMES
List dozer numbers and Operator names for dozers in Strike Teams. Show contractor name as appropriate.

ICS 219-8 MISCELLANEOUS EQUIPMENT/TASK FORCE--TAN-COLORED CARD

This card is used for a variety of miscellaneous equipment (e.g., buses, trucks, water tenders, etc.). The card is also used to show Task Forces. (Task Forces may be several different kinds of resources assembled for a specific purpose.) When the card is used to indicate a Task Force, the left tab should be blacked out. Also, the specific resources making up the Task Force should be listed in the Resource ID. No./Names section of the card. The cards of the resources making up the Task Force can be clipped together with the Tan Task Force card or stored separately as desired. When a single resource is being used in a Task Force, a notation should be made on that Resources' Card to include the Task Force number.

YELLOW CARD STOCK (DOZERS)

AGENCY	ST	TF	KIND	TYPE	I.D. NO.

ORDER/REQUEST NO.	DATE/TIME CHECK IN
HOME BASE	
DEPARTURE POINT	
LEADER NAME	
RESOURCE ID. NO.S/NAMES	
DESTINATION POINT	ETA
REMARKS	
INCIDENT LOCATION	TIME
STATUS ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS. ❑ AVAILABLE ❑ O/S MECH ❑ ETR	
NOTE	

ICS 219-7 (REV. 4/82) DOZERS NFES 1349

AGENCY	ST	TF	KIND	TYPE	I.D. NO.

INCIDENT LOCATION	TIME
STATUS ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS. ❑ AVAILABLE ❑ O/S MECH ❑ ETR	
NOTE	
INCIDENT LOCATION	TIME
STATUS ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS. ❑ AVAILABLE ❑ O/S MECH ❑ ETR	
NOTE	
INCIDENT LOCATION	TIME
STATUS ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS. ❑ AVAILABLE ❑ O/S MECH ❑ ETR	
NOTE	
INCIDENT LOCATION	TIME
STATUS ❑ ASSIGNED ❑ O/S REST ❑ O/S PERS. ❑ AVAILABLE ❑ O/S MECH ❑ ETR	
NOTE	

*U.S. GPO: 1990-794-006

AIR OPERATIONS SUMMARY WORKSHEET (ICS FORM 220)

Purpose. The Air Operations Summary Worksheet provides the Air Operations Branch with the number, type, location, and specific assignments of helicopters and air tankers.

Initiation of Form. The worksheet is completed by the Operations Section Chief or the Air Operations Branch Director during each Planning Meeting. General air resources assignment information is obtained from the Operational Planning Worksheet (ICS Form 215) which also is completed during each Planning Meeting. Specific designators of the air resources assigned to the incident are provided by the Air and Fixed-Wing Support Groups.

Distribution. After the worksheet is completed by Air Operations personnel (except item 11), the form is given to the Air Support Group Supervisor and Air Tanker/Fixed-Wing Coordinator personnel. These personnel complete the form by indicating the designators of the helicopters and air tankers assigned missions during the specified operational period. This information is provided to Air Operations personnel who, in turn, give the information to the Resources Unit.

AIR OPERATIONS SUMMARY

1. INCIDENT NAME	2. OPERATIONAL PERIOD (Date & Time)	3. DISTRIBUTION HELIBASES ______ FIXED-WING BASES ______

4. PERSONNEL AND COMMUNICATIONS

	NAME	AIR/AIR FREQUENCY	AIR/GROUND FREQUENCY
AIR OPERATIONS BRANCH DIRECTOR			
AIR TACTICAL GROUP SUPERVISOR			
HELICOPTER COORDINATOR			
AIR TANKER/FIXED-WING COORDINATOR			

5. REMARKS (Spec. Instructions, Safety Notes, Hazards, Priorities)

6. LOCATION/ FUNCTION	7. ASSIGNMENT	8. FIXED-WING		9. HELICOPTERS		10. TIME		11. AIRCRAFT ASSIGNED	12. OPERATING BASE
		NO.	TYPE	NO.	TYPE	AVAILABLE	COMMENCE		
13. TOTALS									

220 ICS 1-82	14. AIR OPERATIONS SUPPORT EQUIPMENT	15. PREPARED BY (Include Date & Time)

NFES 1351

Instructions for Completing Air Operations Summary Worksheet (ICS Form 220).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name	Print the name assigned to the incident.
2.	Operational Period	Enter the time interval for which the assignment applies. Record the start date/time and end date/time.
3.	Air Operations Distribution	Check the block and enter the time and date when ICS Form 220 and attachments were sent to all fixed-wing bases and helibases supporting the incident.
4.	Personnel and Communications	Enter the name of the individuals in Air Operations and the primary air/air and air/ground (if applicable) radio frequencies to be used.
5.	Remarks	Enter special instructions or information, including safety notes, hazards, and priorities for Air Operations personnel.
6.	Location/ Function	Enter area of incident where air resources will be assigned (i.e., Div. A, Branch II, Standby) or function (i.e., Air Tactical Group Supervisor, Situation Unit, MEDIVAC, etc.) to which they will be assigned.
7.	Assignment	Enter the specific assignment (e.g., water or retardant drops, logistical support, or availability status for a specific purpose, support backup, recon, MEDIVAC, etc.). If applicable, enter the primary air/air and air/ground radio frequency to be used.
8.	Fixed-Wing	Enter the number and type (1, 2, or 3) of air tankers allocated to the location/function.
9.	Helicopters	Enter the number and type of helicopters allocated to the location/function.
10.	Time Available/ Commence	As applicable, enter the time (24-hour clock), when allocated air resources should be available and when they should commence their assignment.
11.	Aircraft Assigned	Enter the designators of the aircraft assigned. Gather information from Resources Unit, helibases, and fixed-wing bases.
12.	Operating Base	Enter the base (helibase, helispot, fixed-wing base) that each air resource is expected to initiate operations from.
13.	Totals	Enter the total number of fixed-wing and helicopters assigned to the incident in the number columns. Enter the total number of each type air tanker and helicopter assigned in Type column.
14.	Air Operations Support	Enter the designators and location of other support resources (i.e., helicopter support units, engines, IR, etc.) assigned to Air Operations.
15.	Prepared By	Enter the name of the person in Air Operations completing the form. Enter the date and time form was completed.

DEMOBILIZATION CHECKOUT (ICS FORM 221)

Purpose. The Demobilization Checkout form provides the Planning Section information on resource releases from the incident to include destination, actual release time, and estimated time of arrival at destination.

Initiation of Form. The form is initiated by the Demobilization Unit Leader or the Planning section. The top portion of the form is completed by Demobilization Unit Leader after the resource supervisor has given written notification that the resource is excess to the needs of the incident.

Distribution. The individual resource will have the unit initial the appropriate checked (√) boxes in section 11 prior to release from the incident. After completion, the form is returned to the Demobilization Unit Leader or the Planning Section.

Note: Prior to actual demobilization, Planning Section (Demobilization Unit) should check with the Command Staff (Liaison Officer) to determine any agency needs related to demobilization and release; if any, add to line Number 11.

DEMOBILIZATION CHECKOUT

ICS-221

1. INCIDENT NAME/NUMBER	2. DATE/TIME	3. DEMOB NO.

4. UNIT/PERSONNEL RELEASED

5. TRANSPORTATION TYPE/NO.

6. ACTUAL RELEASE DATE/TIME	7. MANIFEST YES NO NUMBER ____________
8. DESTINATION ____________	9. AREA/AGENCY/REGION NOTIFIED NAME ____________ DATE ____________

10. UNIT LEADER RESPONSIBLE FOR COLLECTING PERFORMANCE RATING

11. UNIT/PERSONNEL YOU AND YOUR RESOURCES HAVE BEEN RELEASED SUBJECT TO SIGNOFF FROM THE FOLLOWING:

(DEMOB. UNIT LEADER CHECK √ APPROPRIATE BOX)

LOGISTICS SECTION

θ SUPPLY UNIT ____________

θ COMMUNICATIONS UNIT ____________

θ FACILITIES UNIT ____________

θ GROUND SUPPORT UNIT LEADER ____________

PLANNING SECTION

θ DOCUMENTATION UNIT ____________

FINANCE/ADMINISTRATION SECTION

θ TIME UNIT ____________

OTHER

θ ____________ ____________

θ ____________ ____________

12. REMARKS

____

____

221 ICS 1/83

NFES 1353 INSTRUCTIONS ON BACK.

INSTRUCTIONS FOR COMPLETING THE DEMOBILIZATION CHECK (ICS FORM 221)

Prior to actual demobilization, Planning Section (Demobilization Unit) should check with the Command Staff (Liaison Officer) to determine any agency-specific needs related to demobilization and release. If any, add to line Number 11.

Item Number	Item Title	Instructions
1.	Incident Name/No.	Print Name and/or Number of incident.
2.	Date/Time	Enter Date and Time prepared.
3.	Demob No.	Enter Agency Request Number, Order Number, or Agency Demobilization Number if applicable.
4.	Unit/Personnel Released	Enter appropriate vehicle or Strike Team/Task Force I.D. Number(s) and Leader's name or individual overhead or staff personnel being released.
5.	Transportation Type/No.	Method and vehicle I.D. Number for transportation back to home unit. Enter N/A if own transportation is provided. *Additional specific details should be included in Remarks, block #12.
6.	Actual Release Date/Time	To be completed at conclusion of demobilization at time of actual release from incident. Would normally be last item of form to be completed.
7.	Manifest	Mark appropriate box. If yes, enter manifest number. Some agencies require a manifest for air travel.
8.	Destination	Location to which Unit or personnel have been released, i.e., Area, Region, Home base, Airport, Mobilization Center, etc.
9.	Area/Agency/Region Notified	Identify Area, Agency, or Region notified and enter date and time of notification.
10.	Unit Leader Responsible for Collecting Performance Ratings	Self-explanatory. Note, not all agencies require these ratings.
11.	Unit/Personnel	Demobilization Unit Leader will identify with a check in the box to the left of those units requiring check-out. Identified Unit Leaders are to initial to the right to indicate release. Blank boxes are provided for any additional check (unit requirements as needed), i.e., Safety Officer, Agency Representative, etc.
12.	Remarks	Any additional Information pertaining to demobilization or release.

* GPO 1985-0-593-005/14032

Instructions for Completing the Demobilization Checkout (ICS Form 221).

ITEM NUMBER	ITEM TITLE	INSTRUCTIONS
1.	Incident Name/No.	Print the name and/or number assigned to the incident.
2.	Date/Time	Enter date and time prepared.
3.	Demob No.	Enter Agency Request Number, Order Number, or Agency Demob Number if applicable.
4.	Unit/Personnel Released	Enter appropriate vehicle or Strike Team/Task Force ID. Number(s) and Leader's name or individual overhead or staff personnel being released.
5.	Transportation Type/No.	Method and vehicle ID. Number for transportation back to home unit. Enter N/A if own transportation is provided. *Additional specific details should be included in Remarks, block #12.
6.	Actual Release Date/Time	To be completed at conclusion of demobilization at time of actual release from incident. Would normally be last item of form to be completed.
7.	Manifest	Mark appropriate box. If yes, enter manifest number. Some agencies require a manifest for air travel.
8.	Destination	Location to which Unit or personnel have been released, i.e., Area, Region, Home base, Airport, Mobilization Center, etc.
9.	Area/Agency/ Region Notified	Identify Area, Agency, or Region notified and enter date and time of notification.
10.	Unit Leader Responsible for Collecting Performance Ratings	Self-explanatory. Note, not all agencies require these ratings.
11.	Unit/Personnel	Demobilization Unit Leader will identify with a check in the box to the left of those units requiring check-out. Identified Unit Leaders are to initial to the right to indicate release.
		Blank boxes are provided for any additional check (unit requirements as needed), i.e., Safety Officer, Agency Representative, etc.
12.	Remarks	Any additional information pertaining to demobilization or release.

APPENDIX C

EQUIPMENT LIST FOR FOUR OPERATIONAL CAPABILITIES

Minimum Equipment Lists

The following lists identify the minimum amount of tools and equipment needed to provide a safe and acceptable level of service for each of the four levels of US&R operational capability. The amount, size, and type of equipment listed can be increased to provide a higher degree of safety and service in each level of US&R operational capability.

US&R Basic Level

(Minimum Equipment)

Quantity	Item
2	8-10 lb. Sledge hammer
2	3-4 lb. Sledge hammer
2	Cold chisel (1 x 7 7/8")
4	Pinch point pry bar (60")
2	Claw wrecking bar (3')
2	Hacksaw (heavy duty)
3	Carbide hacksaw blade pkg.
2	Crosscut handsaw (26")
1	Cribbing and wedge kit (see Tool Info Sheet)
1	First Aid Kit (see Tool Info Sheet)
1	Trauma Kit (see Tool Info Sheet)
2	Blanket (disposable)
1	Backboard (with two straps)
1	Bolt cutter (30")
1	Scoop shovel "D" handle
1	Building Marking Kit (see Tool Info Sheet)
1	Axe (flat head)
1	Axe (pick head)

US&R Light Level

(Minimum Equipment List)

Quantity	Item
1	US&R Basic Equipment Inventory
2	150' x 1/2" Kernmantle, static, NFPA-approved.
2	Friction device (see Tool Info Sheet)
12	Carabiner (locking "D", 11 mm)
6	Camming devices (see Tool Info Sheet)
3	Pulley, rescue (2" or 4")
1	Litter and complete pre-rig (see Tool Info Sheet)
1	Webbing Kit (see Tool Info Sheet)
2	Edge protection (see Tool Info Sheet)
2	Pick off straps (see Tool Info Sheet)
2	Commercial harness (Class II or better)
6	Steel pickets (1"x 4')
2	3-4 lb. Short sledge hammer
1	Chain saw (see Tool Info Sheet)
3	Tape measure (25')
1	Shovel--long handle square point
1	Shovel--long handle round point
2	Framing hammer (24 ox)
2	Tri or speed square
2	Carpenter belts
1	Nails (see Tool Info Sheet)
2	Hydraulic jacks (minimum--five ton)
2	Rolls of duct tape

US&R Medium Level

(Minimum Equipment List)

Quantity	Item
1	US&R Basic Equipment Inventory and Light Equipment Inventory
1	Air bag set (3 bags, 50 ton with three spare air bottles)
1	Bolt cutters (heavy duty, 42")
1	Generator (5 kw)
4	Floodlight (50 wt)
6	Extension cords (50')
1	Junction box (4 outlet with GFI)
1	Wye electrical adapter
1	Circular saw (12") with 2 1/2 GL fuel
2	Circular saw blades (12" carbide tip)
12	Circular saw blades (12" metal cutting)
2	Circular saw blade (12" diamond, continuous rim)
1	Pressurized water spray can
1	Rotary hammer (1 1/2")
1	Rotary Hammer Bit Kit (see Tool Info Sheet)
1	Anchor Kit (see Tool Info Sheet)
1	Saw, electric (10 1/4")
2	Skill saw blade (10 1/4" carbide tip)
12	Skill saw blade (10 1/4" metal cutting)
1	Sawsall
12	Sawsall blades (wood)
18	Sawsall blades (metal)
2	Rope (300' x 1/2") (static Kernmantle NFPA approved)
2	Rope (20' x 1/2") (static Kernmantle NFPA approved)
3	Pulley, rescue (2" or 4")
2	Friction device (see Tool Info Sheet)
12	Carabiner (locking "D", 11 mm)
1	Webbing Kit (see Tool Info Sheet)
1	Etrier Set
2	Commercial harness (Class II or better)
2	Shovel, folding, short
4	Haul buckets (metal or canvas)
8	Ellis clamps
1	Ellis jack
8	4 x 4 x 8' lumber
6	Screw jacks, pairs (1 1/2")
1	Pipe cutter, multi-wheel (1 1/2")
6	Pipe (6' x 1 1/2", schedule 40)
2	Hi-lift jack with extension tube

Quantity	Item
1	Cribbing and Wedge Kit (see Tool Info Sheet)
1	Come along (2/4 ton)
1	Chain Set (see Tool Info Sheet)
1	Tool Kit (see Tool Info Sheet)
1	Demolition hammer, small (see Tool Info Sheet)
1	Demolition hammer, large (see Tool Info Sheet)
1	Electrical detection device (see Tool Info Sheet)
1	Ventilation fan (see Tool Info Sheet)
1	3 range air monitor

US&R Heavy Level

(Minimum Equipment List)

Quantity	Item
1	US&R Basic Equipment Inventory
1	US&R Light Equipment Inventory
1	US&R Medium Equipment Inventory
6	SCBA (with PAL and 1 spare bottle each)
3	Supplied air breathing apparatus (SABA)
	Umbilical system with escape bottles and 250' hose each
1	3 range air monitor
1	Tripod (human rated, 7-9' with hauling system)
2	Full body harness (Class III or better)
1	Ventilation fan (see Tool Info Sheet)
1	Circular saw (16") with 2 1/2 CL fuel
2	Circular saw blade (16" diamond, continuous rim)
2	Circular saw blade (16" carbide tip)
1	Pressurized water spray can
6	Canister type respirators
24	Replacement canisters for respirators
1	Generator (5 KW)
4	Floodlight (500 WT)
6	Extension cords (50')
1	Junction box (4 outlet with GFI)
1	Wye electrical adapter
1	Rotary hammer (1 1/2")
1	Rotary Hammer Bit Kit (see Tool Info Sheet)
1	Sawsall
12	Sawsall blades (wood)
18	Sawsall blades (metal)
1	Drill (1/2", variable speed)
1	Drill Bit Set (steel, 1/8 – 5/8")
1	Drill Bit Set (carbide tip, 1/4 - 5/8")
1	Chain saw, 12" electric with spare carbide tip chain
	If not already present from light inventory.
1	Rebar cutter (1" capacity)
1	Cutting torch (see Tool Info Sheet)
1	Come along (2/4 ton)
1	Demolition hammer, small (see Tool Info Sheet)
1	Demolition hammer, large (see Tool Info Sheet)
1	Extrication stretcher for confined areas
2	Shovel, folding, short
1	Mechanical axe (high voltage)

Quantity	Item
1	Mechanical grabber (high voltage)
2	Pair lineman gloves (high voltage)
1	Upgrade high pressure air bags to a total of 245 tons
1	Air bag regulator, control valve with two additional hoses
2	Building Marking Kits (see Tool Info Sheet)
1	Cribbing and Wedge Kit (see Tool Info Sheet)
1	Ram Set Powder Actuated Nail Gun (with 150 red charges)
1	Box ram set nails with washers (2 1/2")
1	Box ram set nails with washers (3 1/2")
1	Green stone wheel (to sharpen carbide tips on tools)
1	Nails (see Tool Info Sheet)
2	Tri or speed squares
2	Framing hammers (24 oz)
2	Carpenter belts
1	Level (6")
1	Level (4')
1	Nail gun, pneumatic (framing type, 6p-16p)
1	Case nail gun nails (8p)
1	Case nail gun nails (16p)
32	Ellis clamps
1	Ellis jack
8	Post screw jacks
12	Screw jacks, pairs (1 1/2")
12	Pipe (6' x 1 1/2", schedule 40)
12	Steel pickets (1" x 4')
1	Case orange spray paint (line marking, downward application type)
1	Case--duct tape
1	Technical search device (see Tool Info Sheet)
1	Hydraulic rescue tool (see Tool Info Sheet)

US&R Tool Info Sheet

Anchor Kit	1 box 3/8" x 5" Hilti Kwick Bolt concrete anchors. 25 ea.: 3/8" SMC stainless steel anchor plates. 25 ea.: 3/8" drop forged H/D eye nuts. Anchors and plates are for rope system anchor points.
Building Marking Kit	2 ea. Orange spray paint (line marking, downward Application type). 4 ea.: Lumber chalk. 2 ea.: Lumber crayon (red). 2 ea.: Lumber crayon (yellow). 4 ea.: Lumber pencil.
Camming Device	Prusik lock (7 or 8 mm) or Gibb's Ascender (or combination of each.
Chain Saw	Gasoline or electric with carbide tip chain and one spare chain and bar oil. Gasoline: 2 1/2 gal. spare fuel and oil mixture. Electric: need electric power source and 100' of extension cord.
Chain Set	1 ea.: 1' with a grab hook on each end. 1 ea.: 5' with a grab hook and slip hook. 1 ea.: 10' with a grab hook and slip hook. 1 ea.: 20' with a grab hook and slip hook. All chain is 3/8", grade 7 or better.
Cribbing and Wedge Kit	24 ea.: 4 x 4 x 18". 24 ea.: 2 x 4 x 18". 12 pair: 4 x 4 x 18" wedges. 12 pair: 2 x 4 x 12" wedges. Containers (to store and carry).
Cutting Torch	One or more plasma cutters, exothermic torch with 50 rods, heavy duty oxy/acetylene torch with spare O_2 cylinder (or other similar device).
Demolition Hammer, Large	Electric, pneumatic, or gasoline. 60 lbs. (minimum). 2 ea.: bull point bits. 2 ea.: chisel point bits.

Demolition Hammer, Small	Electric, pneumatic, or gasoline. 30-45 lbs. (minimum). 2 ea.: bull point bits. 2 ea.: chisel point bits.
Edge Protection	Commercial edge rollers, canvas tarps, split fire hose, or any combination of each.
Electrical Detection Device	Hot stick electrical alert device, volt/ohm meter, or other device to alert crew members of electrical current.
First Aid Kit	Basic first aid supplies for minor injuries to six victims or crew members. Example of contents: Band-Aids, eye wash, 4 x 4" gauze pads, gauze dressing, triangular and elastic bandages, etc.
Friction Device	Figure eight with ears or Brake Bar Rack or one of each.
Hydraulic Rescue Tool	Gasoline, electric, or manual device with 10,000 pounds minimum force. Able to cut, spread, and pull. Gasoline: 2 1/2 gallons spare fuel and oil.
Litter and Complete Pre-rig	Litter capable and rated for horizontal and vertical lift and hoist. Pre-rig can be commercial or pre-assembled to include adjustment and attachment capability.
Nails	25 lbs.: 16p vinyl coated (green sinkers). 25 lbs.: 8p vinyl coated (green sinkers). 25 lbs.: 16p duplex. Note: high humidity areas may require cadmium coated nails to prevent rust during long term storage.
Pick Off Strap	Webbing strap with one "D" ring at one end and one "V" ring adjuster on webbing strap. (Webbing: 1 3/4" wide with 10,000 lbs. rating, minimum 42" long) (Hardware strength 5,000 lbs. rating).
Rotary Hammer Bit Kit	1 ea.: carbide tip bits, 3/8", 1/2", 3/4", 1", 1 1/2" 2". 2 ea.: bull point bits. Appropriate adapters for bits and depth range capability.

Technical Search Device

One or more of the following: optical instruments (search cameras), seismic/acoustic instruments (listening devices).

Tool Kit

1 ea.: 12" crescent wrench.
1 ea.: 8" crescent wrench.
1 ea.: slip joint pliers.
1 ea.: channel lock pliers.
1 ea.: wire side cutters.
1 ea.: 1/2" socket set with ratchet and 6" extension.
1 ea.: 1/2" breaker bar.
1 ea.: ball peen hammer.
1 set: standard head screwdrivers.
1 set: Phillips head screwdrivers.
Any other tools required for maintenance and repair of equipment in cache.

Trauma Kit

Basic supplies to treat trauma injuries to six victims or crew members. ALS type equipment (i.e., IV solutions, drugs, etc.) is not listed but may be carried if authorized. Examples of items to carry include: large trauma dressings, splints, airways, bag valve respirator with large and small masks, etc.)

Ventilation Fan

Electric or gasoline powered with extension tube to direct air flow.

Webbing Kit

6 ea.: 1" x 5'.
6 ea.: 1" x 12'.
6 ea.: 1" x 15'.
6 ea.: 1" x 20'.
All webbing is spiral weave nylon, 4,000 lb. minimum tensile strength. Each webbing length must be a different color.

APPENDIX D

STRUCTURAL COLLAPSE SCENE ASSESSMENT CHECKLIST

STRUCTURAL COLLAPSE
SCENE ASSESSMENT CHECKLIST

BUILDING NAME OR STRUCTURE TYPE:____________________ DATE:__________

LOCATION:____________________ TIME:__________

OCCUPANCY TYPE:____________________

CONSTRUCTION:____________________ TYPE OF COLLAPSE:__________

NO. OF STORIES:______ ACCESS TO INCIDENT SITE:____________________

HAZARDS:

STRUCTURAL INSTABILITY
- ( ) ROOF
- ( ) FLOOR
- ( ) WALL
- ( ) COLUMN/BEAM
- ( ) OTHER

OVERHEAD HAZARDS
- ( ) HANGING WALLS
- ( ) HANGING FLOORS
- ( ) POWER LINES
- ( ) OTHER WIRES
- ( ) OTHER

SURFACE HAZARDS
- ( ) POWER LINES
- ( ) REBARS
- ( ) FLOODING
- ( ) UNSTABLE DEBRIS
- ( ) UNSTABLE OPENINGS

BELOW GRADE HAZARDS
- ( ) FLOODING
- ( ) ESCAPING GAS
- ( ) OXYGEN DEFICIENCY
- ( ) SHIFTING DEBRIS
- ( ) DEEP SHAFTS

DAMAGED UTILITIES
- ( ) NATURAL GAS
- ( ) LPG
- ( ) WATER
- ( ) EXPOSED WIRES
- ( ) RAW SEWAGE
- ( ) OTHER

HAZARDOUS MATERIALS
- ( ) CORROSIVE
- ( ) FLAMMABLE LIQUIDS
- ( ) FLAMMABLE GASES
- ( ) PESTICIDES
- ( ) POISONS
- ( ) RADIOACTIVE MATERIALS

HAZARDS: ( ) FIRE/SMOKE ( ) DUST ( ) BIOLOGICAL ( ) OTHER __________

VICTIMS:

VICTIMS REPORTED MISSING:__________ DETECTED:__________

LOCATION:__________ LOCATION:__________
LOCATION:__________ LOCATION:__________
LOCATION:__________ LOCATION:__________

VOID ACCESS AREAS:

SIDE A:__________ SIDE B:__________
SIDE C:__________ SIDE D:__________
ABOVE:__________ BELOW:__________

OTHER NOTES:____________________

(USE REVERSE SIDE OF PAGE FOR BUILDING/SCENE DIAGRAM)

APPENDIX E

STRUCTURAL COLLAPSE OPERATIONAL CHECKLIST

STRUCTURAL COLLAPSE OPERATIONAL CHECKLIST

I. ESTABLISH COMMAND

_____ Communicate the exact type of incident.
Type:____

_____ Communicate the exact location of the incident.
Location:____

_____ Communicate the staging areas for incoming apparatus.
Staging Area:____

_____ Communicate the name of the incident.
Name of Incident:____________________________________

_____ Communicate the location of the command post.
Location of Command Post:____________________________

II. DETERMINE THE EXTENT OF THE INCIDENT

_____ Establish hazard and safe zone and evacuate the area.

_____ Remove surface casualties and walking wounded if safe.

- Number Injured (Triage) _____ Minor Injuries _____
- Deceased _____ Delayed _____
  Immediate _____

_____ Number of people trapped: _____.

- Location(s):

1.____
2.____
3.____
4.____
5.____

_____ Number of people missing: _____.

- Last known location(s):

1.____
2.____
3.____
4.____
5.____

II. DETERMINE THE EXTENT OF THE INCIDENT (cont'd)

_____	Type of structure Description:	___	Residential.		
		___	Apartment House.		
		___	School.		
		___	Hospital or Care Facility.		
		___	Multi-Story/# Floors: _____.		
		___	Mercantile.		
		___	Commercial.		
		___	Industrial.		
_____	Type of construction Description:	___	Wood Frame.		
		___	Unreinforced Masonry.		
		___	Reinforced Masonry.		
		___	Concrete Tilt-Up.		
		___	Concrete.		
		___	Steel Frame.		
_____	Is further collapse possible?	___	Yes	___	No
_____	Are utilities secured?				
	• Gas	___	Yes	___	No
	• Electric	___	Yes	___	No
	• Water	___	Yes	___	No
_____	Do atmospheric hazards exist?	___	Yes	___	No

III. DEVELOP INCIDENT ACTION PLAN AND MANAGEMENT ORGANIZATION

A. Requesting Additional Resources

___ First Alarm--Apparatus ____________________________

___ Second Alarm--Apparatus ____________________________

___ Third Alarm--Apparatus ____________________________

___ Fourth Alarm--Apparatus ____________________________

___ Fire Strike Team(s) ____________________________
(Basic Rescue) ____________________________

___ Light Rescue Strike Team(s) ____________________________
(Wood Frame) ____________________________

A. Requesting Additional Resources (cont'd)

___ Medium Rescue Strike Team(s) ______________________
(Cinderblock, two-story URM, ______________________
heavy timber, tilt-up) ______________________

___ Heavy Rescue Strike Team(s) ______________________
Type 1 & 2 construction, steel ______________________
structures, confined space) ______________________

___ Medical Strike Team(s) ______________________
Level of response ____ ______________________

___ Urban Search and Rescue Task Force TF- ____________
62-Member/Self-sustaining 72 Hours TF- ____________
Search/Rescue/Medical/Technical Team TF- ____________
Heavy Concrete/Technical Rescue TF- ____________

___ Specialized Resources: ______________________
(See directory) ______________________
____
____
____

___ Staging Area/Base Considerations:

- Is the area large enough? ___ Yes ___ No
- Is security needed? ___ Yes ___ No
- Is a med./rehab area needed? ___ Yes ___ No
- Are feeding operations needed? ___ Yes ___ No
- Are toilet facilities needed? ___ Yes ___ No
- Are rest accommodations needed? ___ Yes ___ No
- Is logistical support for equipment repair and rehabilitation needed? ___ Yes ___ No

___ Communications Network:

- Channel _____ Designator ___________________
- Channel _____ Designator ___________________
- Channel _____ Designator ___________________
- Channel _____ Designator ___________________
- Channel _____ Designator ___________________
- Channel _____ Designator ___________________
- Channel _____ Designator ___________________

B. Structure Information

_____ Utilize structural engineers for assistance.

_____ Type of collapse pattern(s).
- _____ V-collapse.
- _____ Lean-to-collapse.
- _____ Unsupported lean-to-collapse.
- _____ Cantilever.
- _____ Pancake collapse.

____ Locate building owner or occupant(s) to obtain additional information concerning structure layout.

_____ Utilize building blueprints or drawings if available.

_____ Today's Date: _____ Time: _____ Day of Week: _______

_____ Structure size:
- Number of stories: ___________.
- Size/length: ____ (ft); Width: ____ (ft); Height: ____ (ft).

_____ Construction type and materials.

_____ Attempt to establish location of voids.

C. Structure Entry

_____ Establish search plan.

_____ Have personnel report to check-in officer (note time).

_____ Brief personnel on search plan and possible location of victims and void spaces.

_____ Have all personnel check safety equipment.

_____ Designate communications channel and call sign.

_____ Access best entry route.

_____ Utilize search markings as needed.

_____ Establish a Rapid Intervention Team and stage within the inner perimeter.

D. Scene Safety

_____ Remove unnecessary civilians and personnel from area.

_____ Establish a perimeter:
Inner area: ____
Outer area: ____

_____ Designate:
- Safe travel zones.
- Danger zones.
- Overhead dangers.
- Hazardous areas.
- Restricted areas.
- Areas of retreat.
- Rehabilitation areas.
- Triage area.

_____ Designate:
- A restricted air space over the incident.
- Heavy equipment staging area--(beware of noise and vibrations).
- Equipment staging, work area, cutting station.

_____ Secure utilities:
____ Gas.
____ Electric.
____ Water.

_____ Provide exterior shoring and cribbing where needed to prevent further collapse and stabilize the structure.

_____ Locate points of entry and designate same with building markings which should include date, time, company, and specialized hazards.

_____ Assign an entry officer to the inner perimeter "Hot Zone" and restrict access to authorized personnel only. Establish an entry and exit time log.

_____ Utilize an emergency evacuation signaling system. All personnel who enter the inner perimeter should be familiar with these signals:

- Cease operations/all quiet--1 long blast (3 seconds).
- Evacuate area--1 short blast (1 second each).
- Resume operations--1 long and 1 short blast.

E. Exploration of voids

___ Shore and crib as needed for safety.

___ Establish emergency evacuation routes (keep clear).

___ Utilize selective debris removal, cutting and breaching.

___ Test for toxic and explosive gases as needed.

___ Establish oxygen percentage: ___________.

___ Identify hazards and mark same.

___ Follow OSHA confined space guidelines as applicable.

___ Provide positive pressure ventilation or utilize SCBA's where needed.

___ Be aware of fatigue of rescue personnel.
- Check entry times.
- Rest, rotate and rehabilitate as needed.

F. Victim Priorities

Once the victim(s) has/have been located:

___ Attempt to make contact. Establish their:
- Mental status.
- Medical condition.
- Environment.

___ Establish extrication procedures.
- Consider what is trapping the victim(s).
- Consider possible load shift, secondary collapse or aftershock.
- Consider the victim's status and environment.

___ If multiple victims, evaluate the following:
- Survivability.
- Extrication difficulty.
- Estimated extrication time.
- Prioritize victim extrication based upon these categories.

_____ Once patient contact has been made:
- Consider crush syndrome and treat for same.
- Treat and package the victim for removal.

G. Situation Status

______ Conduct situation briefings.

______ Examine problems.

______ Develop strategies.

______ Re-establish priorities as needed.

______ Request additional resources as needed.

______ Medical control.

______ Utilize and control volunteers.

H. Incident Wrap-up

___ Establish that areas have been searched and all victims have been removed from the structure.

___ Develop plan to retrieve victims' personal items.

___ Stabilize structure and provide security.

___ Rest and rehabilitate all personnel.

___ Debrief all personnel.

___ Demobilize all equipment and apparatus.

___ Maintain accurate records regarding actions taken, times and personnel, equipment, apparatus, and agencies involved with the incident.

___ Conduct critical incident stress debriefing as needed.

___ Critique the incident.

___ Follow up with both victim (s) and rescuer status checks.

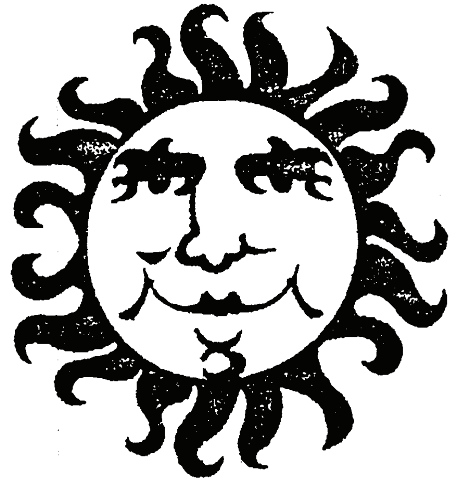
___ Document response activities.

APPENDIX F

SAMPLE INCIDENT ACTION PLAN

F-2

7/2/97
DAY SHIFT
0600-1800



CANYON II FIRE

INCIDENT ACTION PLAN

ANF-2908

INCIDENT OBJECTIVES	1. INCIDENT NAME CANYON	2. DATE PREPARED 7/2/97	3. TIME PREPARED 0215

4. OPERATIONAL PERIOD (DATE/TIME)
7/2/97 0600-1800

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

1. PROVIDE FOR FIREFIGHTER & PUBLIC SAFETY
2. KEEP FIRE EAST OF SILVER FISH RIDGE
3. KEEP FIRE WEST OF SILVER RIDGE MT.
4. KEEP FIRE SOUTH OF RINCON & RED BOX RD.
5. KEEP FIRE NORTH OF HIGHWAY 39
6. PROTECT WATERSHED VALUES--ROBERTS CANYON
7. PROTECT & BEWARE OF HIGH VOLTAGE POWER LINES & WOOD POLES IN CANYONS.

6. WEATHER FORECAST FOR OPERATIONAL PERIOD
SPECIFIC FORECAST NOT AVAILABLE UNTIL 0530
GENERAL PREDICTION SLIGHTLY WARMER & LOWER HUMIDITY

7. GENERAL SAFETY MESSAGE
BE CAUTIOUS OF STEEP TERRAIN, FALLING ROCKS & DEBRIS & TRAFFIC ON NARROW ROADS & HIGHWAY 39

8. ATTACHMENTS (√ IF ATTACHED)

X ORGANIZATION LIST (ICS 203)	X MEDICAL PLAN (ICS 206)	❑ ______
X ASSIGNMENT LIST (ICS 204)	X INCIDENT MAP	❑ ______
X COMMUNICATIONS PLAN (ICS 205)	X TRAFFIC PLAN	❑ ______

202 ICS 3-80	9. PREPARED BY (PLANNING SECTION CHIEF) Robert J. [signature]	10. APPROVED BY (INCIDENT COMMANDER) [signature]

ORGANIZATION ASSIGNMENT LIST

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
CANYON II	7/2/97	0230

OPERATIONAL PERIOD (DATE/TIME): 7/2/97 0600-1800 DAY SHIFT

POSITION	NAME
4. INCIDENT COMMANDER AND STAFF	
INCIDENT COMMANDER	DAVE BARON
DEPUTY	PRAYTOR
SAFETY OFFICER	HERRAND
INFORMATION OFFICER	ROWMAN
LIAISON OFFICER	

5. AGENCY REPRESENTATIVES

AGENCY	NAME
CDF	BILL BARRON
USFS	PEGGY HERNANDEZ
LA SHER	RASH
SCE	TROY WHITMAN
LAC	STONE

6. PLANNING SECTION	
CHIEF	BOB NEW
DEPUTY	
RESOURCES UNIT	WHITE/CAMARGO
SITUATION UNIT	NOYES
DOCUMENTATION UNIT	
DEMOBILIZATION UNIT	
TECHNICAL SPECIALISTS	
RESOURCE ADV	KAREN FORTES
BAER TEAM	BILL BROWN

7. LOGISTICS SECTION	
CHIEF	JEFF JOHNSON
DEPUTY	
a. SUPPORT BRANCH	
DIRECTOR	JOHN CHAPPELL
SUPPLY UNIT	GERRY REPONON
FACILITIES UNIT	MARGO ERICSON
GROUND SUPPORT UNIT	
b. SERVICE BRANCH	
DIRECTOR	
COMMUNICATIONS UNIT	ERIC MARTINEZ
MEDICAL UNIT	
FOOD UNIT	

8. OPERATIONS SECTION		
CHIEF		BILL SCRIBNER
DEPUTY		
a. BRANCH I - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP	A	HOLTMAN
DIVISION/GROUP	B	COWIE
DIVISION/GROUP	C	OLDENBERG
DIVISION/GROUP	X	YARGER
DIVISION/GROUP	STR	BROWN
b. BRANCH II - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
c. BRANCH III - DIVISION/GROUPS		
BRANCH DIRECTOR		
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
d. AIR OPERATIONS BRANCH		
AIR OPERATIONS BR. DIR.		MARK SAYLES
AIR TACTICAL GROUP SUP.		
AIR SUPPORT GROUP SUP.		
HELICOPTER COORDINATOR		
AIR TANKER/FIXED-WING CRD.		

FINANCE SECTION	
CHIEF	PATTY LOCKE
DEPUTY	
TIME UNIT	
PROCUREMENT UNIT	
COMPENSATION/CLAIMS UNIT	
COST UNIT	

203 ICS 1-82	9. PREPARED BY (RESOURCES UNIT)
	JORGE CAMARGO

1. BRANCH	2. DIVISION/GROUP	**DIVISION ASSIGNMENT LIST**
	A	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
CANYON II	DATE 7/2/97 TIME 0600 - 1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF BILL SCRIBNER — DIVISION/GROUP SUPERVISOR HOLTMAN

BRANCH DIRECTOR ________ — AIR TACTICAL GROUP SUPERVISOR MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
St 9384G	HORNE			D.P. #3 0600	
ENG. ST —					
ENG. ST —					
ENG. ST —					
TYPE I WT					
LPF SUNDOWNERS	YOUNG				

7. CONTROL OPERATIONS

- HOLD EXISTING FIRELINE NORTH OF SAN GABRIEL CYN.
- RESOURCES TO REMAIN MOBILE.
- PROVIDE PROTECTION OF WOODEN POWER LINE POLES

8. SPECIAL INSTRUCTIONS

- PROVIDE ESCAPE & SAFETY FOR ALL RESOURCES.
- CONSIDER GARCIA MOTORWAY FOR OBSERVATION & LOOKOUT.
- COORDINATE ALL BURNOUT OPERATIONS
- DO NOT PARK ON BLIND CURVES.
- COORDINATE W/ S.C. EDISON REP FOR POWER POLE LINE PROTECTION AND SHUT DOWN.
- AVOID EXPOSURE TO ROLLING ROCKS FALLING TO HWY

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	RX RECEIVE LOCAL	168.460	NIFC	4	SUPPORT	RX ~~LOCAL~~	411.750	NIFC	9
	TX ~~REPEAT~~	166.1625	NIFC	4		TX ~~REPEAT~~	417.300	NIFC	9
DIV/GROUP TACTICAL		168.050	NIFC	1	GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo [signature]	Robert J. [signature]	7-2-97	0420

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP B	DIVISION ASSIGNMENT LIST

3. INCIDENT NAME	4. OPERATIONAL PERIOD
CANYON II	DATE 7/2/97 TIME 0600-1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF BILL SCRIBNER	DIVISION/GROUP SUPERVISOR COWIE
BRANCH DIRECTOR	AIR TACTICAL GROUP SUPERVISOR MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
Laguna H.S.				DP# 1 @ 0600	
Arrowhead					
Stanislas HS					
Siena HS					
LAC 1181	Aceves				
RRU ST 9374G	Engle				
LPF Vandenberg					

7. CONTROL OPERATIONS

- CONSTRUCT LINE WEST, ABOVE FISH CYN.
- CREWS PICK-UP SLOP OVER AND PUT IN LINE. (D.P. #1 & SGV GUN CLUB)
- CREWS WALK IN FROM DROP POINT #1
- UTILIZE DOZERS TO BUILD LINE AS POSSIBLE.
- LOOK FOR POSSIBLE SITE TO BUILD HELI-SPOT FURTHER UP LINE.

8. SPECIAL INSTRUCTIONS

- ESTABLISH SAFETY AREAS & HELISPOTS AS LINE PROGRESSES
- FLAG SPOTS FOR FOLLOW-ON CREWS
- PROVIDE LOOKOUTS
- LONG HIKE IN PROBABLE; PACE YOUR FIREFIGHTERS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	RX ~~LOCAL~~	168.406	NIFC	4	SUPPORT	RX ~~LOCAL~~	411.750	NIFC	9
	TX ~~REPEAT~~	166.1625	NIFC	4		TX ~~REPEAT~~	417.300	NIFC	9
DIV/GROUP TACTICAL		168.200	NIFC	2	GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo	Robert T. [illegible]	7/2/97	0420

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP C	DIVISION ASSIGNMENT LIST

3. INCIDENT NAME	4. OPERATIONAL PERIOD
CANYON II	DATE 7/2/97 TIME 0600 - 1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF BILL SCRIBNER — DIVISION/GROUP SUPERVISOR OLDENBERG

BRANCH DIRECTOR ______ — AIR TACTICAL GROUP SUPERVISOR MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
LAC ST 1183	Miller			STAGE IN CAMP	
LAC ST 1184	Kidman				
BOO ST 9384G	Home				
DOZER ST —					

7. CONTROL OPERATIONS

- STAGE IN CAMP
- AWAIT INSTRUCTIONS FROM OPS.
* NO DOZER WORK ON MEADOW AT C-X BREAK

8. SPECIAL INSTRUCTIONS

- PLAN LINE LOCATION CAREFULLY & DO NOT PROCEED WITHOUT REASONABLE CHANCE OF SUCCESS (FRONTAL ASSAULT)
- PROVIDE LOOKOUTS FOR DOWNHILL LINE CONST.
- FOLLOW 9 POINTS
- POSSIBLE RADIO COMM. PROBLEMS DUE TO TERRAIN; USE HUMAN REPEATERS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	RX ~~LOCAL~~	168.400	NIFC	4	SUPPORT	RX ~~LOCAL~~	411.750	NIFC	9
	TX ~~REPEAT~~	166.1625	NIFC	4		TX ~~REPEAT~~	417.300	NIFC	9
DIV/GROUP TACTICAL		168.600	NIFC	3	GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo [signature]	Robert J. [signature]	7/2/97	0420

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP X	DIVISION ASSIGNMENT LIST

3. INCIDENT NAME	4. OPERATIONAL PERIOD DATE 7/2/97 TIME 0600-1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF BILL SCRIBNER | DIVISION/GROUP SUPERVISOR KEN VARGER
BRANCH DIRECTOR | AIR TACTICAL GROUP SUPERVISOR MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
LAC ST 1182	BARRERA			DP#2 @ 0600	
DOZER ST ——					
ENG ST ——					
ENG ST ——					
(4) TYPE 3 WT'S					
TEXAS Cym. HS					
HORSESHOE HS					

7. CONTROL OPERATIONS

- BURN OUT AND HOLD SILVERFISH TRUCK TRAIL AND OLD DOZER LINE TO SAN GABRIEL CYN.
- COMPLETE LINE/BURN OUT ASSIGNMENT.
- STAGE AT DROP POINT # 2

8. SPECIAL INSTRUCTIONS

- FOLLOW 9 POINTS FOR DOWNHILL LINE CONST.
- CONSIDER GARCIA MOTORWAY FOR OBSERVATION & LOOKOUT.
- COORDINATE TRAFFIC TO AVOID TRAFFIC JAMS ON SILVERFISH TRUCK TR.
- POSSIBLE RADIO COMM. PROBLEMS DUE TO TERRAIN - USE HUMAN REPEATERS
- COORDINATE W/S.C. EDISON FOR POWER LINE/POLE EXPOSURES, SAFETY, AND SHUT DOWN

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	~~LOCAL~~ RX	168.460	NIFC	4	SUPPORT	~~LOCAL~~ RX	411.250	NIFC	9
	~~REPEAT~~ TX	166.1625	NIFC	4		~~REPEAT~~ TX	417.300	NIFC	9
DIV/GROUP TACTICAL		168.200	NIFC	2	GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
JORGE CAMARGO [signature]	Robert T. [signature]	7/2/97	0420

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
	STABLE STRUCTURE PROTECTION	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
CANYON II	DATE 7/2/97 TIME

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF BILL SCRIBNER — DIVISION/GROUP SUPERVISOR BROWN

BRANCH DIRECTOR — AIR TACTICAL GROUP SUPERVISOR MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
LAC 1103	POWERS			DP3 Paint Ball Ranch	
LAC 1108	CLARK			DP3 Paint Ball Ranch	
WT					
WT					

7. CONTROL OPERATIONS

- ACCESS ON EL ENCANTO RD (2 ACCESS POINTS)
- DROP POINT #3 AT Paint Ball Ranch

8. SPECIAL INSTRUCTIONS

- Expect Strong down cyn. winds to surface in Paint Ball Ranch and Rainbow Stables
- Recon for propane and other haz mats.
- Observe bridge weight limits.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	~~LOCAL~~ RX	168.400	NIFC	4	SUPPORT	~~LOCAL~~ RX	411.750	NIFC	9
	~~REPEAT~~ TX	166.1625	NIFC	4		~~REPEAT~~ TX	417.300	NIFC	9
DIV/GROUP TACTICAL		168.600	NIFC	3	GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo	Robert T. [illegible]	7/2/97	0420

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
	SAN GABRIEL HELIBASE	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
CANYON II	DATE 7/2/97 TIME 0600-1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF	BILL SCRIBNER	DIVISION/GROUP SUPERVISOR	
BRANCH DIRECTOR		AIR TACTICAL GROUP SUPERVISOR	MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
Helibase Mgr.					
LAC E-61					

7. CONTROL OPERATIONS

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	RX ~~LOCAL~~	168.460	NIFC	4	SUPPORT	RX ~~LOCAL~~	411.750	NIFC	9
	TX ~~REPEAT~~	166.1625	NIFC	4		TX ~~REPEAT~~	411.300	NIFC	9
DIV/GROUP TACTICAL					GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo	Robert T. [illegible]	7/2/97	0420

ICS 204 1-82

DIVISION ASSIGNMENT LIST

1. BRANCH

2. DIVISION/GROUP: HEAVY HELIBASE

3. INCIDENT NAME

4. OPERATIONAL PERIOD
DATE 7/2/97
TIME 0600-1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: BILL SCRIBNER
BRANCH DIRECTOR:
DIVISION/GROUP SUPERVISOR:
AIR TACTICAL GROUP SUPERVISOR: MARK SAYLES

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
Security Mgr.					
Security Mgr.					
Helibase Mgr.					
LAC E-121					

7. CONTROL OPERATIONS

– HELIBASE AT TODD AVE. & SIERRA MADRE BLVD.

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	RX ~~LOCAL~~	168.400	NIFC	4	SUPPORT	RX ~~LOCAL~~	411.750	NIFC	9
	~~TX~~ ~~REPEAT~~	166.1625	NIFC	4		~~TX~~ ~~REPEAT~~	417.300	NIFC	9
DIV/GROUP TACTICAL					GROUND-TO-AIR		170.00		

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
Jorge Camargo [signature]	Robert T. [signature]	7/2/97	0420

ICS 204 1-82

INCIDENT RADIO COMMUNICATIONS PLAN	1. INCIDENT NAME	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME
	CANYON II	7/2 0400	Day 7/2 0700

4. BASIC RADIO CHANNEL UTILIZATION

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
NIFC	1	TAC	168.050	DIV A	
NIFC	2	TAC	168.200	DIV B + X	
NIFC	3	TAC	168.600	DIV C + STABLE STR. PROTECTION GRP.	
NIFC	4	COMMAND	Rx 168.400 Tx 166.1625	ALL DIV	
NIFC	5	COMMAND	Rx 169.750 Tx 167.100	NOT YET USED!	
NIFC	6	AIR/GND	170.000	ALL DIV	

205 ICS 9-86	5. PREPARED BY (COMMUNICATIONS UNIT)
	ERIC MARTINEZ

INCIDENT RADIO COMMUNICATIONS PLAN

1. INCIDENT NAME	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME
CANYON II	0400 7/2	DAY 7/2 0700

4. BASIC RADIO CHANNEL UTILIZATION

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
ANF	8	ANF FOREST NET	171.575	ALL DIV	
NIFC	9	LOG	Rx 411.750 Tx 417.300	LOG	
NIFC		VHF-AIR	123.975	AIR ONLY	
NIFC		AIR TAC	169.200	AIR ONLY	

205 ICS 9-86	5. PREPARED BY (COMMUNICATIONS UNIT)
	ERIC MARTINEZ

MEDICAL PLAN	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD
	CANYON II	7/2	0200	0600-1800

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS YES	PARAMEDICS NO
BASE CAMP/ICP	SANTA FE DAM RECREATION AREA		

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS YES	PARAMEDICS NO
MED--TRANS	5420 W. JEFFERSON LA	(618) 967-5191	✓	

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS YES	PARAMEDICS NO
	ICP		

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME AIR	TRAVEL TIME GRND	PHONE	HELIPAD YES	HELIPAD NO	BURN CENTER YES	BURN CENTER NO
FOOTHILL PRESBYTERIAN	250 S GRAND, GLENDORA	3	15	618-663-8411	✓			
HUNTINGTON MEM (TRAUMA)	100 CONGRESS, PASADENA	6	25	618-440-5000	✓			
LA CO USC MED CNTR	STATE	10	30	213-226-2345	✓		✓	
SHERMAN OAKS	4229 VAN NUYS	20	40	618-881-7111	✓		✓	
SANTA TERESITA	1200 ROYAL OAKS, DUARTE	6	15	618-359-3245				

8. MEDICAL EMERGENCY PROCEDURES

ALL INJURIES REQUIRING IMMEDIATE CARE SHOULD BE REPORTED, THROUGH THE CHAIN OF COMMAND, TO THE MEDICAL UNIT. THE MEDICAL UNIT LEADER WILL COORDINATE CARE AND TRANSPORTATION AS REQUIRED. MOST EMERGENCIES WILL BE TAKEN TO FOOTHILL PRESBYTERIAN HOSPITAL. MAJOR TRAUMA WILL GO TO HUNTINGTON MEMORIAL AND BURNS WILL GO TO LA CO USC MEDICAL CENTER UNLESS PATIENT STABILIZATION IS REQUIRED AT A CLOSER FACILITY. THE MEDICAL UNIT LEADER OR AN ON SCENE PARAMEDIC WILL DECIDE WHICH FACILITY THE PATIENT WILL BE TRANSPORTED TO.

206 ICS 8-78	9. PREPARED BY (MEDICAL UNIT LEADER)	10. REVIEWED BY (SAFETY OFFICER)

NPES 1331

Safety Message

Incident:	Date:	Time:
CANYON II	2 July 1997	DAY SHIFT

Major Hazards and Risks: FIRE ENTRAPMENT - FIREFIGHTERS & VEHICLES. ROLLING ROCKS ON STEEP TERRAIN AND ROCK FALL TO HWY. LOSS OF FOOTING/FALLS. INSECT STINGS. TRAFFIC COLLISION.

Narrative: PROVIDE FOR LOOKOUTS, COMMUNICATION, ESCAPE AND SAFETY FOR ALL FIREFIGHTERS AND VEHICLES. CONTROL AND COORDINATE TRAFFIC ON TRUCK TRAILS TO AVOID TRAFFIC JAMS AND DIFFICULT PASSING. AVOID EXPOSURE TO ROLLING ROCKS AND ROCK FALL TO HWY. DO NOT PARK UNDER CUTBANKS ON HWY 39. PLAN FOOT TRAVEL ROUTE AND USE GOOD FOOTING TECHNIQUES -- PACE YOUR FIREFIGHTERS. FLAG AND AVOID INSECT NEST. DRIVE DEFENSIVELY - PARK OUT OF TRAFFIC LANES - USE LIGHTS.

Safety Officer

Fight fire aggressively, but provide for safety first.

Indicate all action based on current and expected fire behavior.

Recognize current weather conditions and obtain forecasts.

Ensure instructions are given and understood.

Obtain current information on fire status.

Remain in communication with crew members, your supervisor, and adjoining forces.

Determine safety zones and escape routes.

Establish lookouts in potentially hazardous situations.

Retain control at all times.

Stay alert, keep calm, think clearly, act decisively.

Bites & Stings

No matter where anyone works, they encounter an endless number of insects capable of biting or stinging humans. Bites and stings can range from minor irritants to severe toxic reactions.

Most people are stung by a class of insect that includes wasps, bees, hornets, and ants. Only the common honeybee leaves a stinger. Wasps, yellow jackets, hornets, and ants sting repeatedly until removed.

In most cases, local treatment is all that is required. Signs and symptoms of a sting include:

* Localized pain
* Redness
* Swelling

In some occasions allergic reaction may occur. Signs and symptoms of allergic reaction include:

* Localized pain, redness, and swelling.
* Reactions such as itching, difficulty breathing, flushed skin, rash, & rapid pulse.
* Swelling of the face, tongue and throat.

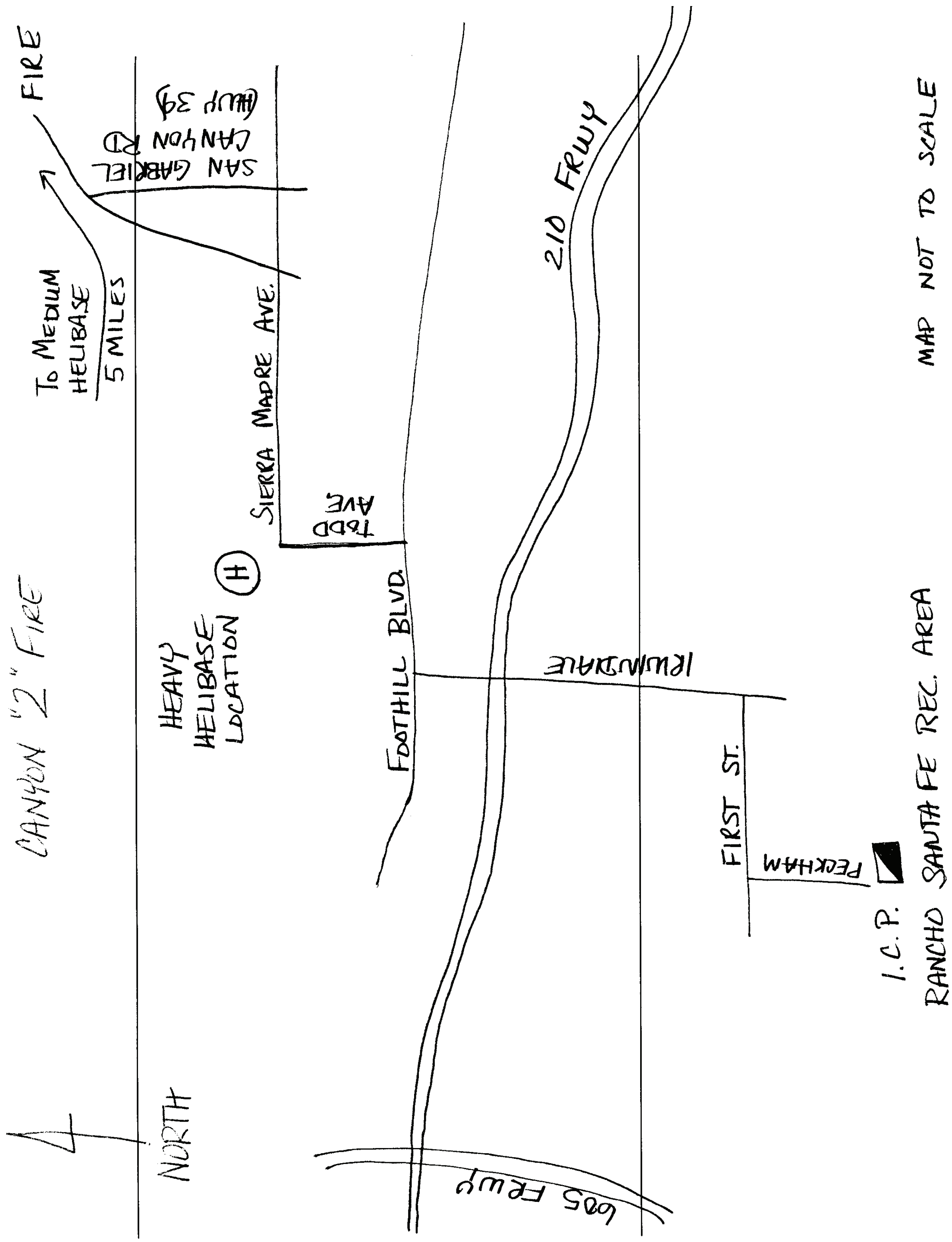
Treatment:

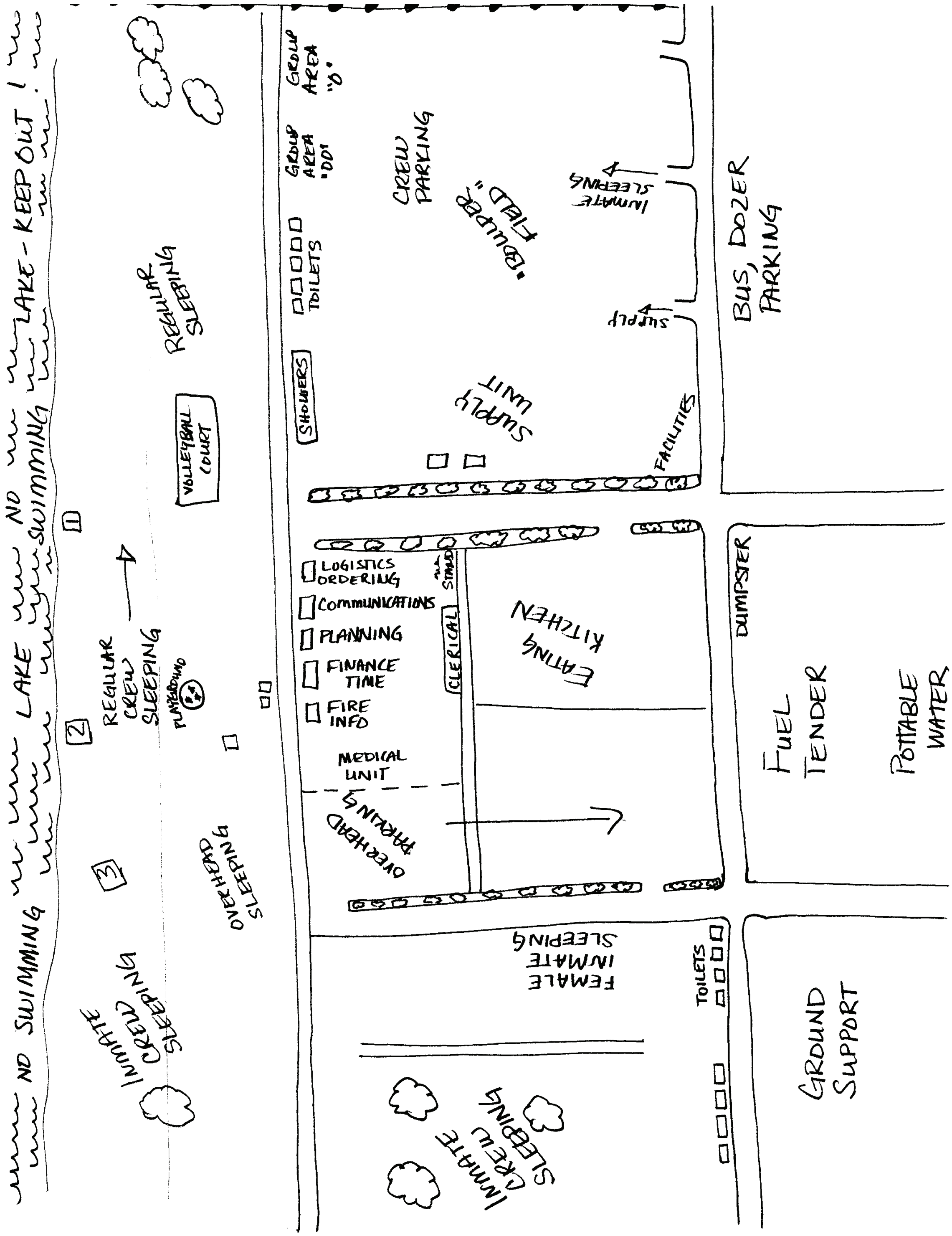
* Remove the stinger by scraping. Do not squeeze the venom sac.
* Clean the area, and apply cold packs.

CONTACT THE MEDICAL UNIT LEADER IMMEDIATELY IN CASES OF ALLERGIC REACTION.

TRANSPORTATION
ROUTE
TO/FROM INCIDENT

ICP PECKHAM RD. TO FIRST ST.
TURN RIGHT (EAST). IRWINDIALE
LEFT (NORTH) FOOTHILL TURN RIGHT
(EAST) TURN LEFT ON TODD.
SIERRA MADRE TURN RIGHT.
SAN GABRIEL CYN RD. LEFT.
(ALSO HWY 39)

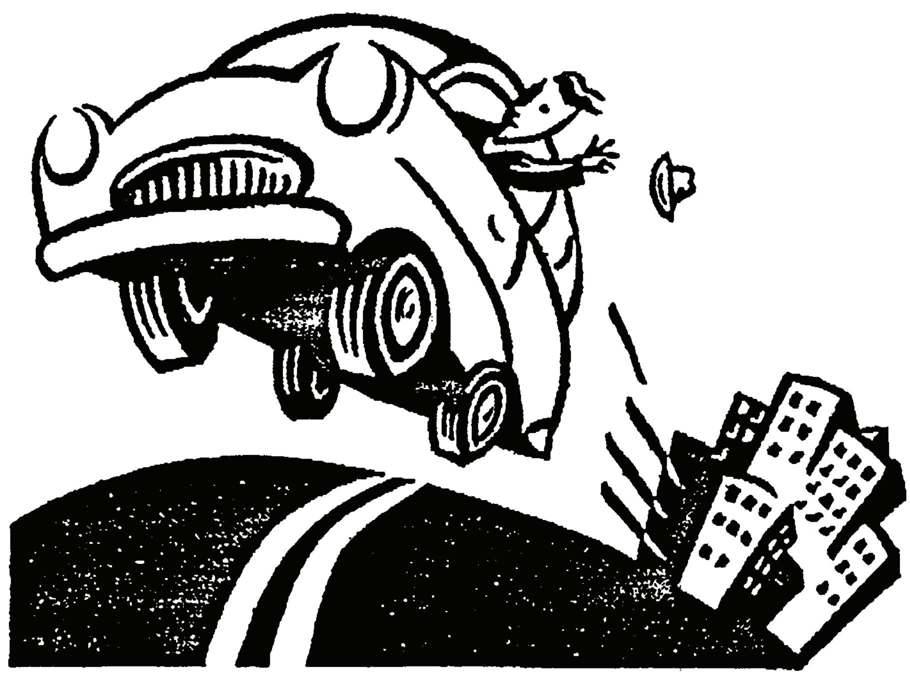

FIRE
SAN GABRIEL CANYON RD (HWY 39)
To MEDIUM HELIBASE 5 MILES
SIERRA MADRE AVE.
TODD AVE
210 FRWY
MAP NOT TO SCALE
CANYON "2" FIRE
HEAVY HELIBASE LOCATION
H
FOOTHILL BLVD.
IRWINDALE
FIRST ST.
PECKHAM
I.C.P.
RANCHO SANTA FE REC. AREA
NORTH
605 FRWY


NO SWIMMING
LAKE
NO SWIMMING
LAKE - KEEP OUT !
1
2
3
REGULAR SLEEPING
VOLLEYBALL COURT
REGULAR CREW SLEEPING
PLAYGROUND
OVERHEAD SLEEPING
INMATE CREW SLEEPING
GROUP AREA "DD"
GROUP AREA "B"
TOILETS
SHOWERS
CREW PARKING
"BOULDER" FIELD
INMATE SLEEPING
SUPPLY
SUPPLY UNIT
FACILITIES
BUS, DOZER PARKING
LOGISTICS ORDERING
COMMUNICATIONS
PLANNING
FINANCE TIME
FIRE INFO
CLERICAL
EATING KITCHEN
MEDICAL UNIT
OVERHEAD PARKING
DUMPSTER
FUEL TENDER
POTTABLE WATER
FEMALE INMATE SLEEPING
TOILETS
GROUND SUPPORT
INMATE CREW SLEEPING

SPEED LIMIT IN THE PARK IS

15 MPH

THIS MEANS YOU !!!



AIR OPERATIONS SUMMARY

805-948-1340 FAX IAP to FOX Field

1. INCIDENT NAME: Canyon II

2. OPERATIONAL PERIOD (Date & Time): 7-2-97 0600-1800

3. DISTRIBUTION: HELIBASES 15; FIXED-WING BASES 2

4. PERSONNEL AND COMMUNICATIONS

	NAME	AIR/AIR FREQUENCY	AIR/GROUND FREQUENCY
AIR OPERATIONS BRANCH DIRECTOR	m. sayles	VHF 123.975	170.00
AIR TACTICAL GROUP SUPERVISOR	a.a. 01 a.a. 12	air tactics 169.200	
HELICOPTER COORDINATOR	on order w/ helicopter		
AIR TANKER/FIXED-WING COORDINATOR	Lead 59 55		
asgs	S. Johnson		
Helibase Manager	on order		

5. REMARKS (Spec. Instructions, Safety Notes, Hazards, Priorities)

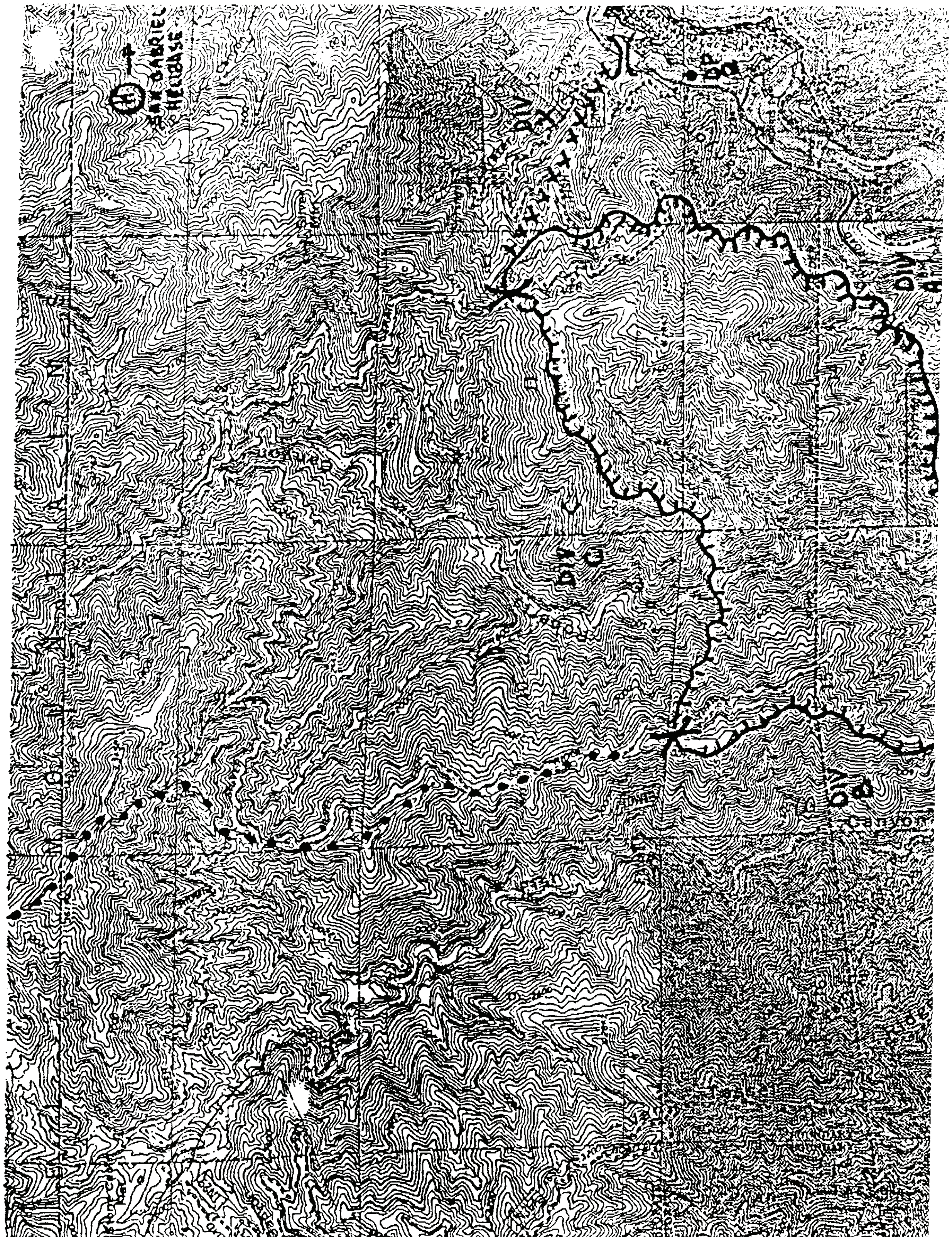
* air attack over the fire 0700 hr.
* H-534 rappell ship
  H-555
* asgs to look for potential helispots
* Powerlines Safety along Hwy 39 in Div. A
* Major power lines to the west of Div. B

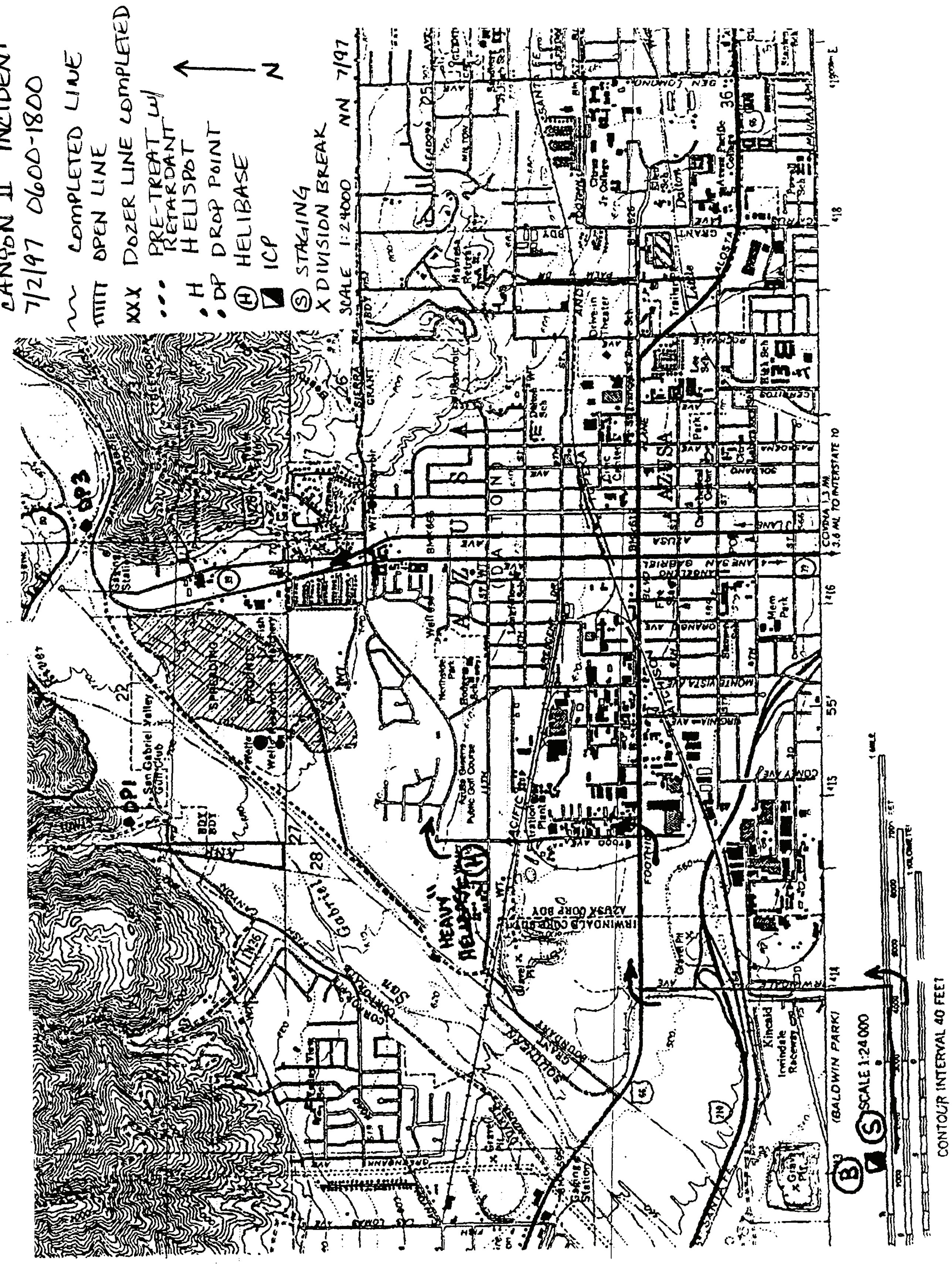
6. LOCATION/ FUNCTION	7. ASSIGNMENT	8. FIXED-WING NO.	FIXED-WING TYPE	9. HELICOPTERS NO.	HELICOPTERS TYPE	10. TIME AVAILABLE	TIME COMMENCE	11. AIRCRAFT ASSIGNED	12. OPERATING BASE
operations	air tankers to pretreat secondary line on west flank from Div. B/C break north on Fish	air tankers 15 71		H-531 H-534 H-555	II	Fixed wing start 0800 hr.			Type II + Type III Helicopters
Operations	Ridge * See IAP map Type I Helicopters to work Div. C	65 22 151		2LA CD	III	Helicopters start 0700 hr.			at San Gabriel Dam
Operations	Helicopter 544 0700 recon for operations	14 160		H-544 64KL 173AC	III I I				Type I Helicopters at Heavy Helibase
Operations	remaining Helicopters will be assigned as needed.	Lead 59 55		164AC 192CH 095B 094DM	I I I I				
	13. TOTALS								

220 ICS 1-82

14. AIR OPERATIONS SUPPORT EQUIPMENT

15. PREPARED BY (Include Date & Time): Mark S. Sayles 7-2-97 0300




CANYON II INCIDENT
7/2/97 0600-1800
COMPLETED LINE
OPEN LINE
XXX DOZER LINE COMPLETED
PRE-TREAT w/ RETARDANT
H HELISPOT
DP DROP POINT
H HELIBASE
ICP
S STAGING
X DIVISION BREAK
SCALE 1:24000
NN 7/97
N
DP1
DP3
HEAVY HELIBASE
AZUSA
SCALE 1:24 000
CONTOUR INTERVAL 40 FEET

"MOUNTAIN TERRORIST INCIDENT"

Frank W. Borden
Instructor

Incident Description

Terrorist Incident--Hazardous chemical release (nerve gas "Sarin") at Magic Mountain amusement park during peak attendance. A multi-agency response of Fire, Law Enforcement, and EMS, Park Security. Local, State, Federal levels of response.

Planning Meeting

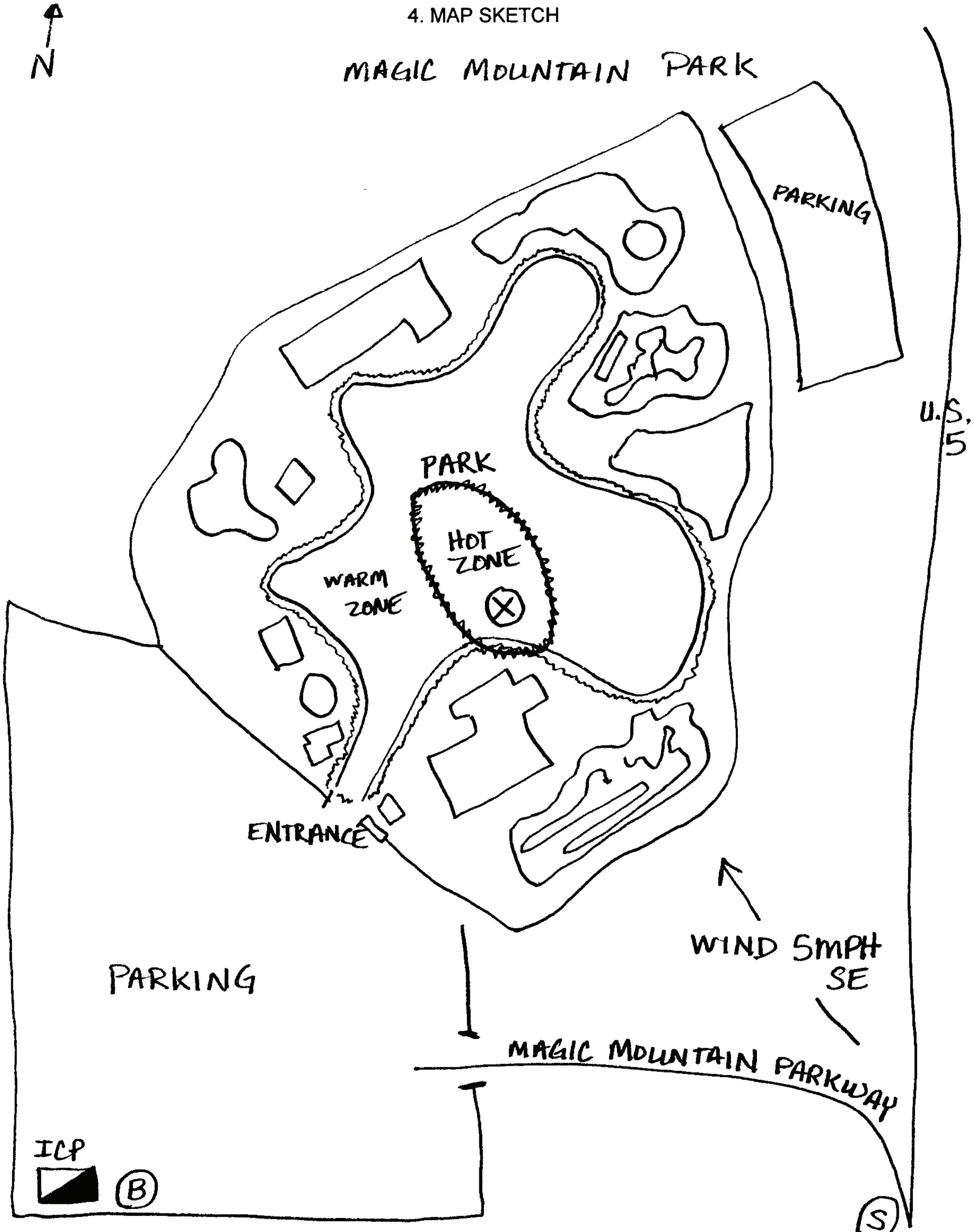
Initial planning meeting conducted for the Command and General Staff. Multi-agency organization and Unified Command. The meeting would be held as soon as possible using the intelligence at the time and available staff personnel. The operational period established would be 4 hours due to incident complexity and dynamics.

Command would be unified Fire and Law Enforcement and the Incident Action Plan would be approved accordingly. Prior to the planning meeting a Unified Commanders meeting would be conducted to discuss responsibilities, etc.

The SEMS ICS Planning meeting format would be used for the meeting (attached).

INCIDENT DEBRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
	MOUNTAIN	8-2-98	1735 HRS

4. MAP SKETCH



ICS 201 (12/93) **NFES 1325**	PAGE 1	5. PREPARED BY (NAME AND POSITION) R. WARFORD SITUATION UNIT LEADER

INCIDENT OBJECTIVES	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
	MOUNTAIN INCIDENT	8-2-98	1800 HRS.

4. OPERATIONAL PERIOD (DATE/TIME)
8-2-98 1800-2100 HRS.

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

1. SECURE PERIMETER, HOT ZONE, WARM ZONE, COLD ZONE.
2. MOVE CROWDS TO SAFETY AREAS AND SECURITY.
3. CONTROL, CONTAIN, STABALIZE SARIN GAS RELEASE.
4. RESCUE VICTIMS.
5. PROVIDE EMS, DECON TRIAGE, TREAT AND TRANSPORT.
6. PROVIDE FOR RESCUER SAFETY.
7. PROTECT AGAINST 2ND DEVICE OR HOSTILE ATTACK.
8. SECURE EVIDENCE AND CRIME AREA.
9. SECURE PARK FROM ENTRY AND EXIT.
10. CONTROL SURROUNDING VEHICULAR TRAFFIC.
11. INVESTIGATE AND SEARCH FOR TERRORISTS.

6. WEATHER FORECAST FOR OPERATIONAL PERIOD
SE WINDS 2 to 5 MPH. TEMP 80°F.
HUMIDITY 27%

7. GENERAL SAFETY MESSAGE
USE SITE SAFETY PLAN. PROVIDE PERSONAL PROTECTION AND DECON FOR RESCUERS. DECON VICTIMS BEFORE TREATMENT. BE AWARE OF POSSIBLE SECONDARY DEVICE, AND HOSTILE ATTACK.

8. ATTACHMENTS (√ IF ATTACHED)

- ☑ ORGANIZATION LIST (ICS 203)
- ☑ ASSIGNMENT LIST (ICS 204)
- ☑ COMMUNICATIONS PLAN (ICS 205)
- ☑ MEDICAL PLAN (ICS 206)
- ☑ INCIDENT MAP
- ☑ TRAFFIC PLAN
- ☑ RESPONSE PROTOCOL
- ☐
- ☑ NERVE GAS INFO.

202 ICS 3-80	9. PREPARED BY (PLANNING SECTION CHIEF)	10. APPROVED BY (INCIDENT COMMANDER)
	P. MILLER	F. BORDEN

ORGANIZATION ASSIGNMENT LIST

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
MOUNTAIN	8/2/98	1800 hrs

OPERATIONAL PERIOD (DATE/TIME): 8/2/98 1800 - 2200 HRS

4. INCIDENT COMMANDER AND STAFF

POSITION	NAME
INCIDENT COMMANDER UNIFIED	F. BORDEN
~~DEPUTY~~ /INCIDENT COMM	B. LEWIS
SAFETY OFFICER	J. DOLAN
INFORMATION OFFICER	S. RODA
LIAISON OFFICER	R. GANDY

5. AGENCY REPRESENTATIVES

AGENCY	NAME
DOD	D. DEVITO
FBI	T. FERRARA
FEMA	G. BAUGHMAN

6. PLANNING SECTION

POSITION	NAME
CHIEF	P. MILLER
DEPUTY	
RESOURCES UNIT	J. FEATHERSTONE
SITUATION UNIT	R. WARFORD
DOCUMENTATION UNIT	R. VASQUEZ
DEMOBILIZATION UNIT	
TECHNICAL SPECIALISTS	F. OJEDA TECH. RES
	W. TROOP WMD

7. LOGISTICS SECTION

POSITION	NAME
CHIEF	T. CORRY
DEPUTY	
a. SUPPORT BRANCH	
DIRECTOR	
SUPPLY UNIT	M. O'CONNOR
FACILITIES UNIT	K. ZUMWALT
GROUND SUPPORT UNIT	
b. SERVICE BRANCH	
DIRECTOR	
COMMUNICATIONS UNIT	D. MANNO
MEDICAL UNIT	K. NIDA
FOOD UNIT	

8. OPERATIONS SECTION

POSITION	DIVISION/GROUP	NAME
CHIEF		R. DEFEO
DEPUTY		R. ODENTHAL
a. FIRE — BRANCH I - DIVISION/GROUPS		
BRANCH DIRECTOR		J. RYWAND
DEPUTY		
DIVISION/GROUP	S&R	G. SEIDEL
DIVISION/GROUP	HM	R. NEAHY
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
b. MEDICAL — BRANCH II - DIVISION/GROUPS		
BRANCH DIRECTOR		D. RASUMOFF
DEPUTY		
DIVISION/GROUP	MED A	D. LEE
DIVISION/GROUP	MED B	J. DENNY
DIVISION/GROUP	TJP	J. MARTIN
DIVISION/GROUP		
DIVISION/GROUP		
c. LAW — BRANCH III - DIVISION/GROUPS		
BRANCH DIRECTOR		S. LACHASSE
DEPUTY		
DIVISION/GROUP	SEC	R. LEG
DIVISION/GROUP	EVAC	G. MORRISON
DIVISION/GROUP	TRAF	M. GALVAN
DIVISION/GROUP	INV.	T. HANEY
DIVISION/GROUP		
d. AIR OPERATIONS BRANCH		
AIR OPERATIONS BR. DIR.		
AIR TACTICAL GROUP SUP.		
AIR SUPPORT GROUP SUP.		
HELICOPTER COORDINATOR		R. REYNOLDS
AIR TANKER/FIXED-WING CRD.		

FINANCE SECTION

POSITION	NAME
CHIEF	L. McCOY
DEPUTY	
TIME UNIT	
PROCUREMENT UNIT	
COMPENSATION/CLAIMS UNIT	
COST UNIT	

203 ICS 1-82

9. PREPARED BY (RESOURCES UNIT): J. FEATHERSTONG

NFES 1327

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
FIRE	SEARCH & RESCUE	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
	8/2/98 DATE ____ TIME 1800 - 2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF	DEFEO	DIVISION/GROUP SUPERVISOR	G. SEIDEL
BRANCH DIRECTOR	J. RYLAND	AIR TACTICAL GROUP SUPERVISOR	

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
S & R TEAM 1					
S & R TEAM 2					
RIT 1					

7. CONTROL OPERATIONS

- SEARCH CONTAMINATED AREA & REMOVE VICTIMS TO DECON AREA
- RIT (RAPID INTERVENTION TEAM) STAND BY FOR INTERVENTION FIRE/SWAT

8. SPECIAL INSTRUCTIONS

- USE PROTECTIVE CLOTHING & SCBA
- COORDINATE W/ HAZ MAT & SECURITY
- ALL ENTRY PERSONNEL CARRY SELF AUTOINJECTIONS OF ATROPINE

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. STONE	P. MILLER	8/2/98	1800

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	**DIVISION ASSIGNMENT LIST**
FIRE	HAZ MAT	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
MOUNTAIN	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF	DEFEO	DIVISION/GROUP SUPERVISOR	R. NEAMY
BRANCH DIRECTOR	J. RYLAND	AIR TACTICAL GROUP SUPERVISOR	

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
HAZ MAT CO 1					
HAZ MAT CO 5					
ENTRY TEAM					
SITE CONTROL					
SAFE REFUGE					
DECON 1					
DECON 2					
TECH. SPEC.					
TECH. SPEC.					
SAFETY OFFICERS					

7. CONTROL OPERATIONS

-ESTABLISH OPERATING ZONES.
-I.D. PRODUCT AND SPREAD -- MONITOR AREA.
-STABILIZE and CONTROL PRODUCT.
-DECON HAZ MAT TEAM AND CONTAMINATED RESCUERS/VICTIMS.

8. SPECIAL INSTRUCTIONS

-COORDINATE WITH SEARCH-RESCUE, MEDICAL BRANCH, SECURITY.
-MAINTAIN ALL SAFETY PROCEDURES.
-DECON VICTIMS PRIOR TO MEDICAL CARE.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. STONE	P. MILLER	8/2/98	1800

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
MEDICAL	MED GROUP 1	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
MOUNTAIN	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF	DEFEO	DIVISION/GROUP SUPERVISOR	F. PRATT
BRANCH DIRECTOR	D. KASUMOFF	AIR TACTICAL GROUP SUPERVISOR	

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
TRIAGE UNIT					
TREATMENT					
TRANSPORTATION					
MED. SUPPLY					

7. CONTROL OPERATIONS

- PROVIDE EMS TO EXPOSED AFTER DECON BY HAZ MAT.
- TRIAGE WILL MANAGE MORGUE.
- USE DESIGNATED TRIAGE & TREATMENT AREAS.

8. SPECIAL INSTRUCTIONS

- USE ATROPINE AS ANTIDOTE.
- COORDINATE WITH HAZ MAT AND LAW INVESTIGATION.
- WEAR PROTECTIVE CLOTHING.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. STONE	P. MILLER	8/2/98	1800

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
Law	Security	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
Mountain	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF Defeo
DIVISION/GROUP SUPERVISOR R. Lee
BRANCH DIRECTOR S. Lachasse
AIR TACTICAL GROUP SUPERVISOR

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
Perimeter Team					
Park Team					
LACO SWAT					
LAPD SWAT					

7. CONTROL OPERATIONS

- maintain security on perimeter.
- maintain security and control of patrons in park.
- Provide for Rapid Intervention SWAT Operations if needed.

8. SPECIAL INSTRUCTIONS

- close off park and maintain watch for secondary attack.
- Use L.A. Co. SO. shooting protocol.
- Coordinate with evacuation group.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. Stone	P. Miller	8/28/98	1800

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
Law	Traffic	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
Mountain	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF	Defeo	DIVISION/GROUP SUPERVISOR	M. Galvan
BRANCH DIRECTOR	S. Lachasse	AIR TACTICAL GROUP SUPERVISOR	

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
Motor Task Force					
LASO task Force					
CHP Task Force					

7. CONTROL OPERATIONS

- Control + direct emergency response vehicles into park.
- Control + direct civilian traffic around + in park.
- Control + direct traffic outside of park.

8. SPECIAL INSTRUCTIONS

- Maintain response routes into park on Interstate 5 and magic Mountain Parkway.
- Divert civilian traffic from I-5.
- Coordinate with security and maintain traffic plan.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. Stone	P. Miller	8-2-98	1800 hrs.

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
LAW	EVACUATION	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
MOUNTAIN	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF R. DEFEO
BRANCH DIRECTOR S. LACHASSE
DIVISION/GROUP SUPERVISOR G. MORRISON
AIR TACTICAL GROUP SUPERVISOR

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
FIRE TASK FORCE 1					
POLICE TASK FORCE 1					
POLICE TASK FORCE 2					
PARK SECURITY TEAM					

7. CONTROL OPERATIONS

- MOVE PEOPLE TO DESIGNATED SAFE AREAS.
- FIRE TASK FORCE WORKS IN HOT AND WARM ZONES.
- POLICE AND PARK SECURITY WORK IN COLD ZONE.

8. SPECIAL INSTRUCTIONS

- IDENTIFY CONTAMINATED VICTIMS FOR MEDICAL, HAZ MAT, + SECURITY GROUPS.
- COORDINATE WITH MEDICAL + HAZ MAT GROUPS.
- DO NOT MIX CONTAMINATED VICTIMS WITH EVACUEES.
- DO NOT PERMIT EVACUEES TO LEAVE PARK.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. STONE	P. MILLER	8/2/98	1800 HRS.

ICS 204 1-82

1. BRANCH	2. DIVISION/GROUP	DIVISION ASSIGNMENT LIST
LAW	INVESTIGATION	

3. INCIDENT NAME	4. OPERATIONAL PERIOD
MOUNTAIN	DATE 8-2-98 TIME 1800-2200

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF DEFED
BRANCH DIRECTOR S. LACHASSE
DIVISION/GROUP SUPERVISOR T. HANEY
AIR TACTICAL GROUP SUPERVISOR

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT/TIME	PICK-UP PT/TIME
F.B.I. TEAM					
A.T.F. TEAM					
D.O.D. TEAM					
LASO TEAM					

7. CONTROL OPERATIONS

- F.B.I. LEAD IN INVESTIGATING INCIDENT.
- LOCATE AND I.D. SUSPECTS.
- COLLECT EVIDENCE.
- INTERROGATE WITNESSES.

8. SPECIAL INSTRUCTIONS

- COORDINATE WITH FIRE BRANCH & SECURITY GROUP.
- WORK IN SAFE AREAS UNLESS PROTECTED.
- ESTABLISH CLOSED AREAS FOR EVIDENCE COLLECTION.

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				SUPPORT	LOCAL			
	REPEAT					REPEAT			
DIV/GROUP TACTICAL					GROUND-TO-AIR				

10. PREPARED BY (RESOURCES UNIT)	11. APPROVED BY (PLANNING SECTION CHIEF)	DATE	TIME
J. STONE	P. MILLER	8/2/98	1800 HRS.

ICS 204 1-82

INCIDENT RADIO COMMUNICATIONS PLAN			1. INCIDENT NAME MOUNTAIN	2. DATE/TIME PREPARED 8-2-98 1800	3. OPERATIONAL PERIOD DATE/TIME 8-2-98 1800-2200
4. BASIC RADIO CHANNEL UTILIZATION					
SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
L.A. CO. FIRE	1	COMMAND		ICP COMM & GEN STAFF	
L.A. CO. SHER.	2	DISPATCH		ICP	USE TELEPHONE ALSO.
PARK SECURITY	3	INTEL		FIRE LAW MED	USE SECURE CHANNEL ONLY
FIRE S&R	10	TACTICAL		FIRE LAW	
FIRE HM	11	TACTICAL		FIRE LAW	
MEDICAL	12	TACTICAL		FIRE EMS	
LAW SECURITY	20	TACTICAL		LAW FIRE EMS	
LAW EVAC.	21	TACTICAL		FIRE LAW	
205 ICS 9-86	5. PREPARED BY (COMMUNICATIONS UNIT) D. MANNO				

MEDICAL PLAN	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD
	MOUNTAIN	8-2-98	1800	1800-2200

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS YES	PARAMEDICS NO
MED. STATION 1	MAIN GATE	✓	
MED. STATION 2	NORTH PARKING LOT	✓	

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS YES	PARAMEDICS NO
L.A. Co. + LA. CITY			✓	
GOODHEW			✓	
MERCY AIR			✓	

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS YES	PARAMEDICS NO
L.A. CITY	MEDICAL STAGING	✓	
GOODHEW	" "	✓	
L.A. CO. HEALTH	" "		✓
MERCY AIR	HELISPOT	✓	
L.A. CITY AIR	"	✓	

7. HOSPITALS

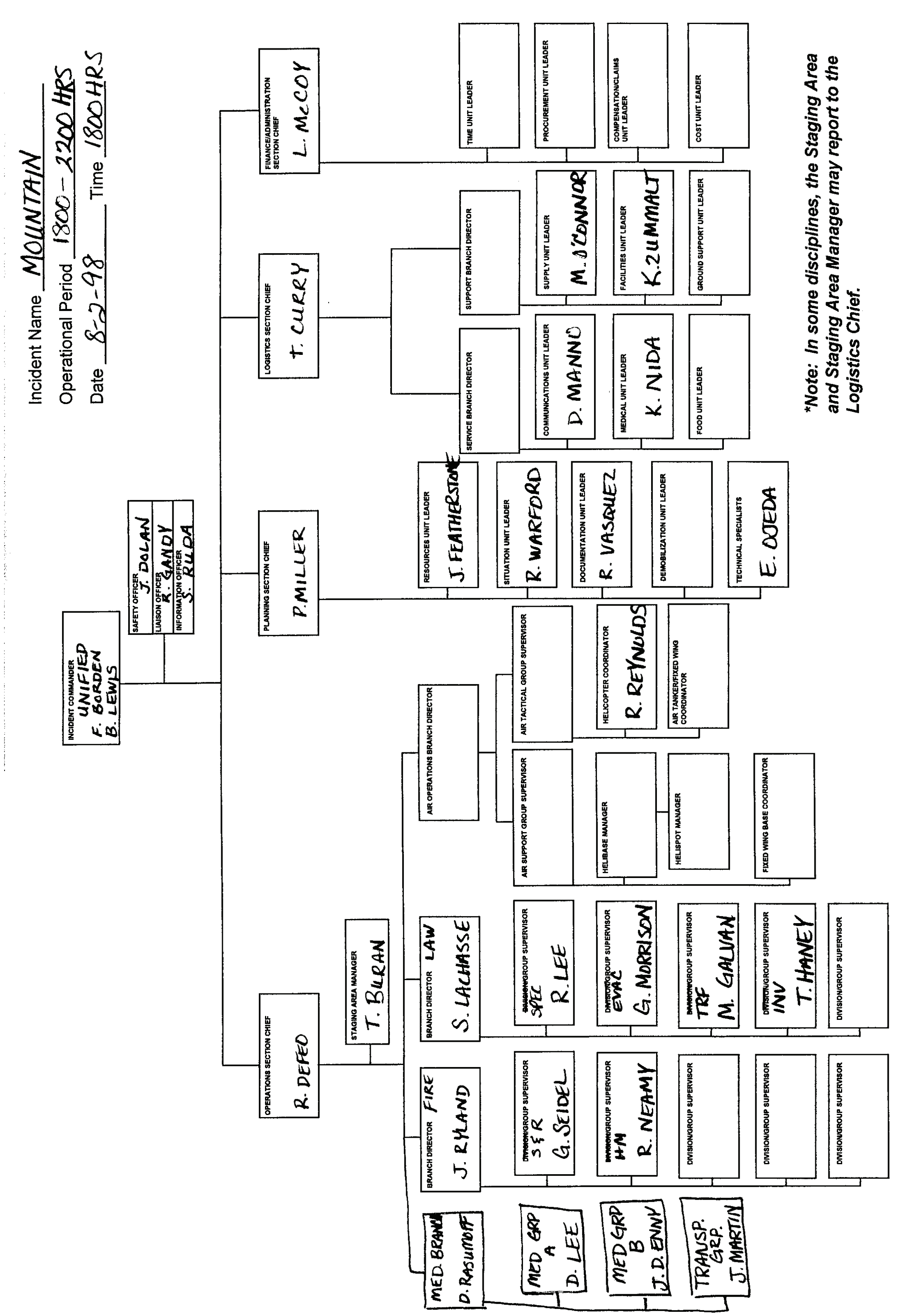
NAME	ADDRESS	TRAVEL TIME AIR	TRAVEL TIME GRND	PHONE	HELIPAD YES	HELIPAD NO	BURN CENTER YES	BURN CENTER NO
VALLEY PRES.		5	20		✓			
SANTA CLARITA		10	45			✓		
NORTHRIDGE		15	60		✓			
U.C.L.A.		20	90		✓			

8. MEDICAL EMERGENCY PROCEDURES

- INITIAL CARE @ MED STATIONS
- DECON FIRST
- NOTIFY MED. BRANCH DIR.
- USE AIR EVAC. TO HOSP. FOR SERIOUS
- USE ATROPINE FOR EXPOSURE

206 ICS 8-78	9. PREPARED BY (MEDICAL UNIT LEADER)	10. REVIEWED BY (SAFETY OFFICER)
	K. NIDA	J. DOLAN

NPES 1331


Incident Name MOUNTAIN
Operational Period 1800 – 2200 HRS
Date 8-2-98 Time 1800 HRS
INCIDENT COMMANDER UNIFIED F. BORDEN B. LEWIS
SAFETY OFFICER J. DOLAN
LIAISON OFFICER R. GANDY
INFORMATION OFFICER S. RUDA
OPERATIONS SECTION CHIEF R. DEFEO
PLANNING SECTION CHIEF P. MILLER
LOGISTICS SECTION CHIEF T. CURRY
FINANCE/ADMINISTRATION SECTION CHIEF L. McCOY
STAGING AREA MANAGER T. BURAN
BRANCH DIRECTOR FIRE J. RYLAND
BRANCH DIRECTOR LAW S. LACHASSE
AIR OPERATIONS BRANCH DIRECTOR
DIVISION/GROUP SUPERVISOR S&R G. SEIDEL
DIVISION/GROUP SUPERVISOR HM R. NEAMY
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR
DIVISION/GROUP SUPERVISOR SPEC R. LEE
DIVISION/GROUP SUPERVISOR EVAC G. MORRISON
DIVISION/GROUP SUPERVISOR TRF M. GALVAN
DIVISION/GROUP SUPERVISOR INV T. HANEY
DIVISION/GROUP SUPERVISOR
MED. BRANCH D. RASUMOFF
MED GRP A D. LEE
MED GRP B J.D. ENNY
TRANSP. GRP. J. MARTIN
AIR SUPPORT GROUP SUPERVISOR
HELIBASE MANAGER
HELISPOT MANAGER
FIXED WING BASE COORDINATOR
AIR TACTICAL GROUP SUPERVISOR
HELICOPTER COORDINATOR R. REYNOLDS
AIR TANKER/FIXED WING COORDINATOR
RESOURCES UNIT LEADER J. FEATHERSTONE
SITUATION UNIT LEADER R. WARFORD
DOCUMENTATION UNIT LEADER R. VASQUEZ
DEMOBILIZATION UNIT LEADER
TECHNICAL SPECIALISTS E. OJEDA
SERVICE BRANCH DIRECTOR
COMMUNICATIONS UNIT LEADER D. MANNO
MEDICAL UNIT LEADER K. NIDA
FOOD UNIT LEADER
SUPPORT BRANCH DIRECTOR
SUPPLY UNIT LEADER M. O'CONNOR
FACILITIES UNIT LEADER K. ZUMMALT
GROUND SUPPORT UNIT LEADER
TIME UNIT LEADER
PROCUREMENT UNIT LEADER
COMPENSATION/CLAIMS UNIT LEADER
COST UNIT LEADER
*Note: In some disciplines, the Staging Area and Staging Area Manager may report to the Logistics Chief.

PLANNING MEETING CHECKLIST

No.	ACTIVITY	PRIMARY RESPONSIBILITY
1	STATE INCIDENT OBJECTIVES--POLICY ISSUES	INCIDENT COMMANDER
2	GIVE SITUATION & RESOURCE BRIEFING	PLANNING SECT. CHIEF
3	STATE PRIMARY & ALTERNATE STRATEGIES	OPS SECTION CHIEF
4	DESIGNATE BRANCH, DIVISION, GROUP BOUNDARIES & FUNCTIONS AS APPROPRIATE	OPS SECTION CHIEF
5	DESCRIBE TACTICAL OPERATIONS & TACTICS	OPS & PLANS SECTION CHIEF
6	MAKE TACTICAL RESOURCE ASSIGNMENTS	OPS, PLANNING, & LOG. SECT. CHIEFS
7	FACILITIES AND REPORTING LOCATIONS	LOGISTICS SECT. CHIEF
8	RESOURCES, SUPPORT, AND OVERHEAD	PLANS & LOGISTICS SECTIONS CHIEFS
9	SUPPORT PLANS--COMM, MED., TRAFFIC	PLANS SECT. CHIEF/IC
10	FINALIZE, APPROVE, & IMPLEMENT THE PLAN	IC AND GEN. STAFF

APPENDIX G

STRUCTURE/HAZARDS MARKING SYSTEM

Structure/Hazards Marking System

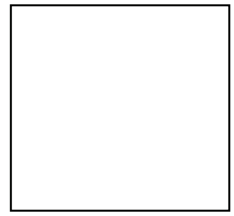
The identity and location of individual structures is crucial at incidents involving several structures or large areas of damage. The use of existing street names and addresses should always be considered first. If due to damage this is not possible, use the existing hundred block and place all even numbers on one side of the street and all odd numbers on the other side. Mark the new numbers on the front of the structure with orange spray paint. If due to damage the name of the street is not identifiable, start with the letter "A" using the phonetic alphabet "Alpha," "Bravo," "Charlie," etc.

Structure hazards identified during initial size up activities and throughout the incident should be noted. A structure/hazards mark should be made on the outside of all normal entry points. Orange spray paint seems to be the most easily seen color on most backgrounds and line marking (or downward spray cans) apply the best paintmarks. Lumber chalk or lumber crayons should be used to mark additional information inside the search mark itself (because they are easier to write with than spray paint).

A large (approximately 2 foot) square box should be outlined at any entrance accessible for entry into any compromised structure. Use orange paint for this marking. Specific markings will be clearly made adjacent to the box to indicate the condition of the structure and any hazards found at the time of the assessment. Normally, the square box marking would be made immediately adjacent to the entry point identified as safe. An arrow will be placed next to the box indicating the direction of the safe entrance (if the structure/hazards marking must be made somewhat remote from the safe entrance).

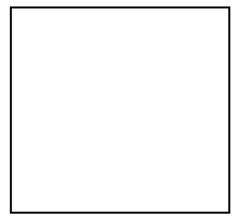
Structure/Hazards Markings

Make a large (two by two-foot) square box with orange spray paint on the outside of the main entrance to the structure. Put the date, time, hazardous material conditions, and team (or company) identifier **outside** the box--on the right hand side. This information should be made with lumber crayon or lumber chalk.



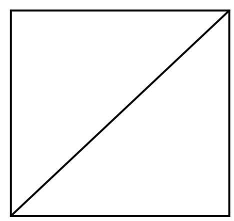
9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Structure is accessible and safe for search and rescue operations. Damage is minor with little danger of further collapse.



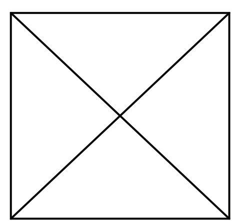
9/12/93
1310 hours
HM--none
SMA--E-1

Structure is significantly damaged. Some areas are relatively safe, but others may need shoring, bracing, or removal of falling and collapse hazards.



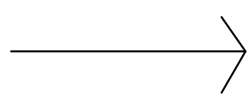
9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Structure is not safe for search and rescue operations. May be subject to sudden additional collapse. Remote search operations may proceed at significant risk. If rescue operations are undertaken, safe haven areas and rapid evacuation routes should be created.



9/12/93
1310 hours
HM--nat. gas
SMA--E-1

Arrow located next to a marking box indicates the direction to a safe entrance into the structure (used when the marking box needs to be made remote from the indicated entrance).



Search Marking System

Search markings must be easy to make, read, and understand. To be easily seen, the search mark must be large and of a contrasting color to the background surface. Orange spray paint seems to be the most easily seen color on most backgrounds and line marking (or downward spray cans) apply the best paint marks. Lumber chalk or lumber crayons should be used to mark additional information inside the search mark itself (because they are easier to write with than spray paint).

A large, distinct, marking will be made outside the main entrance of each building or structure searched. This "main entrance" search marking will be completed in two steps. First, a large (approximately two foot) single slash shall be made near the main entrance at the start of the search. After the search of the entire structure has been completed, a second large slash will be drawn in the opposite direction (forming an "X"). Specific information will be placed in all four quadrants of the main entrance "X". This information summarizes the entire search of the structure.

Left quadrant = Rescue Team identifier.
Top quadrant = date and time that search was completed.
Right quadrant = any significant hazards located in the structure.
Bottom quadrant = number of "live" or "dead" victims still inside the structure.

Use a small "x" in the bottom quadrant if no victims are inside the structure.

During the search function, while inside the structure, a large single slash will be made upon entry of each room or area. After the search of the room or area has been completed, a second large slash will be drawn in the opposite direction forming an "X." The only information placed in any of the "X" quadrants while **inside the structure** will be that pertaining to any significant hazards or the number of "live" or "dead" victims.

APPENDIX H

GLOSSARY

GLOSSARY

Agency Representative	Individual assigned to an incident from an assisting or cooperating agency who has been delegated full authority to make decisions on all matters affecting that agency's participation at the incident. Agency Representatives report to the Incident Liaison Officer.
Air-to-Air Net	A part of the Integrated Communications Radio Network. Air-to-Air Nets will normally be pre-designated and assigned for use at a large incident.
Allocated Resources	Resources dispatched to an incident that have not yet checked in with the Incident Commander.
Ambulance	A ground vehicle providing patient transport capability, specified equipment capability, and personnel (basic life support ambulance or advance life support ambulance, etc.).
Assigned Resources	Resources checked in and assigned work tasks on an incident.
Assisting Agency	An agency directly contributing suppression, rescue, support, or service resources to another agency.
Available Resource	Resources assigned to an incident and available for an assignment.
Base	That location at which the primary logistics functions are coordinated and administered. (Incident name or other designator will be added to the term "Base".) The Incident Command Post may be co-located with the base. There is only one base per incident.
Basic Operational Level	The Basic level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents. Personnel at this level shall be competent at surface rescue which involves minimal removal of debris and building contents to extricate easily accessible victims from non-collapsed structures.
Basic Rope Rescue	Rescue operations of a non-complex nature employing the use of ropes and accessory equipment.
BOO	A term used by FEMA US&R Task Forces which indicates their "Base of Operation." This "Base of Operation" is the same as a "Base" location.

Branch — That organizational level having functional/geographic responsibility for major segments of incident operations. The Branch level is organizationally between Section and Division/Sector/Group.

Clear Text — The use of plain English in radio communications transmissions. No Ten Codes or agency specific codes are used when using Clear Text.

Command — The act of directing, ordering, and/or controlling resources by virtue of explicit legal, agency, or delegated authority.

Command Net — A part of the Integrated Communications Radio Network. This net should link together the Incident Command, key staff members, Section Chiefs, Division and Group Supervisors at a large incident.

Command Post (CP) — That location at which primary Command functions are executed; usually co-located with the Incident Base.

Command Staff — The Command Staff consists of the Information Officer, Safety Officer, and Liaison Officer, who report directly to the Incident Commander.

Communications Unit — Functional Unit within the Service Branch of the Logistics Section. This unit is responsible for the incident communications plan, the installation and repair of communications equipment, and operation of the Incident Communications Center. Also may refer to a vehicle (trailer or mobile van) used to provide the major part of an Incident Communications Center.

Company — A ground vehicle providing specific equipment capability and personnel (Engine Company, Truck Company, Rescue Company, etc.).

Company Officer — The individual responsible for command of a Company. This designation is not specific to any particular fire department rank (may be a Firefighter, Lieutenant, Captain, or Chief Officer, if responsible for command of a single Company).

Compensation/ Claims Unit — Functional Unit within the Finance/Administration Section. Responsible for financial concerns resulting from injuries or fatalities at an incident.

Confined Space Rescue	Rescue operations in an enclosed area, with limited access/egress, not designed for human occupancy and have the potential for physical, chemical or atmospheric injury.
Cooperating Agency	An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort (Red Cross, law enforcement agency, telephone company, etc.).
Cost Unit	Functional Unit within the Finance/Administration Section. Responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures.
Crew	A specific number of personnel assembled for an assignment such as search, ventilation, or hose line deployment and operations. The number of personnel in a crew should not exceed recommended span-of-control guides. A Crew operates under the direction supervision of a Crew Leader.
Demobilization Unit	Functional Unit within the Planning Section. Responsible for assuring orderly, safe, efficient demobilization of resources committed to the incident.
Director	IMS title for individuals responsible for command of a Branch.
Dispatch Center	A facility from which resources are directly assigned to an incident.
Division	That organization level having responsibility for operations within a defined geographic area. The Division level is organizational between Single Resources, Task Force, or the Strike Team and the Branch.
Documentation Unit	Functional Unit within the Planning Section. Responsible for recording/protecting all documents relevant to the incident.
Engine Company	A ground vehicle providing specified levels of pumping, water, hose capacity, and personnel.
Facilities Unit	Functional Unit within the Support Branch of the Logistics Section. Provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, and a formal Command Post.

Finance/ Administration Section — Responsible for all costs and financial actions of the incident. Includes the Time Unit, Procurement Unit, Compensation/ Claims Unit, and the Cost Unit.

Food Unit — Functional Unit within the Service Branch of the Logistics Section. Responsible for providing meals for personnel involved with the incident.

General Staff — The group of incident management personnel comprised of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

Ground Support Unit — Functional Unit within the Support Branch of the Logistics Section. Responsible for fueling/maintaining/repairing vehicles and the transportation of personnel and supplies.

Ground-to-Air Net — A part of the Integrated Communications Radio Network. A ground-to-air tactical net may be designated, or regular tactical nets may be used to coordinate ground-to-air traffic at large incidents.

Group — That organizational level having responsibility for a specified functional assignment at an incident (ventilation, salvage, water supply, etc.).

Heavy Floor Construction — Structures of this type are built utilizing cast-in-place concrete construction consisting of flat slab panel, waffle or two-way concrete slab assemblies. Pre-tensioned or post-tensioned reinforcing steel rebar or cable systems are common components for structural integrity. The vertical structural supports include integrated concrete columns, concrete enclosed or steel frame, which carry the load of all floor and roof assemblies. This type includes heavy timber construction that may use steel rods for reinforcing. Examples of this type of construction include offices, schools, apartments, hospitals, parking structure and multi-purpose facilities. Common heights vary from single-story to high rise structures.

Heavy Operational Level — The heavy level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of reinforced concrete or steel frame construction and Confined Space Rescue operations.

Heavy Wall Construction Materials used for construction are generally heavy and utilize an interdependent structural or monolithic system. These types of materials and their assemblies tend to make the structural system inherently rigid. This construction type is usually built without a skeletal structural frame. It utilizes a heavy wall support and assembly system to provide support for the floors and roof assemblies. Occupancies utilizing tilt-up concrete construction are typically one to three stories in height and consist of multiple monolithic concrete wall panel assemblies. They also use an interdependent girder, column and beam system for providing lateral wall support of floor and roof assemblies. Occupancies typically include commercial, mercantile and industrial. Other examples of this type of construction type include reinforced and unreinforced masonry (URM) buildings typically of low-rise construction, one to six stories in height, of any type of occupancy.

Incident Action Plan The strategic goals, tactical objectives, and support requirements for the incident. All incidents require an action plan. For simple incidents the action plan is not usually in written form. Large or complex incidents will require that the action plan be documented in writing.

Incident Command System (ICS) An Incident Management System with a common organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Incident Commander (IC) The individual responsible for the management of all incident operations.

Information Officer Responsible for interface with the media or other appropriate agencies requiring information direct from the incident scene. Member of the Command Staff.

Initial Attack Resources initially committed to an incident.

Integrated Communications Communications at an incident are managed through the use of a common communications plan and an incident-based communications center established solely for the use of tactical and support resources assigned to the incident. All communications between organizational elements at an incident should be in plain English, "Clear Text". No codes should be used, and all communications should be confined only to essential messages. The Communications Unit is responsible for all communications planning at the Incident.

	This will include incident-established radio networks, on-site telephone, public address, and off-incident telephone/ microwave/radio systems.
Ladder Company	See Truck Company.
Leader	The individual responsible for command of a Task Force, Strike Team, or Functional Unit.
Liaison Officer	The point of contact for assisting or coordinating agencies. Member of the Command Staff.
Light Frame Construction	Materials used for construction are generally lightweight and provide a high degree of structural flexibility to applied forces such as earthquakes, hurricanes, tornadoes, etc. These structures are typically constructed with a skeletal structural frame system of wood or light gauge steel components, which provide support to the floor or roof assemblies. Examples of this construction type are wood frame structures used for residential, multiple low rise occupancies and light commercial occupancies up to four stories in height. Light gauge steel frame buildings include commercial business and light manufacturing occupancies and facilities.
Light Operational Level	The Light level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of light frame construction and basic rope rescue operations.
Logistics Section	Responsible for providing facilities, services, and materials for the incident. Includes the Communications Unit, Medical Unit, and Food Unit, within the Service Branch and the Supply Unit, Facilities Unit, and Ground Support Unit, within the Support Branch.
Medical Unit	Functional Unit within the Service Branch of the Logistics Section. Responsible for providing emergency medical treatment of emergency personnel. This Unit does not provide treatment for civilians.
Medium Operational Level	The Medium level represents the minimum capability to conduct safe and effective search and rescue operations at structure collapse incidents involving the collapse or failure of reinforced and unreinforced masonry (URM), concrete tilt-up and heavy timber construction.

Officer The Command Staff positions of Safety, Liaison, and Information.

Operational Period The period of time scheduled for execution of a given set of operation actions as specific in the Incident Action Plan.

Operations Section Responsible for all tactical operations at the incident. Includes up to 5 Branches, 25 Divisions/Groups/Sectors, and 125 Single Resources, Task Forces, or Strike Teams.

Out-of-Service Resources Resources assigned to an incident but unable to respond for mechanical, rest, or personal reasons.

Planning Meeting A meeting, held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations and for service and support planning.

Planning Section Responsible for the collection, evaluation, dissemination, and use of information about the development of the incident and the status of resources. Includes the Situation Status, Resource Status, Documentation, and Demobilization Units as well as Technical Specialists.

Pre-Cast Construction Structures of this type are built utilizing modular pre-cast concrete components that include floors, walls, columns and other sub-components that are field connected upon placement on site. Individual concrete components utilize imbedded steel reinforcing rods and welded wire mesh for structural integrity and may have either steel beam, or column or concrete framing systems utilized for the overall structural assembly and building enclosure. These structures rely on single or multi-point connections for floor and wall enclosure assembly and are a safety and operational concern during collapse operations. Examples of this type of construction include commercial, mercantile, office and multi-use or multi-function structures, including parking structures and large occupancy facilities.

Procurement Unit Functional Unit within the Finance/Administration Section. Responsible for financial matters involving vendors.

Radio Networks An element of Integrated Communications. Radio networks for large incidents normally include a Command Net, Tactical Nets, Support Net, Ground-to-Air Net, and Air-to-Air Net.

Reporting Locations — Any one of six facilities/locations where incident-assigned resources may check in. The locations are: Incident Command Post--Resources Unit (RESTAT), Base, Camp, Staging Area, Helibase, or Division Supervisor for direct line assignments. (Check in at one location only.)

Rescue Company — A ground vehicle providing specified rescue equipment, capability, and personnel.

Resource Status Unit (RESTAT) — Functional Unit within the Planning Section. Responsible for recording the status and accounting of resources committed to the incident, and evaluation of resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

Resources — All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.

Responder Rehabilitation (Rehab) — That function and location which shall include medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions for emergency responders, according to the circumstances of the incident.

Safety Officer — Responsible for monitoring and assessing safety hazards, unsafe situations, and developing measures for ensuring personnel safety. Member of the Command Staff.

Search Marking System — A standardized marking system employed during the after the search of a structure for potential victims.

Section — That organization level having functional responsibility for primary segments of incident operations, such as Operations, Planning, Logistics, and Finance/Administration. The Section level is organizationally between Branch and Incident Commander.

Section Chief — ICS title for individuals responsible for command of the functional Sections: Operations, Planning, Logistics, and Finance/Administration.

Service Branch — A Branch within the Logistics Section. Responsible for service activities at an incident. Components include the Communications Unit, Medical Unit, and Food Unit.

Single Resource	An individual Company or Crew.
Situation Status Unit (SITSTAT)	Functional Unit within the Planning Section. Responsible for analysis of situation as it progresses. Reports to the Planning Section Chief.
Staging Area	That location where incident personnel and equipment are assigned on an immediately available status.
State/National Urban Search & Rescue (US&R) Task Force	A 62-person team specifically trained and equipped for large or complex urban search and rescue operations. The multi-disciplinary organization provides five functional elements that include command, search, rescue, medical and technical. The US&R Task Force is designed to be used as a "single resource" and not disassembled to make use of individual task force elements.
Strategic Goals	The overall plan that will be used to control the incident. Strategic goals are broad in nature and are achieved by the completion of tactical objectives.
Strike Team	Five (5) of the same kind and type of resources with common communications and a Leader.
Structure/Hazards Marking System	A standardized marking system to identify structures in a specific area and any hazards found within or near the structure.
Supervisor	Individuals responsible for Command of a Division/Group.
Supply Unit	Functional Unit within the Support Branch of the Logistics Section. Responsible for ordering equipment/supplies required for incident operations.
Support Branch	A Branch within the Logistics Section. Responsible for providing the personnel, equipment, and supplies to support incident operations. Components include the Supply Unit, Facilities Unit, and Ground Support Unit.
Support Net	A part of the Integrated Communications Radio Network. A support net will be established primarily to handle status changing for resources as well as for support requests and certain other non-tactical or command functions.
Tactical Objectives	The specific operations that must be accomplished to achieve strategic goals. Tactical objectives must be both specific and measurable.

Tactical Level Management
A Division, or Group.

Tactical Nets
A part of the Integrated Communications Radio Network. There may be several tactical nets. They may be established around agencies, departments, geographical areas, or even specific functions. The determination of how nets are set up should be a joint Planning/Operations function. The Communications Unit Leader will develop the plan.

Task Force
A group of any type and kind of resources, with common communications and a leader, temporarily assembled for a specific mission (not to exceed five resources).

Technical Specialists
Personnel with special skills who are activated only when needed. Technical Specialists may be needed in the areas of fire behavior, water resources, environmental concerns, resource use, and training. Technical Specialists report initially to the Planning Section but may be assigned anywhere within the IMS organizational structure as needed.

Time Unit
A functional Unit within the Finance/Administration Section. Responsible for record keeping of time for personnel working at an incident.

Truck Company
A ground vehicle providing an aerial ladder or other aerial device, specified portable ladders and equipment capability, and personnel.

Unit
That organization element having functional responsibility for a specific incident's Planning, Logistics, or Finance/ Administration activity.

Urban Search & Rescue (US&R) Company
Any ground vehicle(s) providing a specified level of US&R operational capability, rescue equipment and personnel.

Urban Search & Rescue (US&R) Crew
A predetermined number of individuals that are supervised, organized and trained principally for a specified level of US&R operational capability. They respond with **no** equipment and are used to relieve or increase the number of US&R personnel at the incident.

Water Tender
Any ground vehicle capable of transporting specified quantities of water.

HANDOUT

Unit 1: Introduction

Incident Command System for Structural Collapse Incidents

Federal Emergency Management Agency
National Fire Academy

Incident Command System for Structural Collapse Incidents Slide 1-1

Course Administration

Class roster
Daily procedures:
- **Class hours**
- **Breaks**
- **Lunch**

Student introductions

Incident Command System for Structural Collapse Incidents Slide 1-2

Terminal Objective

The students will be able to describe key aspects of a structural collapse.

Incident Command System for Structural Collapse Incidents Slide 1-3

Enabling Objectives

The students will:
- **Identify hazards and conditions associated with a structural collapse.**
- **Understand the causes and complexities of structural collapses.**
- **Describe the difference between response and recovery operations.**

Incident Command System for Structural Collapse Incidents Slide 1-4

Course Goal

To provide fire officers with an understanding of command operations at structural collapse incidents.

Incident Command System for Structural Collapse Incidents Slide 1-5

Why a Course on Structural Collapse?

To provide
- **A basic knowledge of factors involved**
- **An appreciation for the complexity of structural collapse**
- **A review of strong command skills required to manage structural collapse incidents**
- **An appreciation of the need for effective incident management**

Incident Command System for Structural Collapse Incidents Slide 1-6

Course Schedule/Units

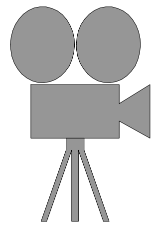
Day 1

- **Unit 1: Introduction**
- **Unit 2: Incident Command System Organizational Structure**
- **Unit 3: Response Resource Capabilities**
- **Unit 4: Scene Management: Factors and Issues**

Day 2

- **Unit 5: Response Functions**
- **Unit 6: Structural Collapse: Operational Phases**

Incident Command System for Structural Collapse Incidents Slide 1-7



Video: "Working Fire, Volume 97-9" (Metro-Dade, Florida)

Incident Command System for Structural Collapse Incidents Slide 1-8

Causes of Structural Collapse

Include

- **Construction accidents**
- **Structural deterioration**
- **Fire or explosion**
- **Natural hazards (e.g., earthquake, hurricane, tornado, flood, landslide)**
- **Transportation accidents**

Incident Command System for Structural Collapse Incidents Slide 1-9

Low Probability/High Risk

Structural collapse is considered a low probability but high consequence event due to:

- **Complex rescues**
- **Dangerous rescues**
- **Time-critical situations**
- **Interface of different levels of rescue capability**

Incident Command System for Structural Collapse Incidents Slide 1-10

Rescuer Hazards

Potential threats include

- **Physical**
- **Medical**
- **Environmental**
- **External**
- **Psychological**

Incident Command System for Structural Collapse Incidents Slide 1-11

Unsafe Conditions

Can consist of:

- **Unstable building/Secondary collapse**
- **Confined space**
- **Flammable or toxic hazard**
- **Oxygen-deficient atmosphere**
- **Ignition source**
- **Sharp, unstable, or irregular surface**

Incident Command System for Structural Collapse Incidents Slide 1-12

Safety Considerations

Should involve

- **Preplanning and training**
- **Use of the Incident Command System**
- **Establishment of a Safety Officer, safety plan, and Rapid Intervention Crew**
- **Use of a personnel accountability system**
- **Require appropriate protective clothing and equipment**

Response Operations

Involve

- **Searching for live victims.**
- **Rescuing live victims. Realizing that time is a critical factor for survival.**
- **Considering risk/benefit factors.**
- **Considering safety factors.**

Recovery Operations

Involve

- **Removal of deceased victims and personal property**
- **Realizing that time is not critical**
- **Using additional safety precautions (when possible)**
- **Using critical incident stress management**
- **Working with law enforcement and coroner in investigation and recovery operations**
- **Stabilizing and securing the incident site**

Unit Summary

Structural collapse incidents require

- **An effective Incident Command System**
- **Resource capability commensurate with the rescue operation**
- **Scene safety**
- **Response operations to rescue live victims**
- **Recovery operations to remove deceased victims**

Unit 2: The ICS Organizational Structure

Unit 2: The Incident Command System Organizational Structure

Terminal Objective

The students will be able to explain basic Command procedures and Incident Command System (ICS) organizational structure.

Enabling Objectives

The students will:

- Identify the functions of the Incident Commander (IC).
- Identify the three levels of Command.
- Describe operational elements within the Command structure.

Incident Command System Functions

Primary functions include

- Command
- Planning
- Operations
- Logistics
- Finance/Administration

Commander

Command responsibilities include

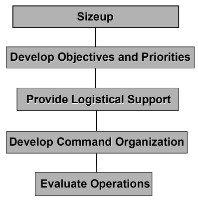
- Assess the incident (sizeup)
- Develop an Incident Action Plan (IAP)
- Request and deploy resources
- Organize Incident Management Team (IMT) and response
- Manage the incident
- Provide for safety
- Assume overall responsibility at the incident

Command

Is responsible for developing a plan that includes

- Setting objectives
- Setting priorities
- Assigning resources
- A command organization

Incident Management Process



Incident Command System for Structural Collapse Incidents Slide 2-7

Incident Commander

The IC will

- **Concentrate on the "big picture"**
- **Concentrate on strategic plans (for the entire incident)**
- **Manage Command and General Staff positions**

Incident Command System for Structural Collapse Incidents Slide 2-8

Incident Commander (cont'd)

Responsibilities include

- **Reviewing, evaluating, planning, and initiating changes**
- **Providing ongoing review of overall incident**
- **Directing Command and General Staff positions**
- **Expanding ICS structure (as necessary)**
- **Staffing Command and General Staff functions**
- **Liaison with internal and external agencies, owners, and tenants**

Incident Command System for Structural Collapse Incidents Slide 2-9

Incident Commander (cont'd)

Early responsibilities consist of performing each of the following functions:

- **Operations**
- **Planning**
- **Logistics**
- **Finance/Administration**

Incident Command System for Structural Collapse Incidents Slide 2-10

General Staff Section Chiefs

- **As the incident escalates, additional support is required.**
- **The IC can become overwhelmed quickly.**
- **Arriving personnel fill Command and General Staff positions.**
- **Staff these positions only as needed.**

Incident Command System for Structural Collapse Incidents Slide 2-11

Operations Section Chief

- **Responsible for direct management of all tactical activities and priorities and personnel safety and welfare.**
- **Staffed when the incident exceeds the IC's span of control.**
- **Staffed when the IC cannot be involved in tactics without losing the "big picture."**

Incident Command System for Structural Collapse Incidents Slide 2-12

Question ...

"What are some responsibilities of the Operations Section Chief?"

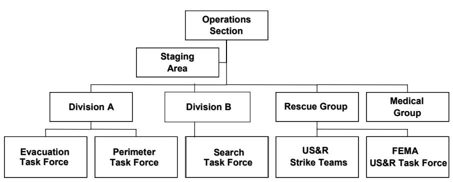
Incident Command System for Structural Collapse Incidents Slide 2-13

Question ...

"When is the Operations Section Chief position implemented?"

Incident Command System for Structural Collapse Incidents Slide 2-14

Operations Section



Incident Command System for Structural Collapse Incidents Slide 2-15

Staging Area

- **Located within the incident area.**
- **Temporary location for immediately available resources.**
- **Established early in the incident.**
- **Run by an assigned Staging Area Manager.**
- **During an expanded incident, Staging reports to Operations.**
- **All Resources in Staging are controlled directly by Operations.**

Incident Command System for Structural Collapse Incidents Slide 2-16

Planning Section

Responsibilities include

- **Gathering information**
- **Analyzing information**
- **Processing information**
- **Developing an IAP**
- **Maintaining situation and resource status**

Incident Command System for Structural Collapse Incidents Slide 2-17

Planning Section (cont'd)

- **Information management is a full-time job.**
- **Serves as the IC's information clearinghouse.**
- **Critical information is forwarded directly to the IC.**
- **Long-term plans are needed for complex operations.**

Incident Command System for Structural Collapse Incidents Slide 2-18

Planning Section (cont'd)

The Planning Section Chief's goals include
- Planning ahead
- Identifying projected resources

Planning Section Chief

Responsibilities include
- Evaluating current strategy/planning with the IC
- Maintaining resource status (RESTAT) and personnel accountability
- Recommending changes to the action plan (with Operations Section Chief's input)
- Evaluating incident organization and span of control
- Forecasting possible outcomes
- Using technical assistance

Planning Section Chief (cont'd)

Responsibilities include
- Evaluating tactical priorities, safety, and specific critical factors
- Gathering, updating, improving, and managing situation status
- Coordinating planning needs with outside agencies
- Planning for demobilization
- Maintaining incident records

Victim Locator Unit

- Reports to Planning Section Chief
- Functions as a (situational) intelligence-gathering unit
- Interviews
  - Witnesses
  - Occupants
  - Neighbors
  - Injured victims

Logistics Section

Provides services and support systems to all organizational components.

Logistics Section Services

Services and support functions include
- Command Post (CP), base, and other facilities
- Transportation
- Supplies
- Equipment maintenance
- Fueling
- Feeding
- Communications
- Responder medical services/rehabilitation

Logistics Section

Responsibilities include

- Provide medical aid (for response personnel)
- Coordinate immediate critical incident stress debriefing (CISD)
- Provide (and manage) supplies and equipment
- Forecast (and obtain) future resource needs
- Provide communications plan and equipment

Incident Command System for Structural Collapse Incidents Slide 2-25

Logistics Section (cont'd)

Responsibilities include

- Provide fuel and equipment repairs
- Obtain specialized equipment/ expertise
- Provide food and associated supplies
- Secure needed (fixed or portable) facilities
- Provide any logistical needs of the IC

Incident Command System for Structural Collapse Incidents Slide 2-26

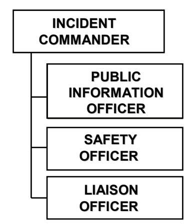
Finance/ Administration Section

Responsibilities include

- Procure services and supplies
- Document all financial costs
- Document for recovery of services and supplies
- Document compensation and claims for injuries
- Obtain all documentation for cost recovery
- Handle all legal requirements

Incident Command System for Structural Collapse Incidents Slide 2-27

Command Staff



Incident Command System for Structural Collapse Incidents Slide 2-28

Public Information Officer

Develops and maintains informational briefings covering details such as:

- Incident cause
- Size
- Current situation
- Resources committed
- Other matters of general interest

Incident Command System for Structural Collapse Incidents Slide 2-29

Public Information Officer (cont'd)

Responsibilities include

- Media point of contact
- Addressing the media (at frequent briefings)
- Providing a "media area" (away from the CP)
- Requesting assistants (as required)
- Providing photo opportunities for the media

Incident Command System for Structural Collapse Incidents Slide 2-30

Safety Officer

Responsibilities include

- Assessing hazards and unsafe conditions.
- Developing measures for ensuring personnel safety
- Stopping (or preventing) unsafe acts
- Supervising assigned assistants
- Assessing responder rehabilitation needs

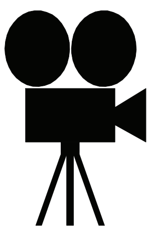
Incident Command System for Structural Collapse Incidents Slide 2-31

Liaison Officer

Responsibilities include

- Acting as a point of contact for representatives from other agencies.
  - Representatives from outside agencies must have authority to speak on behalf of their agency.

Incident Command System for Structural Collapse Incidents Slide 2-32



Video:
"Working Fire, Volume 95-6" (Oklahoma City)

Incident Command System for Structural Collapse Incidents Slide 2-33

Establishing Command

- First fire department member to arrive at the scene assumes Command.
- The IC remains in Command until Command is transferred or until the incident is stabilized.
- The response of additional ranking officers strengthens the Command function.
- Communications should be established to include sizeup, etc.

Incident Command System for Structural Collapse Incidents Slide 2-34

Question ...

"What does establishing Command involve?"

Incident Command System for Structural Collapse Incidents Slide 2-35

Passing Command

- May be indicated when the first-arriving company is fully committed and another company is on scene.
- Passing and assumption of Command are accomplished on scene by radio or face to face.

Incident Command System for Structural Collapse Incidents Slide 2-36

Transfer of Command

- Command is transferred to improve the quality and effectiveness of the Command organization.
- Transfer of command must be predetermined by local agencies.

Transfer of Command Process

Involves

- First-arriving fire department Company Officer (CO) assumes Command
- First-arriving chief officer then assumes Command (using transfer-of-command guidelines).
- Second-arriving chief officer reports to CP for assignment.
- Later-arriving chief officers may assume Command or perform other duties.
- Assumption of Command for assistant chiefs and the fire chief should be discretionary.

Transferring Command

Guidelines:

- Officer assuming Command may do a preliminary sizeup prior to communicating by radio or face to face with member being relieved.
- Member being relieved briefs the officer assuming Command.
- Officer relieved is reassigned.

Question ...

"If you are the Incident Commander, and Command is being transferred to you, what would you need to know?"

Levels of Command

The three levels consist of:

- Strategic (= what)
- Tactical (= how)
- Task (= job done at company level)

Strategic Level

Responsibilities include

- Assess the situation (sizeup)
- Establish overall objectives
- Set priorities
- Develop IAP
- Obtain and assign resources
- Predict outcomes and planning
- Assign specific objectives

Tactical Level

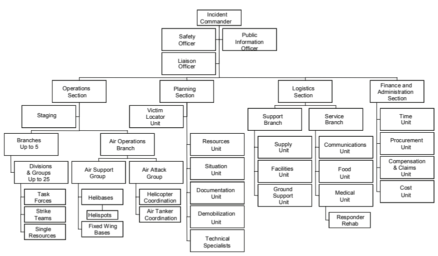
Responsibilities:

- **Directs operational activities toward specific objectives**
  - **(This level includes branch directors, and division and group supervisors responsible for geographic areas or functions)**
- **Completes tactical objectives to accomplish strategy outlined in the IAP**

Task Level

- **Encompasses activities accomplished by individual companies or specific personnel**
- **Level where work is actually performed**
- **Normally supervised by CO's**
- **Accomplishes tactical objectives**

Command Structure



Organizational Development

- **Initial response**
- **Reinforced or expanded response**
- **Extended response**

Basic Organization Example One Company

Strategy

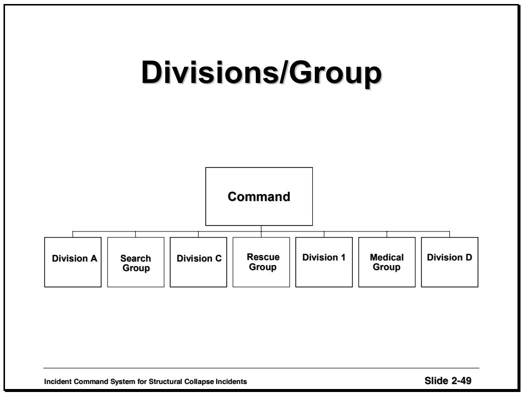
Tactical **Command E-1** **Task**

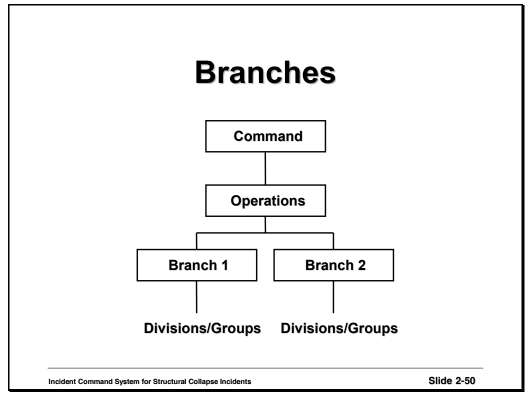
Strategic/Tactical Three Companies

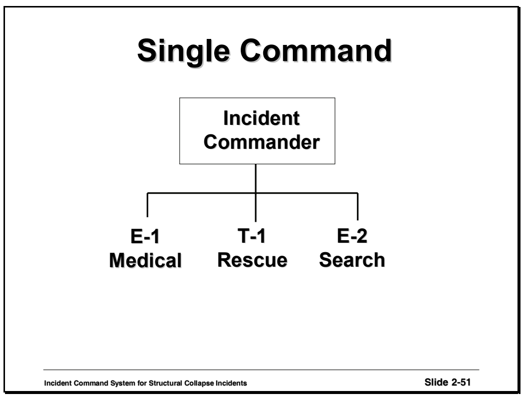
Strategic **Command** **Tactical**

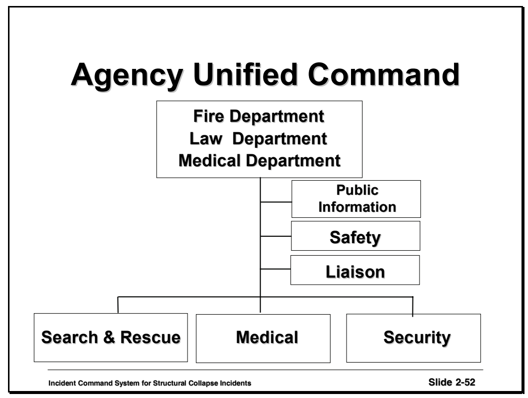
Engine **Engine** **Truck**

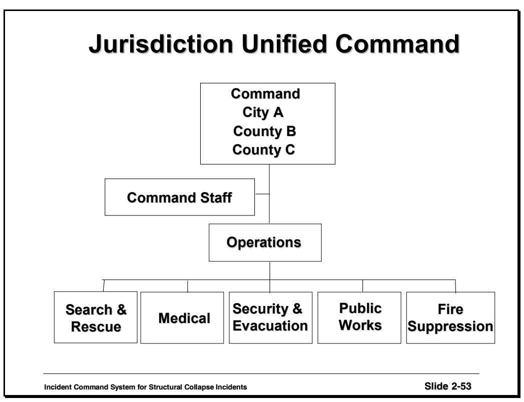
Task **Task** **Task**

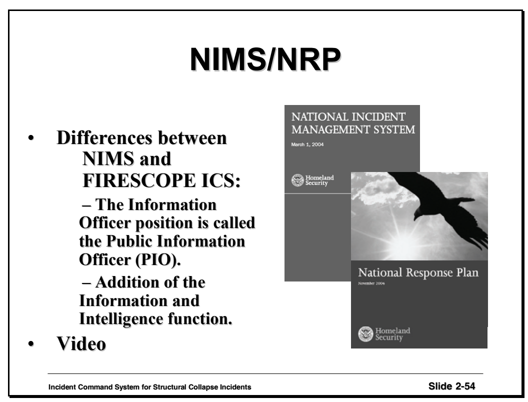

Divisions/Group
Command
Division A
Search Group
Division C
Rescue Group
Division 1
Medical Group
Division D
Incident Command System for Structural Collapse Incidents
Slide 2-49


Branches
Command
Operations
Branch 1
Branch 2
Divisions/Groups
Divisions/Groups
Incident Command System for Structural Collapse Incidents
Slide 2-50

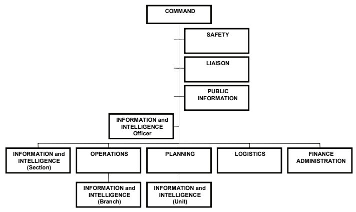

Single Command
Incident Commander
E-1 Medical
T-1 Rescue
E-2 Search
Incident Command System for Structural Collapse Incidents
Slide 2-51


Agency Unified Command
Fire Department
Law Department
Medical Department
Public Information
Safety
Liaison
Search & Rescue
Medical
Security
Incident Command System for Structural Collapse Incidents
Slide 2-52


Jurisdiction Unified Command
Command
City A
County B
County C
Command Staff
Operations
Search & Rescue
Medical
Security & Evacuation
Public Works
Fire Suppression
Incident Command System for Structural Collapse Incidents
Slide 2-53


NIMS/NRP
• Differences between NIMS and FIRESCOPE ICS:
– The Information Officer position is called the Public Information Officer (PIO).
– Addition of the Information and Intelligence function.
• Video
NATIONAL INCIDENT MANAGEMENT SYSTEM
National Response Plan
Incident Command System for Structural Collapse Incidents
Slide 2-54

Information and Intelligence Options



Incident Command System for Structural Collapse Incidents — Slide 2-55

Unit Summary

- **ICS functions are used although specific positions may not be filled.**
- **The IC is responsible for sizeup, setting objectives and priorities, requesting and deploying resources, organizing, and incident management.**
- **ICS Command and General Staff positions are activated as needed.**

Incident Command System for Structural Collapse Incidents — Slide 2-56

Unit Summary (cont'd)

- **First-arriving fire department member establishes ICS and takes all initial actions.**
- **Transfer of command improves effectiveness.**
- **Three levels of Command:**
  - **Strategic**
  - **Tactical**
  - **Task**
- **The IC is responsible for developing the organization based on the needs of the incident.**

Incident Command System for Structural Collapse Incidents — Slide 2-57

Unit Summary (cont'd)

- **The basic command organization may be expanded using divisions, groups, or branches.**
- **Command may be single or unified when needed for multi-agency or multi-jurisdictional incidents.**

Incident Command System for Structural Collapse Incidents — Slide 2-58

Unit 3: Response Resource Capabilities

Unit 3: Response Resource Capabilities

Incident Command System for Structural Collapse Incidents — Slide 3-1

Terminal Objective

The students will be able to identify various resource levels, types, and capabilities used for structural collapse incidents.

Incident Command System for Structural Collapse Incidents — Slide 3-2

Enabling Objectives

The student will:

- **Define the types and levels of structural collapse risks within a jurisdiction.**
- **Define various levels of capability for a structural collapse incident.**
- **Describe resources available through local, State, and Federal agencies.**

Incident Command System for Structural Collapse Incidents — Slide 3-3

Introduction

The Incident Commander (IC) must be able to:

- **Identify the type of collapse**
- **Identify rescuer and victim hazards**
- **Match appropriate level of rescue capability to the problem**
- **Determine, manage, and coordinate resources**

Incident Command System for Structural Collapse Incidents — Slide 3-4

Levels of Capability/Resources

Include

- **Spontaneous volunteers**
- **FEMA National US&R Task Forces**
- **Other agencies**

Incident Command System for Structural Collapse Incidents — Slide 3-5

Risk/Hazard Analysis

It is important that each department identify and understand its collapsed structure response capabilities.

Incident Command System for Structural Collapse Incidents — Slide 3-6

Risk/Hazard Analysis (cont'd)

Process:
- **Perform risk assessment**
- **Consider target hazards**
- **Analyze data**
- **Establish a risk threshold**
- **Determine team type and capability needed**

Incident Command System for Structural Collapse Incidents Slide 3-7

Operational Capability

… this term refers to the different types of operations and resource deployment possible.

Incident Command System for Structural Collapse Incidents Slide 3-8

Operational Capability (cont'd)

Levels consist of:
- **Basic**
- **Light**
- **Medium**
- **Heavy**

Incident Command System for Structural Collapse Incidents Slide 3-9

Class "Brainstorm" Session

- **Government resources**
- **Private sector resources**

Incident Command System for Structural Collapse Incidents Slide 3-10

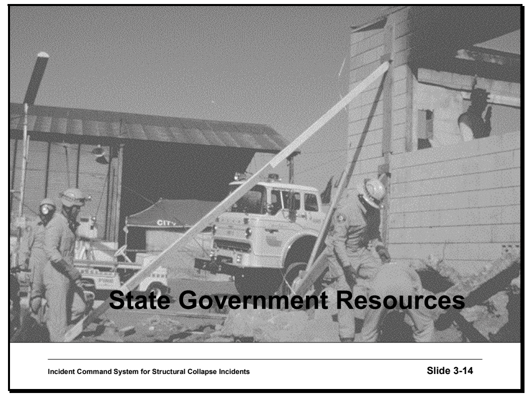
Rescue Resources

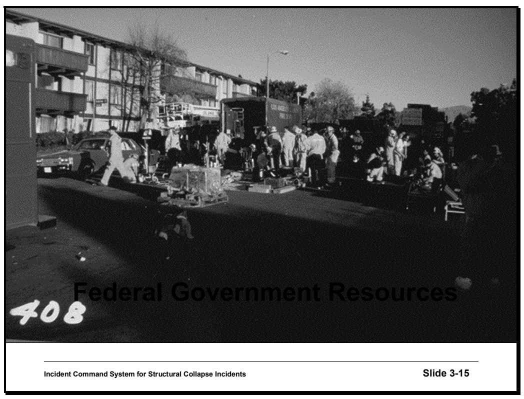
Available from:
- **Local jurisdictions**
- **Local and State governments**
- **Federal government (FEMA)**
- **Private sector**
- **Trained civilian volunteers**
- **FEMA US&R Task Forces**

Incident Command System for Structural Collapse Incidents Slide 3-11

Incident Command System for Structural Collapse Incidents Slide 3-12

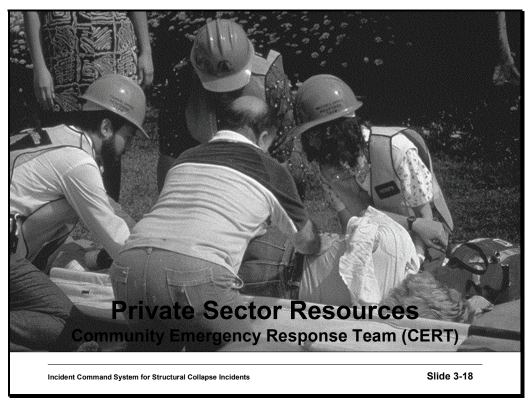

Regional Government Resources
Incident Command System for Structural Collapse Incidents
Slide 3-13


State Government Resources
Incident Command System for Structural Collapse Incidents
Slide 3-14


Federal Government Resources
408
Incident Command System for Structural Collapse Incidents
Slide 3-15


International Government Resources
Incident Command System for Structural Collapse Incidents
Slide 3-16


Video: "National Urban Search and Rescue Response System"
Incident Command System for Structural Collapse Incidents
Slide 3-17


Private Sector Resources
Community Emergency Response Team (CERT)
Incident Command System for Structural Collapse Incidents
Slide 3-18

Incident Command System for Structural Collapse Incidents — Slide 3-19

Incident Command System for Structural Collapse Incidents — Slide 3-20

Incident Command System for Structural Collapse Incidents — Slide 3-21

Incident Command System for Structural Collapse Incidents — Slide 3-22

California US&R Resource Typing System

Increases IC effectiveness by providing specified levels of capability for a given objective and task assignment.

Incident Command System for Structural Collapse Incidents — Slide 3-23

California US&R Resource Typing System (cont'd)

Capability levels:

- **US&R company**
- **US&R crew**
- **State and national task forces**

These resources may be combined into strike teams.

Incident Command System for Structural Collapse Incidents — Slide 3-24

Question ...

"What is a tiered response system?"

Incident Command System for Structural Collapse Incidents — Slide 3-25

Tiered Response System

- **Used by fire departments for EMS and haz mat response.**
- **Also used effectively for structural collapse response.**

Incident Command System for Structural Collapse Incidents — Slide 3-26

Incident Command System for Structural Collapse Incidents — Slide 3-27

Incident Command System for Structural Collapse Incidents — Slide 3-28

Incident Command System for Structural Collapse Incidents — Slide 3-29

Incident Command System for Structural Collapse Incidents — Slide 3-30

Other Agencies

Coordination occurs at:

- **The incident (IC and agency representative(s))**
- **Department dispatch center or department operating center**
- **Local Emergency Operations Center (EOC)**
- **County EOC**
- **State multi-agency coordination system and EOC**
- **Federal coordinating system**
- **City level (mayor)**

Activity 3.1

Community Risk Analysis

Unit Summary

- **Hazard/Risk analysis is needed for each community.**
- **Levels of operational capability and resource typing assist in developing specific response requirements.**
- **Structural collapse resources are available from all levels of government and from the private sector.**
- **Coordination of responding agencies is critical to an effective ICS for structural collapse incidents.**

Unit 4: Scene Management: Factors and Issues

Unit 4: Scene Management: Factors and Issues

Terminal Objective

The students will be able to identify critical factors and issues that affect structural collapse scene management.

Enabling Objectives

The students will:

- **Identify factors associated with rapid scene assessment.**
- **Identify life safety issues.**
- **Identify key elements of scene control.**
- **Explain the importance of establishing appropriate incident facilities.**
- **Describe the potential effects and consequences of the incident on the community.**

Introduction

Note that:

- **The Incident Commander's (IC's) initial actions set the tone for the incident.**
- **Sizeup and structural triage produce information for:**
  - **The action plan.**
  - **Rescuer and victim safety.**
  - **Increased operational effectiveness.**
- **Impact on the community may be significant.**

Incident Emergency Management Planning Phases

- **Initial response plan**
- **Expanded response**
- **Extended response**
- **Demobilization**

Initial Response Plan

- **Sizeup**
- **Develop initial plan (objectives and priorities)**
- **Request and/or assign resources**
- **Develop organization**
- **Evaluate operations**

Expanded Response (Use ICS 201 Form)

- Sizeup
- Develop objectives and priorities
- Request and assign resources
- Provide logistical support
- Expand the organization
- Evaluate operations

Extended Response (Use Written IAP)

- Sizeup
- Develop objectives and priorities
- Request and assign resources
- Provide logistical support
- Expand the organization
- Add to IAP as needed (safety, medical, transportation plans, etc.)
- Evaluate operations

Demobilization (Continue IAP)

- Sizeup
- Develop objectives and priorities
- Assign and release resources
- Provide logistical support
- Reduce the organization
- Evaluate operations
- Provide CISM
- Collect all records
- Secure site and release all resources

Question ...

"What information is needed in order to develop an IAP?"

Structural Collapse Scene Checklist

Appendix D

Initial Scene Assessment "First Impressions" Sizeup

Incident Command System for Structural Collapse Incidents Slide 4-13

Incident Command System for Structural Collapse Incidents Slide 4-14

Incident Command System for Structural Collapse Incidents Slide 4-15

Incident Command System for Structural Collapse Incidents Slide 4-16

Incident Command System for Structural Collapse Incidents Slide 4-17

Incident Command System for Structural Collapse Incidents Slide 4-18

Incident Command System for Structural Collapse Incidents Slide 4-19

Incident Command System for Structural Collapse Incidents Slide 4-20

Incident Command System for Structural Collapse Incidents Slide 4-21

Incident Command System for Structural Collapse Incidents Slide 4-22

Operational Considerations

When developing an IAP, consider

- **Time**
- **Location**
- **Occupancy (hazards, type, multiple)**
- **Height and area (six sides)**
- **Size of collapse area and structural hazards**
- **Fire and hazardous materials problems**

Incident Command System for Structural Collapse Incidents Slide 4-23

Operational Considerations (cont'd)

- **Exposures**
- **Utilities (gas, water, electricity)**
- **Weather**
- **Victims**
- **Traffic**
- **Rail**

Incident Command System for Structural Collapse Incidents Slide 4-24

Operational Considerations (cont'd)

- Personnel
- Incident command
- Communications
- Medical
- Safety
- Special equipment

Incident Command System for Structural Collapse Incidents Slide 4-25

Operational Considerations (cont'd)

- Construction equipment
- Shoring materials
- Information updates
- Staging Areas
- Responder rest, recovery, and relief
- Secondary collapse

Incident Command System for Structural Collapse Incidents Slide 4-26

Structural Triage

… helps to identify, select, and prioritize structures to find and rescue live victims.

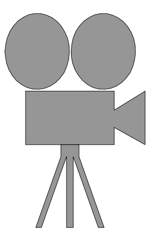
Incident Command System for Structural Collapse Incidents Slide 4-27

Structural Triage (cont'd)

Steps:

- Obtain precollapse intelligence.
- Deploy reconnaissance teams.
- Analyze and determine the best risk/benefit ratio.
  - Significant hazards drive "no go" assessment.
- Prioritize rescue sites.
- Reevaluate continually.

Incident Command System for Structural Collapse Incidents Slide 4-28



Video: "Working Fire, Volume 95-12" (Los Angeles, California, Fire Department)

Incident Command System for Structural Collapse Incidents Slide 4-29

Life Safety and Personnel Considerations

Collapse hazards consist of:

- Structural failure
- Nonstructural failure
- Nonstructural damage
- Environmental conditions

"Low occurrence/high-risk incidents injure and kill firefighters."

Incident Command System for Structural Collapse Incidents Slide 4-30

Risk Management

Five-step process:
- Situation awareness
- Hazard assessment
- Risk control
- Decision point
- Evaluation

Risk Management (cont'd)

Other people in the system give the IC advice, but ultimately the "go"/"no go" decision is made by the IC.

Personnel Accountability

- The IC must ensure that an accountability system is in place early during initial response.
- Accurate information must be provided on assignments and locations of:
  - Companies.
  - Crews.
  - Personnel.

Scene Safety

IC responsibilities include
- Provide leadership and organization.
- Obtain accurate information and develop a plan.
- Make safety a top priority.
- Assign a Safety Officer (SO) and a Rapid Intervention Crew (RIC).
- Provide appropriate protective measures and safety equipment.

Scene Safety (cont'd)

- Rotate crews and provide rehabilitation.
- Plan for contingencies.
- Monitor, isolate, confine, contain, and mitigate hazards.
- Communicate and use chain of command.
- Hold periodic briefings.
- Plan for injuries and stress management.

Scene Control

Establishing scene control should coincide with sizeup and development of an IAP.

Question ...

"What actions should the IC take when managing the scene of a structural collapse?"

Community Considerations

- Structural collapse
- People affected:
  - Victims
  - Responders
  - Friends and relatives of victims
- Community response:
  - Donations
  - Volunteers
- CISM

Community Effect

Media issues:

- Assigning an Information Officer.
- Important to work with the media so that mutual objectives are accomplished.
- Providing accurate and timely information.

Community Effect (cont'd)

Political issues:

- Coordinate, interact with, and provide information to elected officials.
- Future political action is possible through acknowledgements and mitigation.

Community Effect (cont'd)

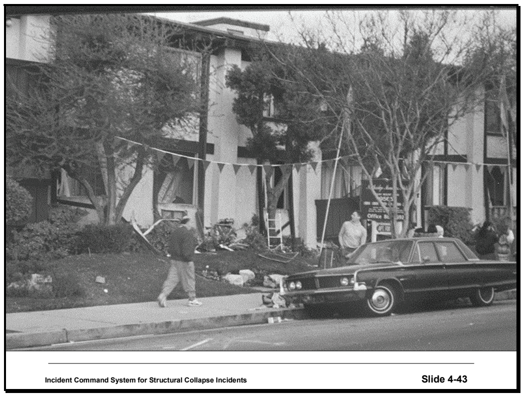
Economic issues:

A collapse involving one or many structures may have severe short-term or long-term economic effect such as:

- Loss of homes.
- Loss of jobs.
- Loss of a special community-dependent facility such as a large manufacturing building.
- Loss of community tax base.
- Movement of business and industry to other areas.
- Recovery and rebuilding may take years.

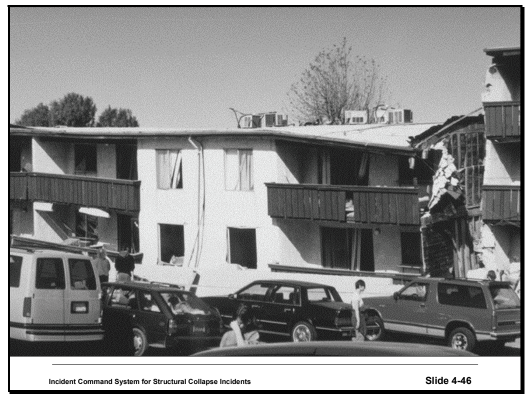
Activity 4.1

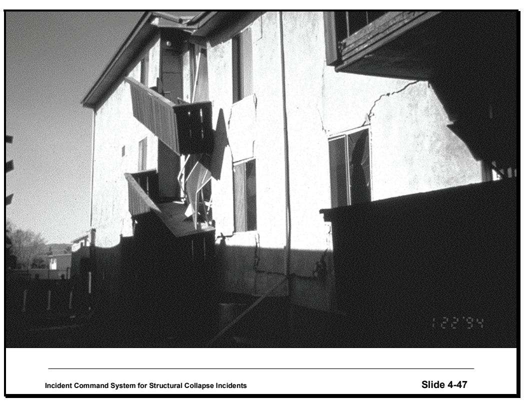
Scene Assessment


Incident Command System for Structural Collapse Incidents
Slide 4-43

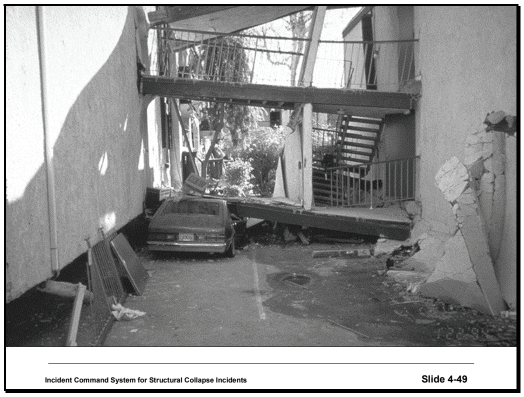

Incident Command System for Structural Collapse Incidents
Slide 4-44

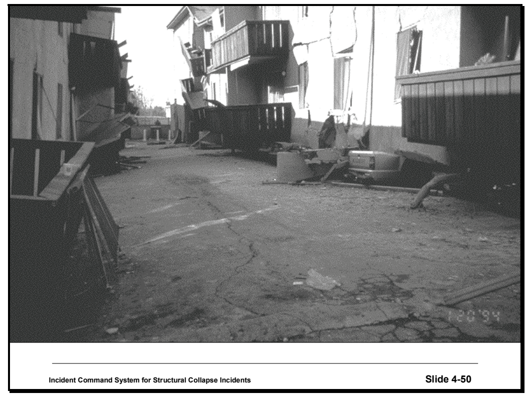

Incident Command System for Structural Collapse Incidents
Slide 4-45

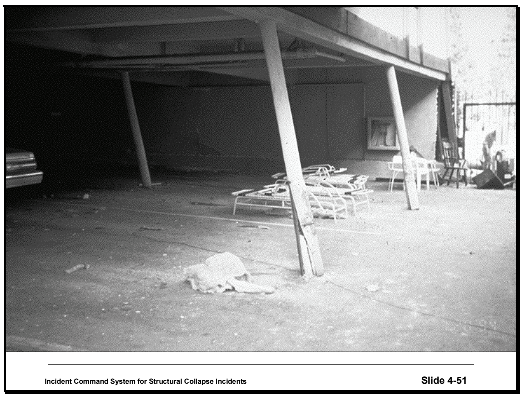

Incident Command System for Structural Collapse Incidents
Slide 4-46

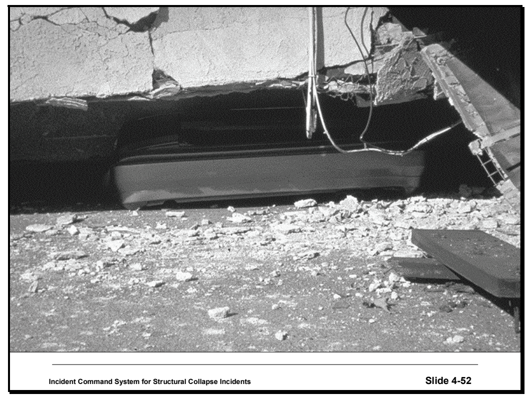

Incident Command System for Structural Collapse Incidents
Slide 4-47

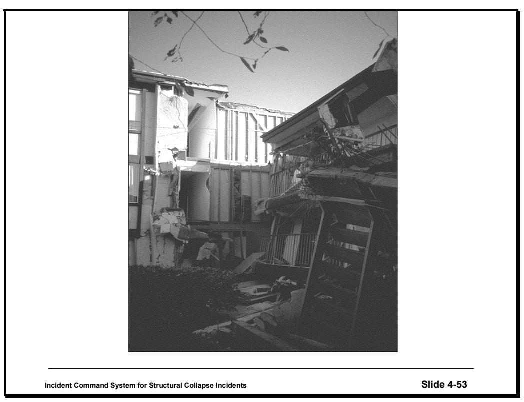

Incident Command System for Structural Collapse Incidents
Slide 4-48

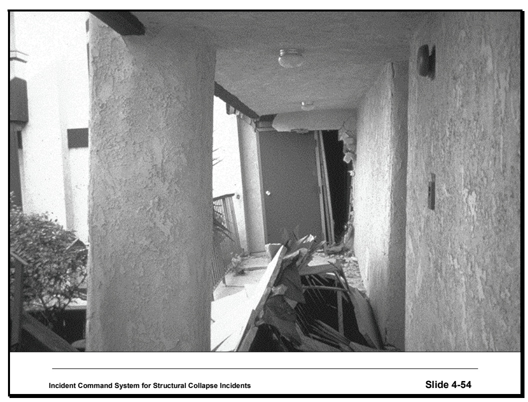

Incident Command System for Structural Collapse Incidents
Slide 4-49


Incident Command System for Structural Collapse Incidents
Slide 4-50


Incident Command System for Structural Collapse Incidents
Slide 4-51

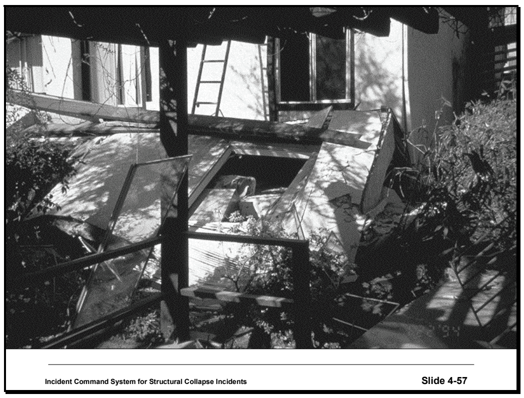

Incident Command System for Structural Collapse Incidents
Slide 4-52


Incident Command System for Structural Collapse Incidents
Slide 4-53


Incident Command System for Structural Collapse Incidents
Slide 4-54

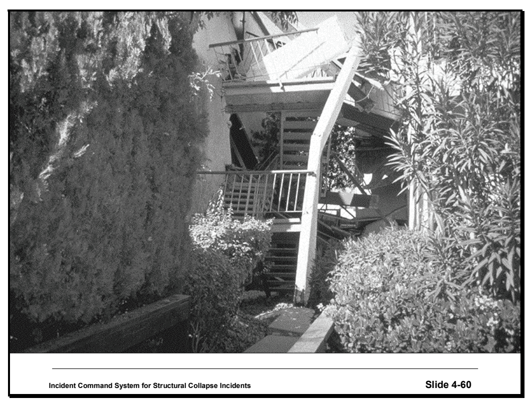

Incident Command System for Structural Collapse Incidents
Slide 4-55


Incident Command System for Structural Collapse Incidents
Slide 4-56


Incident Command System for Structural Collapse Incidents
Slide 4-57


Incident Command System for Structural Collapse Incidents
Slide 4-58


Incident Command System for Structural Collapse Incidents
Slide 4-59


Incident Command System for Structural Collapse Incidents
Slide 4-60

Summary

- Sizeup provides information needed to develop the IAP.
- Structural triage identifies, selects, and prioritizes rescue areas with the highest probability of success.
- Collapsed structure incidents are complex.

Summary (cont'd)

- Use risk management process to commit resources safely.
- Use personnel accountability system to ensure responder safety.
- Initiate scene control early for safety and efficiency.
- Effective incident command mitigates hazards.
- Structural collapse may have lasting effect on population, media, politicians, and economy.

Unit 5: Response Functions

Unit 5: Response Functions

Terminal Objective

The students will be able to describe unique operational considerations for a structural collapse incident.

Enabling Objective

The students will identify primary functions used during structural collapse operations.

Introduction

The Incident Commander (IC) must be able to

- **Analyze an incident accurately.**
- **Develop appropriate strategy, tactics, and resource requirements.**

Response Functions

Command and coordination involves

- **Obtaining incident information**
- **Analyzing intelligence**
- **Developing and selecting strategies (objectives)**
- **Prioritizing objectives**
  - **Life**
  - **Property**
  - **Systems**
  - **Environment**
  - **Situation**

Incident Objectives

- **Objectives are brief action statements of what needs to done.**
- **Objectives should be obtainable, measurable, and clearly understood.**

Incident Priorities

Objectives should be prioritized.

- Life
- Property
- Systems
- Environment
- Situation (multiple locations)

General Priority for Rescue

"Do the most good
for the greatest number
in the least amount of time."

Activity 5.1

Incident Objectives

Response Functions (cont'd)

Command and coordination involves

- Setting objectives and developing tactics
- Determining resource requirements
- Tasking resources
- Identifying logistic requirements
- Developing Incident Command System (ICS) organization

Response Functions (cont'd)

- Preparing and implementing an Incident Action Plan (IAP)
- Deploying resources
- Evaluating operations (and progress towards objectives)
- Revising plan (as needed to accomplish objectives)

Response Functions (cont'd)

Search involves

- Locating victims.
- Using technical search equipment or dogs (as needed).
- Systematic approach (which enables the IC and rescue teams to increase efficiency and reduce injury).

Question ...

"What does the search process involve?"

Incident Command System for Structural Collapse Incidents Slide 5-13

Response Functions

Rescue evaluates

- Compromised areas
- Structural stabilization
- Access

Incident Command System for Structural Collapse Incidents Slide 5-14

The "Golden Day" of Survival

80 percent of victims are rescued within the first 24 hours.

Incident Command System for Structural Collapse Incidents Slide 5-15

Prioritizing Rescues

Factors include

- Victim viability and longevity
- Degree of difficulty and duration of rescue
- Rescue outcome potential (multiple versus single survivors)
- Safety of rescuers and victims

Incident Command System for Structural Collapse Incidents Slide 5-16

Structural Collapse Rescue

Five phases:

- Phase 1--survey area for victims.
- Phase 2--rescue surface victims.
- Phase 3--explore voids and remove survivors.
- Phase 4--remove selected debris.
- Phase 5--remove general debris.

Incident Command System for Structural Collapse Incidents Slide 5-17

Rescue Operations

Coordination needs to be made with specialists such as:

- Structural engineers
- Heavy equipment operators
- Hazardous materials specialists
- Medical personnel

Incident Command System for Structural Collapse Incidents Slide 5-18

Medical Functions

- Providing initial care to victims.
- Entry of paramedics and EMT's to the rescue zone (to provide care).
- Providing treatment for responders.

Incident Command System for Structural Collapse Incidents — Slide 5-19

Medical Sizeup

Medical assessment factors include

- Number, location, and condition of survivors
- Short- versus long-term survival potential
- Hazards and environmental conditions
- Onscene medical and hospital capability and availability

Deceased require response by law enforcement, coroner, or medical examiner.

Incident Command System for Structural Collapse Incidents — Slide 5-20

Victim survival can be improved by recognizing medical needs early and by providing medical care as soon as the victim is reached and continuously throughout the rescue process.

Incident Command System for Structural Collapse Incidents — Slide 5-21

Technical Specialists

Technical specialists are needed for:

- Unique situations
- Complex situations

Incident Command System for Structural Collapse Incidents — Slide 5-22

Question ...

"What type of technical specialists could be used at a structural collapse incident?"

Incident Command System for Structural Collapse Incidents — Slide 5-23

Safety

Safety involves

- Identifying hazards and analyzing risks
- Incorporating safety in the IAP
- Monitoring operations (for safety issues)
- Providing appropriate protection
- Monitoring radio communications

Incident Command System for Structural Collapse Incidents — Slide 5-24

Safety (cont'd)

- **Enforcing personnel accountability**
- **Enforcing personnel rotation and rehabilitation**
- **Monitoring personnel (for fatigue and stress)**
- **Investigating and documenting injuries**

Incident Command System for Structural Collapse Incidents Slide 5-25

Activity 5.2

Developing Strategy, Tactics, and Rescue Requirements

Incident Command System for Structural Collapse Incidents Slide 5-26

Incident Command System for Structural Collapse Incidents Slide 5-27

Incident Command System for Structural Collapse Incidents Slide 5-28

Incident Command System for Structural Collapse Incidents Slide 5-29

Incident Command System for Structural Collapse Incidents Slide 5-30

Incident Command System for Structural Collapse Incidents
Slide 5-31

Incident Command System for Structural Collapse Incidents
Slide 5-32

Incident Command System for Structural Collapse Incidents
Slide 5-33

Incident Command System for Structural Collapse Incidents
Slide 5-34

Incident Command System for Structural Collapse Incidents
Slide 5-35

Incident Command System for Structural Collapse Incidents
Slide 5-36

Incident Command System for Structural Collapse Incidents — Slide 5-37

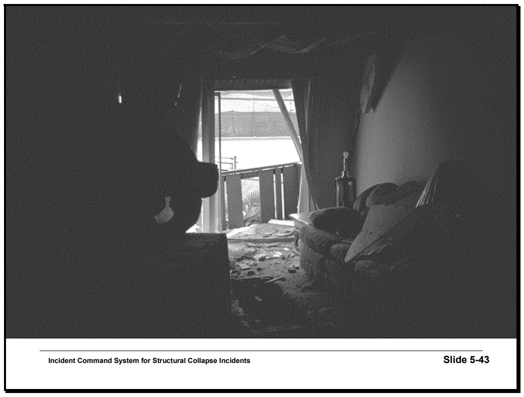
Incident Command System for Structural Collapse Incidents — Slide 5-38

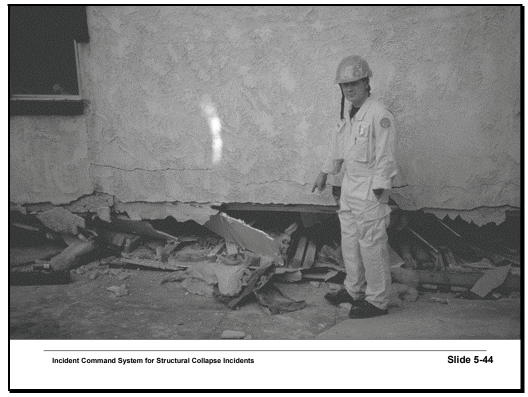
Incident Command System for Structural Collapse Incidents — Slide 5-39

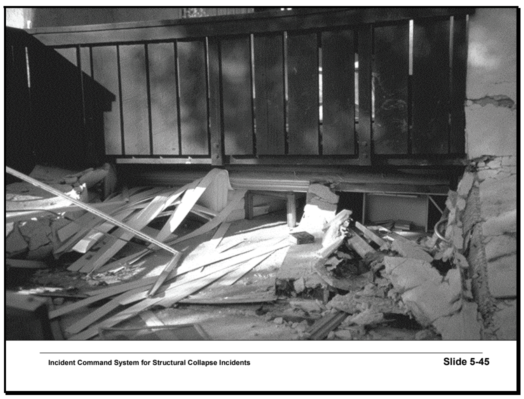
Incident Command System for Structural Collapse Incidents — Slide 5-40

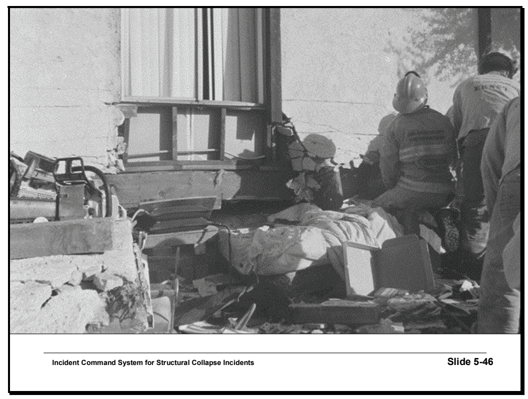
Incident Command System for Structural Collapse Incidents — Slide 5-41

Incident Command System for Structural Collapse Incidents — Slide 5-42

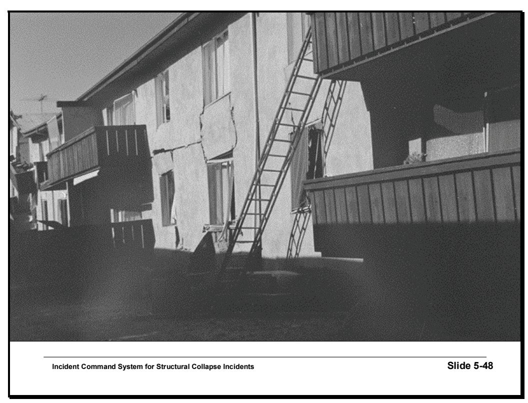

Incident Command System for Structural Collapse Incidents
Slide 5-43

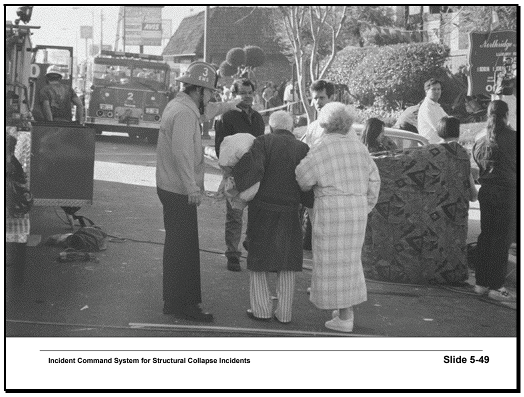

Incident Command System for Structural Collapse Incidents
Slide 5-44

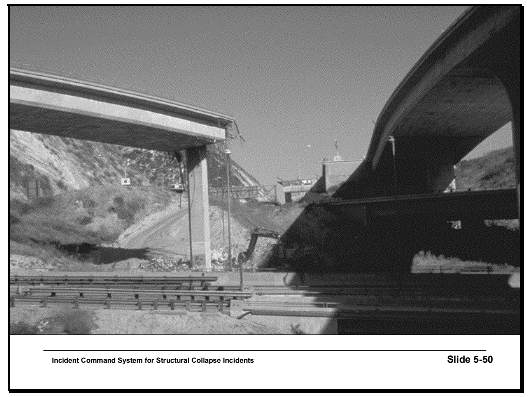

Incident Command System for Structural Collapse Incidents
Slide 5-45

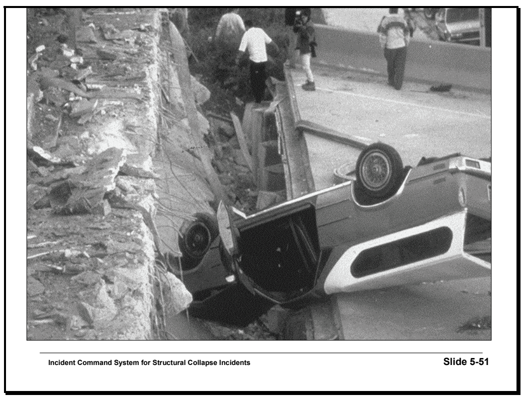

Incident Command System for Structural Collapse Incidents
Slide 5-46


SEARCH
RESCUE
Incident Command System for Structural Collapse Incidents
Slide 5-47

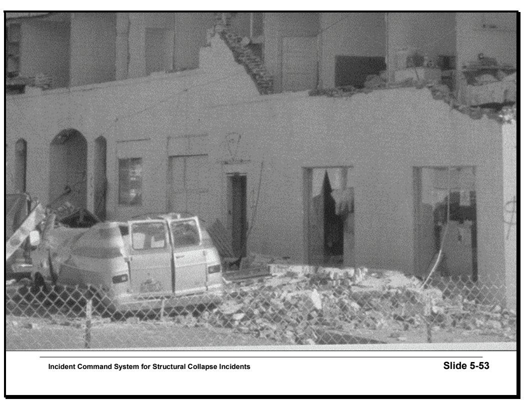

Incident Command System for Structural Collapse Incidents
Slide 5-48

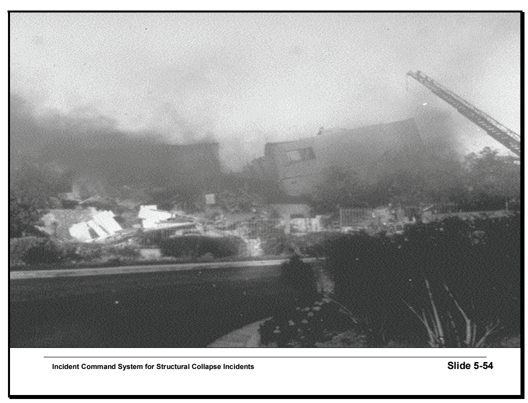

Incident Command System for Structural Collapse Incidents
Slide 5-49

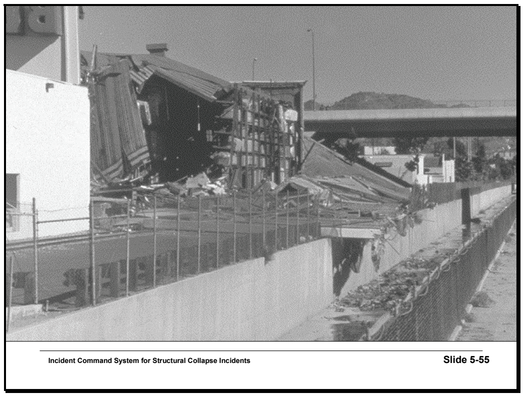

Incident Command System for Structural Collapse Incidents
Slide 5-50

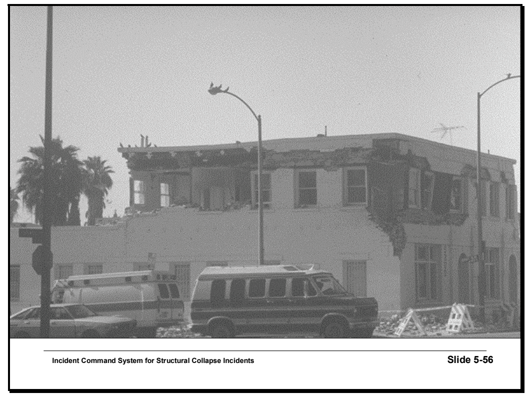

Incident Command System for Structural Collapse Incidents
Slide 5-51

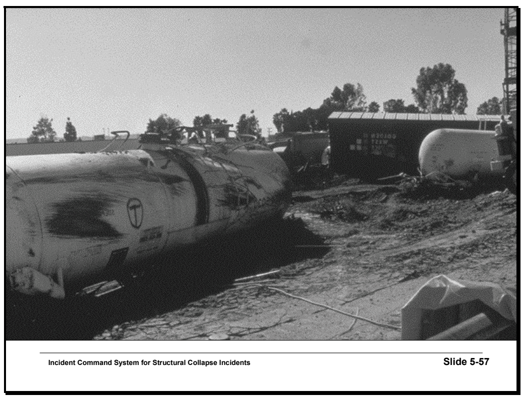

Ventura Fwy
East
363
Incident Command System for Structural Collapse Incidents
Slide 5-52


Incident Command System for Structural Collapse Incidents
Slide 5-53

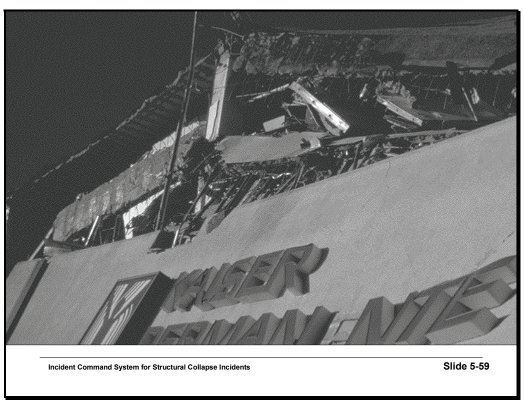

Incident Command System for Structural Collapse Incidents
Slide 5-54

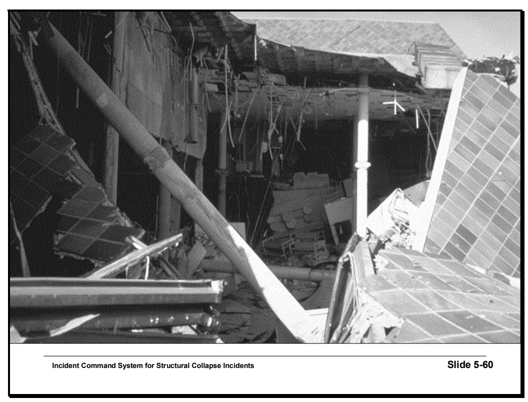

Incident Command System for Structural Collapse Incidents
Slide 5-55

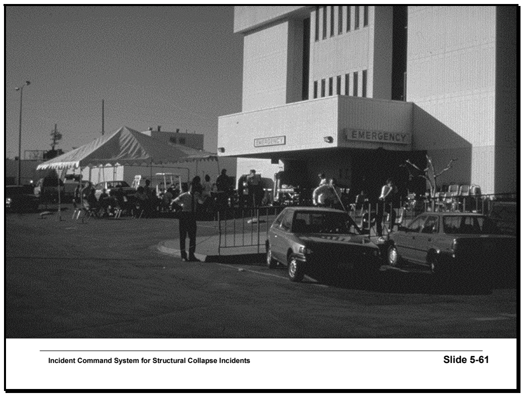

Incident Command System for Structural Collapse Incidents
Slide 5-56

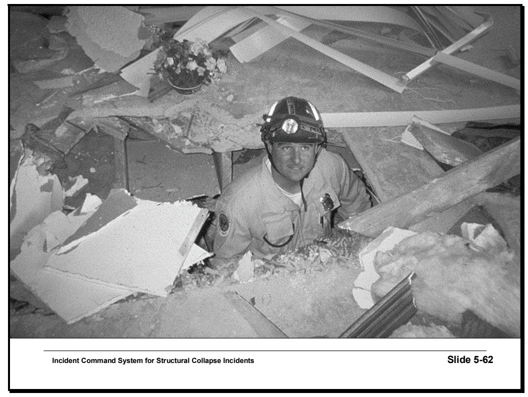

Incident Command System for Structural Collapse Incidents
Slide 5-57


Incident Command System for Structural Collapse Incidents
Slide 5-58

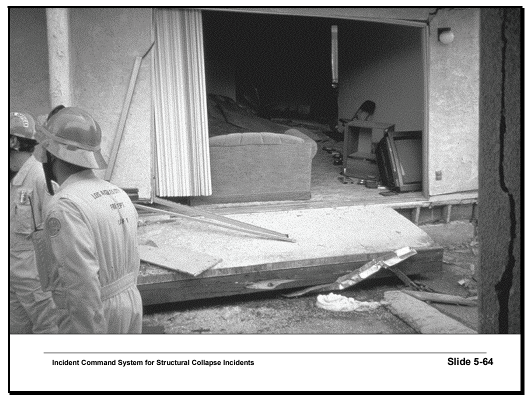

Incident Command System for Structural Collapse Incidents
Slide 5-59

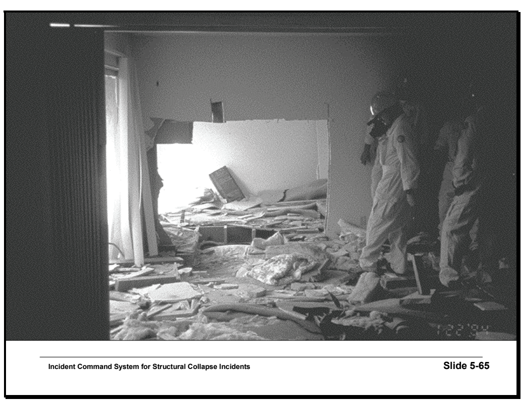

Incident Command System for Structural Collapse Incidents
Slide 5-60

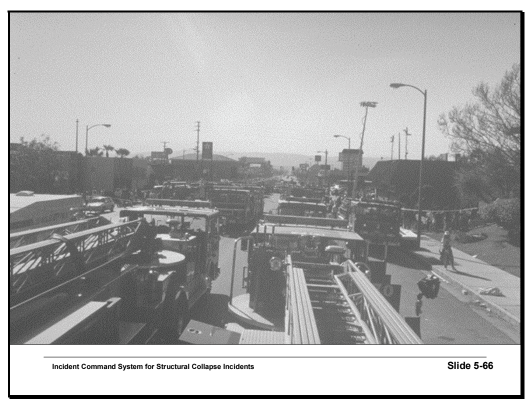

EMERGENCY
Incident Command System for Structural Collapse Incidents
Slide 5-61

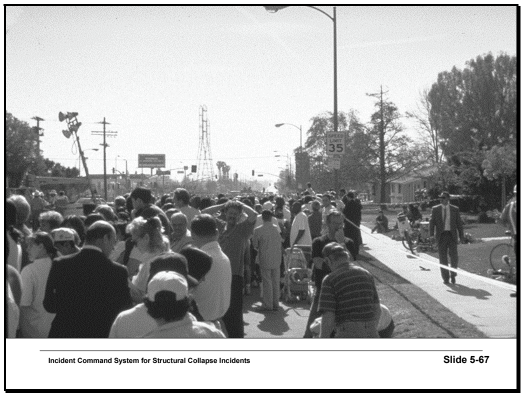

Incident Command System for Structural Collapse Incidents
Slide 5-62

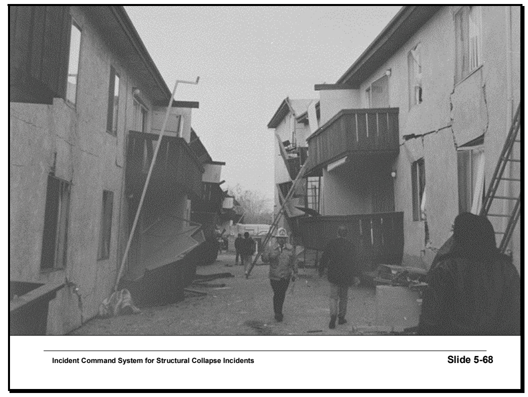

Incident Command System for Structural Collapse Incidents
Slide 5-63

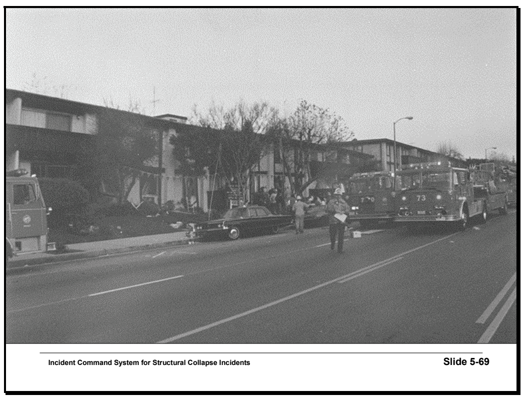

Incident Command System for Structural Collapse Incidents
Slide 5-64

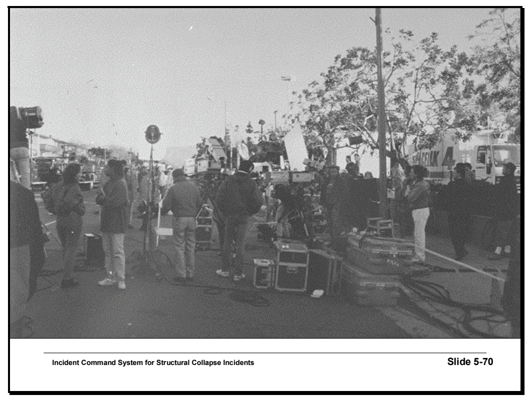

Incident Command System for Structural Collapse Incidents
Slide 5-65

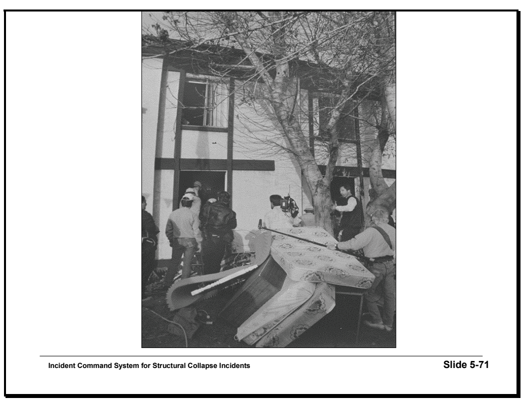

Incident Command System for Structural Collapse Incidents
Slide 5-66

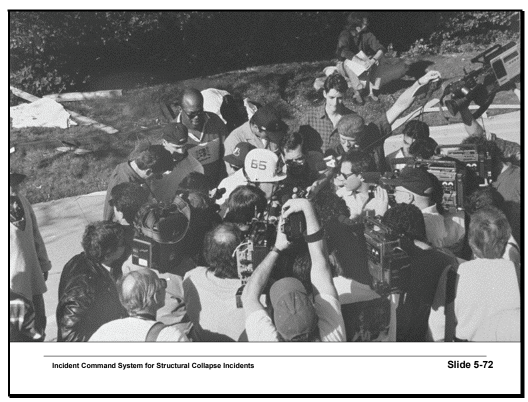

Incident Command System for Structural Collapse Incidents
Slide 5-67


Incident Command System for Structural Collapse Incidents
Slide 5-68


Incident Command System for Structural Collapse Incidents
Slide 5-69


Incident Command System for Structural Collapse Incidents
Slide 5-70


Incident Command System for Structural Collapse Incidents
Slide 5-71


Incident Command System for Structural Collapse Incidents
Slide 5-72

Incident Command System for Structural Collapse Incidents Slide 5-73

Unit Summary

The IC must

- Analyze a collapsed structure incident accurately.
- Develop appropriate strategies, tactics, and resource requirements to locate and rescue injured and trapped effectively.

Incident Command System for Structural Collapse Incidents Slide 5-74

Unit Summary (cont'd)

The command and coordination function:

- Obtains incident information.
- Analyzes intelligence.
- Develops strategies.
- Identifies/Develops objectives.
- Prioritizes objectives.
- Determines resource requirements.

Incident Command System for Structural Collapse Incidents Slide 5-75

Unit Summary (cont'd)

- Tasks resources.
- Identifies logistics requirements.
- Develops an ICS organization.
- Prepares and implements the IAP.
- Deploys resources.
- Evaluates operations and progress towards achieving objectives.
- Revises plan as needed to complete objectives.

Incident Command System for Structural Collapse Incidents Slide 5-76

Unit Summary (cont'd)

Response functions for structural collapse consist of:

- Command and coordination
- Search
- Rescue
- Medical
- Technical specialists
- Safety

Incident Command System for Structural Collapse Incidents Slide 5-77

Unit 6: Structural Collapse: Operational Phases

Unit 6: Structural Collapse: Operational Phases

Incident Command System for Structural Collapse Incidents Slide 6-1

Terminal Objective

The students will be able to describe all operational phases associated with a structural collapse incident.

Incident Command System for Structural Collapse Incidents Slide 6-2

Enabling Objectives

The students will:

- Define five operational phases.
- Describe conditions that trigger transition of operational phases.
- Demonstrate an ability to develop an appropriate Incident Command System (ICS) organization to command and control a structural collapse incident.

Incident Command System for Structural Collapse Incidents Slide 6-3

Enabling Objectives (cont'd)

- Identify, request, and apply specialized urban search and rescue (US&R) resources.
- Explain the application of critical scene management issues and factors in the appropriate operational phase.

Incident Command System for Structural Collapse Incidents Slide 6-4

Operational Phases

Major structural collapse incidents move through five operational phases:

- Phase 1: initial response
- Phase 2: expanded (reinforced) response
- Phase 3: extended response
- Phase 4: demobilization
- Phase 5: return to readiness

Incident Command System for Structural Collapse Incidents Slide 6-5

Phase 1: Initial Response

Incident Command System for Structural Collapse Incidents Slide 6-6

Involves Establishing Command

Process includes

- Announcing Command
- Assuming all Command and General Staff responsibilities
- Providing a brief radio report (location, type of structure, and situation)
- Establishing a Command Post (CP)

Incident Command System for Structural Collapse Incidents Slide 6-7

Involves a Sizeup

Assessment of:

- Survey site
- Type of problem
- Hazards
- Conditions
- Victims
- Exposures
- Potential for escalation

Incident Command System for Structural Collapse Incidents Slide 6-8

Involves Developing an Incident Action Plan

Steps include

- Understanding the situation
- Establishing objectives and strategy
- Developing tactical directions and assignments
- Preparing the plan (ICS Form 201)
- Implementing the plan
- Evaluating the plan

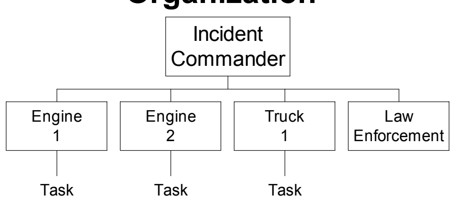
Incident Command System for Structural Collapse Incidents Slide 6-9

Involves Requesting Resources

Request of sufficient resources required to implement the IAP.

Incident Command System for Structural Collapse Incidents Slide 6-10

Involves Resource Deployment and Organization



Incident Command System for Structural Collapse Incidents Slide 6-11

Involves Resource Deployment and Organization (cont'd)

- Deploy resources to accomplish priority objectives
- Initiate scene management
  - Isolate the area
  - Establish zones

Incident Command System for Structural Collapse Incidents Slide 6-12

Involves Evaluating Response

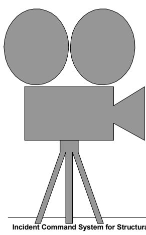
- Requires accurate information and good communications (status/progress reports).
- Involves determining resource effectiveness in achieving objectives.

Incident Command System for Structural Collapse Incidents — Slide 6-13

Activity 6.1

Implementing the Initial Incident Command System Organization

Incident Command System for Structural Collapse Incidents — Slide 6-14



Video: "Initial Response"

Incident Command System for Structural Collapse Incidents — Slide 6-15

Incident Command System for Structural Collapse Incidents — Slide 6-16

Incident Command System for Structural Collapse Incidents — Slide 6-17

Incident Command System for Structural Collapse Incidents — Slide 6-18

Incident Command System for Structural Collapse Incidents Slide 6-19

Incident Command System for Structural Collapse Incidents Slide 6-20

Incident Command System for Structural Collapse Incidents Slide 6-21

Incident Command System for Structural Collapse Incidents Slide 6-22

Incident Command System for Structural Collapse Incidents Slide 6-23

Incident Command System for Structural Collapse Incidents Slide 6-24

Incident Command System for Structural Collapse Incidents Slide 6-25

Phase 2: Expanded (Reinforced) Response

Incident Command System for Structural Collapse Incidents Slide 6-26

An expanded response is initiated when the IC determines that initial resources are insufficient.

Incident Command System for Structural Collapse Incidents Slide 6-27

Involves a Sizeup

This must

- **Be continuous**
- **Anticipate the need for an extended operation**
- **Document information**

Incident Command System for Structural Collapse Incidents Slide 6-28

Involves Transfer of Command

Consists of:

- **Communication with the officer being relieved**
- **A briefing (using ICS Form 201) that contains**
  - **Incident conditions**
  - **IAP**
  - **Progress toward completing objectives**
  - **Safety considerations**
  - **Resource assignments**
  - **Need for additional resources**
  - **Critical issues**

Incident Command System for Structural Collapse Incidents Slide 6-29

Involves Transfer of Command (cont'd)

- **Reassignment of the officer being relieved**
- **Communication of the change of Command**

Incident Command System for Structural Collapse Incidents Slide 6-30

Involves Evaluation of Situation

Identify
- What happened
- Progress made
- Quality of current plan
- Incident growth potential
- Present (and future) resource and organizational capability

Incident Command System for Structural Collapse Incidents Slide 6-31

Involves Developing a Risk Management Plan

- Hazards must be assessed.
- Hazards must be controlled (or avoided).
- Risk must be managed.

Incident Command System for Structural Collapse Incidents Slide 6-32

Involves Scene Control

Establishment consists of:
- Establishing zones
- Evacuating bystanders
- Controlling perimeters
- Establishing site security
- Establishing a suitable CP
- Establishing a Staging Area
- Establishing a triage and treatment area

Incident Command System for Structural Collapse Incidents Slide 6-33

Involves Developing/ Expanding an IAP

The plan needs to provide:
- Clear statement of objectives and actions
- Basis for measuring work effectiveness
- Basis for measuring progress
- Basis for providing accountability

Incident Command System for Structural Collapse Incidents Slide 6-34

Involves Developing/ Expanding an IAP (cont'd)

Essential IAP elements include
- Statement of objectives
- Incident organization
- Tactics and resource requirements
- Support plans

Incident Command System for Structural Collapse Incidents Slide 6-35

Involves Developing/ Expanding an IAP (cont'd)

IAP objectives should be
- Achievable
- Measurable
- Flexible

Incident Command System for Structural Collapse Incidents Slide 6-36

Involves Developing/ Expanding an IAP (cont'd)

Written IAP's should be used when:

- **Two or more jurisdictions are involved.**
- **Operational periods are required.**
- **Many organizational elements exist.**
- **Required by agencies involved.**
- **The IC decides to have a written document.**

Incident Command System for Structural Collapse Incidents Slide 6-37

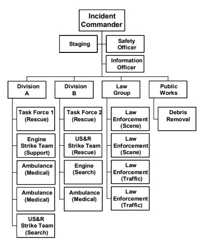
Involves Organization Expansion

Expansion is based on:

- **Resource needs**
- **Management needs**

Incident Command System for Structural Collapse Incidents Slide 6-38

Expanded Response



Incident Command System for Structural Collapse Incidents Slide 6-39

Activity 6.2

Implementing an Expanded Incident Command System Organization

Incident Command System for Structural Collapse Incidents Slide 6-40

Incident Command System for Structural Collapse Incidents Slide 6-41

Incident Command System for Structural Collapse Incidents Slide 6-42

Incident Command System for Structural Collapse Incidents Slide 6-43

Incident Command System for Structural Collapse Incidents Slide 6-44

Incident Command System for Structural Collapse Incidents Slide 6-45

Incident Command System for Structural Collapse Incidents Slide 6-46

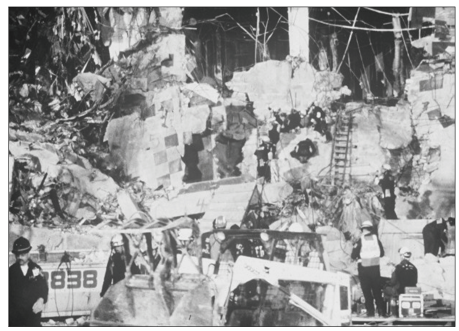
Incident Command System for Structural Collapse Incidents Slide 6-47

Incident Command System for Structural Collapse Incidents Slide 6-48

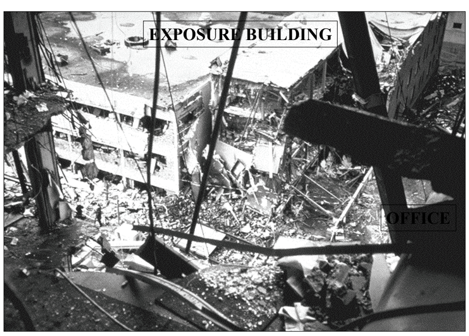
Incident Command System for Structural Collapse Incidents Slide 6-49

Incident Command System for Structural Collapse Incidents Slide 6-50

Incident Command System for Structural Collapse Incidents Slide 6-51

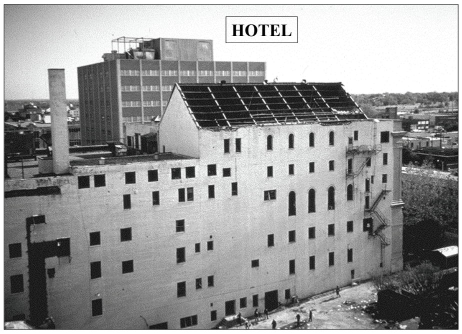


Incident Command System for Structural Collapse Incidents Slide 6-52



Incident Command System for Structural Collapse Incidents Slide 6-53

Incident Command System for Structural Collapse Incidents Slide 6-54



Incident Command System for Structural Collapse Incidents Slide 6-55

Incident Command System for Structural Collapse Incidents Slide 6-56

Phase 3: Extended Response (24-hour operation)

Incident Command System for Structural Collapse Incidents Slide 6-57

Involves a Detailed IAP

A detailed IAP is necessary for incidents with:

- **Extended response**
- **Operational periods**
- **Multiagency involvement**
- **Multijurisdiction involvement**

Incident Command System for Structural Collapse Incidents Slide 6-58

Involves a Detailed IAP (cont'd)

- **Developed for each operational period**
- **Essential elements include**
  - **Specific detailed objectives**
  - **Tactics (to meet objectives)**
  - **Resource assignments**
  - **Incident organization**
  - **Maps**
  - **Plans for communications, medical, safety, and traffic**

Incident Command System for Structural Collapse Incidents Slide 6-59

Involves a Detailed IAP (cont'd)

- **Serves as a guide to evaluate operational effectiveness (based on objectives set for the operational period)**
- **Changes (as work progresses, priorities change)**
- **Is flexible (contingency plans are a necessity)**

Incident Command System for Structural Collapse Incidents Slide 6-60

Involves Operational Periods

- These are planned time periods (needed to achieve objectives).
- May require shorter operational periods (due to rapidly changing incidents).

Incident Command System for Structural Collapse Incidents — Slide 6-61

Involves Logistics

Logistics support needs to change to meet long term needs such as:

- Lighting
- Large food/water supply
- Major equipment, repair, supply function
- Special equipment acquisitions
- Other support functions (specific to a structural collapse incident)

Incident Command System for Structural Collapse Incidents — Slide 6-62

Involves Incident Facilities

Those used may include

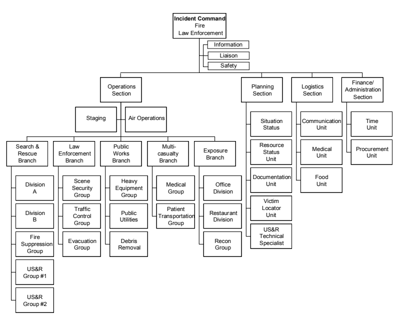
- Multiple Staging Areas
- Large base for personnel and equipment support
- Supply and equipment distribution system
- Expanded Incident Command Post (ICP)
- Larger triage and treatment areas
- Morgue
- Decontamination area

Incident Command System for Structural Collapse Incidents — Slide 6-63

Involves an Extended ICS Organization

A structural collapse incident of major magnitude may require an incident organization that involves resources from many agencies who work in a Unified Command.

Incident Command System for Structural Collapse Incidents — Slide 6-64



Incident Command System for Structural Collapse Incidents — Slide 6-65

Involves an Extended ICS Organization

During a multibranch response:

- The IC assigns Logistics and Finance/ Administration Chiefs.
- Operations has established five branches.
- Planning, Logistics, and Finance/ Administration have several operational units.

Incident Command System for Structural Collapse Incidents — Slide 6-66

Involves Interface with Emergency Operations Center

- Activated to support response agencies and coordinate multiagency operations.
- Local government EOC's are the central point for coordination within and outside the jurisdiction.
- Field level coordination may go through dispatch.

Incident Command System for Structural Collapse Incidents Slide 6-67

Involves Interface with Emergency Operations Center (cont'd)

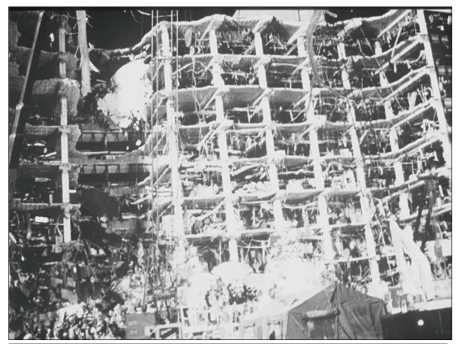
- May be managed using the five primary ICS functions.
- The IC normally interfaces with the EOC OSC.
- ICS Section Chiefs may interface directly with EOC Section Chiefs.

Incident Command System for Structural Collapse Incidents Slide 6-68

Activity 6.3

Organizing Extended Operations

Incident Command System for Structural Collapse Incidents Slide 6-69

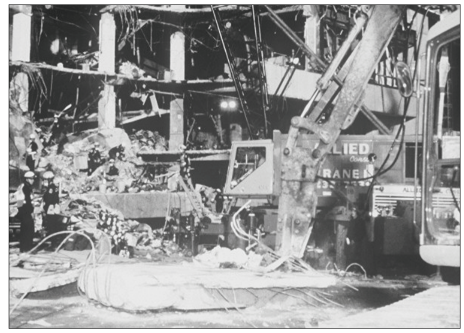


Incident Command System for Structural Collapse Incidents Slide 6-70

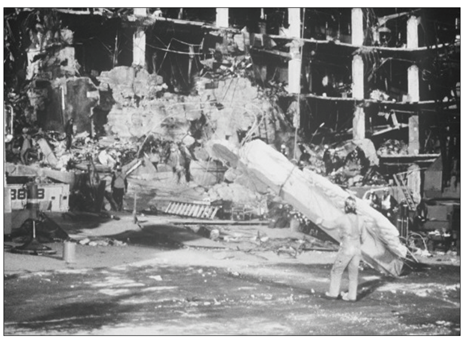
Incident Command System for Structural Collapse Incidents Slide 6-71

Incident Command System for Structural Collapse Incidents Slide 6-72

Incident Command System for Structural Collapse Incidents Slide 6-73

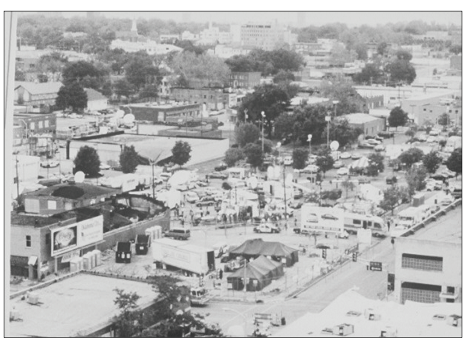


Incident Command System for Structural Collapse Incidents Slide 6-74

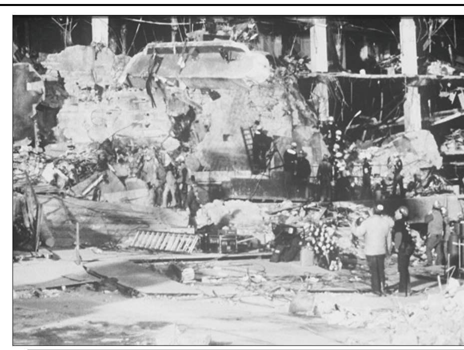


Incident Command System for Structural Collapse Incidents Slide 6-75

Incident Command System for Structural Collapse Incidents Slide 6-76



Incident Command System for Structural Collapse Incidents Slide 6-77



Incident Command System for Structural Collapse Incidents Slide 6-78

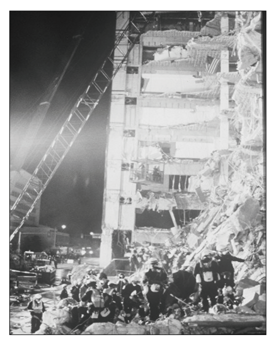
Incident Command System for Structural Collapse Incidents Slide 6-79

Incident Command System for Structural Collapse Incidents Slide 6-80

Incident Command System for Structural Collapse Incidents Slide 6-81

Incident Command System for Structural Collapse Incidents Slide 6-82

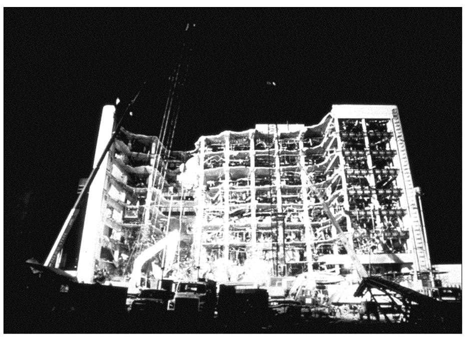
Incident Command System for Structural Collapse Incidents Slide 6-83



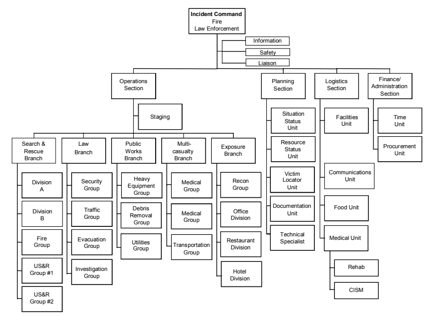
Incident Command System for Structural Collapse Incidents Slide 6-84

Incident Command System for Structural Collapse Incidents Slide 6-85

Incident Command System for Structural Collapse Incidents Slide 6-86



Incident Command System for Structural Collapse Incidents Slide 6-87



Incident Command System for Structural Collapse Incidents Slide 6-88

Unit Summary

Five operational phases of an incident are
- Initial response
- Expanded (reinforced) response
- Extended response (24-hour operations)
- Demobilization
- Return to readiness

Incident Command System for Structural Collapse Incidents Slide 6-89

Unit Summary (cont'd)

- Incident action planning is continuous and provides direction for all incident personnel.
- The ICS expands (or contracts) based on resource and management needs of the incident.
- Sizeup, safety, risk, management, scene control, response evaluation, and coordination are key functions of the IC.

Incident Command System for Structural Collapse Incidents Slide 6-90