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BEST PRACTICE

Incident Site Safety Planning: Deployment

PURPOSE

Discusses pre-planning initiatives for developing and improving resource deployment at emergency incident sites.

SUMMARY

Response organizations should make preparations to efficiently and effectively execute the on-site deployment of personnel, vehicles, and other emergency response resources. These preparations include recognizing common deployment problems, creating relevant standard operating procedures (SOPs), and conducting extensive officer/personnel training.

DESCRIPTION

Emergency response organizations must deploy personnel, vehicles, and other necessary resources at an incident site to conduct response and recovery operations. For many response organizations, incident site deployment is an everyday task. However, if performed incorrectly, deployment can lead to significant incident site safety problems. Many incident site "maydays" result from mistakes made during the deployment phase. Response organizations can prevent on-site deployment errors through extensive pre-incident planning and training.

This Best Practice discusses the importance of deployment preparation and provides information response organizations can use to improve their deployment practices. The Best Practice focuses on two areas of incident site deployment: vehicle deployment and personnel deployment.

Vehicle Deployment

The on-site deployment of response vehicles is crucial to the success of any emergency response operation. It is especially important when multiple departments and agencies are involved in a response, as is the case during mass casualty incidents. Accordingly, organizations must be familiar with common vehicle deployment problems, as well as how to mitigate those problems through pre-incident planning.

Common Vehicle Deployment Problems

The haphazard deployment of response vehicles at an incident site can lead to delays in response operations, injury, or even death. The most common vehicle deployment problems include:

- **Excessive Congestion:** Emergency response operations suffer when too

Many first-arriving police units parked as close to Columbine High School as possible during the [April 1999 shootings](#) in Littleton, CO. This led to excessive incident site congestion that blocked important access routes to the school. The congestion eventually forced on-site commanders to use tow trucks to clear a path for ambulances, fuel trucks, and other vehicles.

many vehicles are situated in close proximity to an incident site. Vehicle congestion blocks operation access points and forces responders to work in constricted areas. It also obstructs incident scene entry and exit routes, which are vital for the timely removal of victims.

- **Inadequate Vehicle Positioning:** Poor vehicle placement at an incident site can limit or eliminate the operational tactics available to responders. It can also lead to serious safety problems. Positioning vehicles too close to an incident scene hazard, such as power lines, or the incident itself can result in responder injury or death.
- **Unsafe Vehicle Operation:** Personnel working at an incident site are put in danger when vehicle operators disregard general safety benchmarks, such as speed limits and traffic signals. Unsafe vehicle operation can cause on-site accidents that divert time, resources, and personnel away from initial response operations.

Incident site congestion and inadequate vehicle placement hindered the response to the [Station Night Club Fire](#) in West Warwick, Rhode Island. The problems were alleviated after the creation of a staging area. For more information on vehicle deployment at the Station Club Fire, please see *Lessons Learned Information Sharing Lesson Learned, "Incident Site Management: Using Staging Areas to Coordinate On-Site Emergency Vehicle Parking."*

According to the [Arlington County After-Action Report](#), some emergency vehicles operated at unsafe speeds during the response to the Pentagon following the September 11, 2001 attacks. As a result, a safety officer was assigned to monitor emergency vehicle speeds. For information, please see *Lessons Learned Information Sharing Lesson Learned, "Safe Vehicle Speeds at Incident Sites."*

Improving Vehicle Deployment

Response organizations can complete pre-incident measures that will help their personnel avoid vehicle deployment mistakes and improve the overall efficiency of incident site operations. These measures include:

- Developing Relevant SOPs, and
- Providing Vehicle Operators Training.

Developing Relevant SOPs

Response organizations can adopt and implement SOPs that create a controlled and predictable incident site conducive to safe vehicle deployment. These SOPs include:

- **Staging:** Staging SOPs provide response organizations with a standard plan for the initial deployment of resources to an incident site. They ensure that vehicle operators obtain direction from Incident Command before arriving on-scene. Staging SOPs also facilitate the early establishment and enforcement of staging areas during larger incidents. These practices reduce the likelihood of congestion and/or inadequate vehicle placement during an emergency response. Response organizations' staging SOPs should include instruction on staging at both large and small incidents. This can be accomplished by delineating "level 1" staging from "level 2" staging. Level 1 protocols are utilized during small- to medium-sized incidents; level 2 staging is necessary during large incidents that involve multiple units and the creation of a physical staging area. Staging SOPs should also discuss the role and responsibilities of a staging officer/manager.

A number of exemplary jurisdictions have posted staging SOPs online, including [Moraine, OH](#), [Ennis, TX](#), and [Phoenix, AZ](#). The [Navajo Nation](#) has its unit staging guidelines on the Internet, as well.

Staging officers can identify and maintain staging areas at an incident site. They can also keep an inventory of what resources are staged and report that inventory to the Incident Commander (IC). SOPs with instruction on when and how a staging officer(s) will be designated during a response increases the probability one will be assigned in a timely manner during an actual incident.

- **Vehicle/Apparatus Positioning:** The positioning of response vehicles at an incident site is dictated by that incident's circumstances and surrounding environment. However, response organizations should create apparatus positioning SOPs that provide basic guidelines personnel can follow at any incident scene. Positioning procedures may include general instruction on tactical techniques, safety benchmarks, and common positioning mistakes.
- **Vehicle Operation:** Vehicle operation SOPs provide emergency responders with the information and guidelines necessary to avoid unsafe vehicle deployment practices. A response organization's vehicle operation SOPs must clearly define what is expected of personnel while operating a vehicle. These procedures should also include a detailed discussion of an organization's driving policies, such as observing basic speed rules, utilizing defensive driving techniques, and using sirens/lights.

Roadway Vehicle Positioning

Apparatus positioning is especially important at highway or other roadway response operations. Response vehicles should be placed so they provide a safety barrier for on-scene victims and emergency personnel. The **Emergency Responder Safety Institute** has posted a helpful SOP titled, "[Safe Positioning While Operating in or Near Moving Traffic](#)" on its website, [Respondersafety.com](#). In addition, [Fairfax County, VA Fire and Rescue](#) and [Phoenix, AZ Fire Department](#) highway operating procedures can be found in appendix C of the **Federal Emergency Management Agency's** "[Emergency Vehicle Safety Initiative.](#)"

Providing Vehicle Operators Training

Providing vehicle operators training affords personnel the opportunity to learn techniques and skills needed to safely operate an emergency vehicle. Vehicle operator instruction can be completed in-house; alternatively, response organizations can send their personnel to a certified course in their area. Instruction should involve a variety of components, including:

- Classroom discussions of the theory and concepts associated with safe vehicle operation;
- Simulation activities, such as tabletop exercises, that familiarize students with vehicle operation principles and decision-making processes; and
- Hands-on operation training conducted by professional, appropriately certified instructors.

Driving Simulators

Several organizations and training facilities, such as the [New York City, NY Fire Department](#), the [Ventura County, CA Fire Department](#), and the [Sacramento, CA Regional Driver Training Facility](#), utilize a driving simulator during vehicle operators training. The simulators allow students to train against a number of emergency scenarios in a controlled environment. The use of simulators help students improve their response times and decision-making skills.

To improve on-scene vehicle deployment, vehicle operator training must include segments dedicated to:

- Incident scene parking/vehicle placement,
- Lessons learned from problematic vehicle deployments, and
- Vehicle/apparatus backing.

The **U.S. Fire Administration** and the **National Volunteer Fire Council** have released a [web-based educational program](#) that includes an emergency vehicle safety best practices self-assessment, standard operating guideline examples, and behavioral motivation techniques to enhance emergency vehicle safety. The initiative includes a [“Best Practice Self-Assessment Product Chart”](#) which contains Internet links to helpful emergency vehicle safety training programs and products. An SOP entitled [“Emergency Vehicle Driver Training”](#) is also part of the program.

Personnel Deployment

The initial deployment of personnel at an incident site creates a foundation for the entirety of response operations. If performed in an unsafe, disorganized fashion, the rest of the incident’s response is likely to follow a similarly dangerous pattern. This can, and has, cost the lives of emergency response personnel and victims. To avoid unnecessary injuries and fatalities, response organizations must be familiar with common personnel deployment problems. Response organizations must also conduct pre-incident preparations that will reduce or eliminate the occurrence of such mistakes.

Common Personnel Deployment Problems

Response personnel can be deployed at an incident site in a reckless, and therefore hazardous, manner. Personnel deployment mistakes are frequently made at the command level, but can also be committed by individual responders. Some of the most common personnel deployment problems include:

- **Inadequate Incident Site Risk Assessment/Incident Action Plan (IAP):** A safe response operation strategy, known as an IAP, cannot be created without the completion of a comprehensive incident site risk assessment. Without an accurate IAP, emergency responders face a myriad of incident site safety risks. Chief among these risks is the deployment of personnel into offensive tactical positions under defensive circumstances. This mistake can result in injury or death due to structural collapse, chemical contamination, incident site violence, thermal insult, suffocation, or other incident site dangers.
- **Inability to Reassess Changing Incident Site Conditions/Operational Strategy:** Personnel deployment mistakes often occur when ICs fail to continually assess incident site conditions and change their operations strategy accordingly. Utilizing an obsolete or inappropriate operational strategy can lead to prolonged work cycles, the dispatch of personnel to dangerous depths within structures, and other hazardous deployment errors.
- **Responders Operating Outside of Incident Command:** Emergency responders place themselves and others at risk when they self-deploy at an incident site. Operating outside the Incident Command structure, commonly referred to as “freelancing,” disallows the IC from maintaining personnel accountability and, subsequently, strategically and safely placing his/her response resources. It also enables responders with little situational awareness to choose their incident site positions and responsibilities.

For more on the importance of personnel accountability at emergency incident sites, see the *Lessons Learned Information Sharing* Best Practice: [“Incident Site Safety Planning: Personnel Accountability.”](#)

Improving Personnel Deployment

Response organizations can complete several pre-incident measures that will help their personnel avoid personnel deployment mistakes and improve the overall efficiency of incident site operations. These measures include:

- Adopting a Risk Management Plan,
- Conducting Relevant Officer Training, and
- Creating Standard Incident Command Worksheets.

Adopting a Risk Management Plan (RMP)

Response organizations should develop and adopt a clearly defined and exercised RMP. A RMP provides ICs with a standard safety benchmark, thereby acting as a foundation for all incident site personnel deployment decisions. Organizations generally develop their RMP in-house and follow a tiered approach. A tiered RMP supplies ICs with a pre-determined risk-matrix, useable during any size or type of incident. All RMPs should stress the importance of responder wellbeing over that of property or “unsavable” lives.

The **Phoenix, AZ Fire Department** operates under the following, simple [RMP](#):

- We will risk our lives a lot, in a calculated manner, to save SAVABLE lives.
- We will risk our lives a little, in a calculated manner, to save SAVABLE property.
- We will not risk our lives at all for lives or property that are already lost.

Conducting Relevant Officer Training

A response organization should provide its command personnel with the requisite training to execute its RMP during an emergency incident. Training that stresses the following skills will enable command personnel to successfully implement a RMP and better perform personnel deployment at an incident site:

- **Initial Incident Site Size-up/Risk Assessment:** Officers should be able to evaluate and determine the potential hazards associated with an incident upon arrival at an incident scene.
- **Incident Action Plan Development:** ICs should have the skills to quickly analyze the information they obtain from the incident site size-up and translate it into a tactical IAP.
- **Reassessment and Plan Adaptation:** Officers need the wherewithal to continually compare incident site conditions against the incident’s response strategy. This is essential for determining where on-site personnel should and should not be deployed.

Response organizations can also improve incident site deployment by training non-command personnel. Emergency responders must be well-informed on the benefits of working within the Incident Command System (ICS) and not freelancing. In addition, they must have the skills to feed data back to Incident Command during an incident, so the IC has the information needed to reassess his/her response strategy.

Creating Standard Incident Command Worksheets

Response organizations can create worksheets that facilitate the completion of size-ups and IAPs at an incident site. The development of standard worksheets affords ICs a simple, familiar form that they can utilize during an emergency response. An effective worksheet provides ICs with space to track resources, record critical information, and identify ICS components. It also acts as an Incident Command “checklist,” which ensures that ICs

retain an awareness of all their incident site responsibilities. The use of a worksheet can improve an IC's ability to quickly develop a comprehensive IAP and increases the likelihood that personnel deployment will be accomplished in a safe and logical fashion.

Response organizations can develop their standard templates by utilizing templates that have been created by other departments and agencies. Templates from several jurisdictions are available on-line, including: [Charlottesville, VA](#) and [Salisbury, NC](#). Pre-made worksheets can also be purchased from a wide-array of retailers.

Some jurisdictions have completed incident specific pre-plans that they record on their tactical Incident Command worksheets. The pre-plans provide ICs with an initial, vetted management plan for operations at an incident scene. It also gives ICs an idea of what strategies do not work under certain circumstances.

RESOURCES

Standards and Regulations

NFPA 1002 Standard on Apparatus Driver/Operator Professional Qualification

- Identifies the professional levels of competence required of the fire apparatus driver/operator.

NFPA 1451 Standard for a Fire Service Vehicle Operations Training Program

- Contains the minimum requirements for a fire service vehicle risk management program.

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