

Information Gathering and Technology Use During Disaster Deployments

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THE IMPORTANCE OF GOOD INTELLIGENCE GATHERING

It is inevitable during a disaster deployment that a person in a leadership position will need to make swift decisions concerning a crisis when the available information is sparse, controversial, or even unconfirmed. There are many cases in the literature where a disaster was the result of, or a situation within the disaster was compounded by, a breakdown in the system by which information was collected, evaluated, disseminated, and utilized. Fortunately, tools and techniques are available to enable rescue workers to acquire information, validate the quality and source of the information, and ultimately provide the best possible information to decision makers.

The responsibility for information gathering usually falls on the team leaders and those in the planning branch of the incident command system. Other branches such as the logistics/communications group can also be involved with this task. Many parties will assist with information management and information gathering. In some situations, every team member plays a role.

Retrospective analysis of many disasters has shown that faulty information and an inability to evaluate the quality of the information had significant roles in decreasing the effectiveness of the response. This type of study is possible when the information that was at hand is known and the decision process has been documented. However, countless response errors have occurred because information was never collected or was unknown, forcing the persons in charge of the response to make decisions blindly. Good information gathering, assessment, compilation, and recording will only improve response efforts. Additionally,

recording the information obtained and keeping a log of who was notified about what and when will facilitate evaluations and improve future mitigation efforts. It is hoped that decision-makers will not make the same mistakes twice.

Team leaders have a responsibility within the response system to make the best decisions possible. Good intelligence and reliable information sharpen their decision-making processes. In contrast, making bad decisions and appearing to lack knowledge reduce team members' trust in the leaders, prompting them to self-task and free-lance. Being informed also allows team leaders to provide more convincing explanations for particular actions taken during crisis situations.

PREPARING FOR EFFECTIVE INTELLIGENCE GATHERING

The Information-Gathering Resource List

Prior to entering a crisis situation, all persons responsible for intelligence gathering should start identifying information resources. Contact information, availability, and area of expertise should be recorded. Even sources of lesser credibility can be included in the resource list if the user can calibrate it in terms of bias and reliability. The most practical real-world example is the news media. Some media sources are quite accomplished at getting a reporter to the scene of the disaster and reporting the facts. Others are not and may tend to sensationalize the facts, just to compete. On occasion though, a less reliable source may have a reporter in the right place at the right time and may be the best source of information until the others catch up.

A variety of information sources can be tapped by a response team prior to deploying. Even though a disaster site is distant from a team's home base, some excellent local sources of information should not be overlooked. Cartographers and geographic information system (GIS) experts at a local university or college may feel local pride for a team and thus may be quite

generous in providing detailed maps, census data, warnings about potential health hazards, and other useful information about a disaster site. Other sources of information can be contacted by phone or via the Internet. Government agencies are mandated to make this information available because federal funds are used to collect it.

As teams develop their resources for information gathering and start recording them in a resource list, they should consider cataloging the resources. One way of cataloging resources is to specify for which type of disaster the resource would be most useful. Another way of cataloging sorts resources based on level of credibility. Resources also can be catalogued based on level of focus. In most cases, broader, general resources should be contacted before focused, detailed resources. Resource type also may play a role in development of a list. A Web page on the Internet may provide more rapid, easily retrievable information than a local university professor who must be called from class for a discussion with a rescue worker. The foundation of the information-gathering practice is the identification of accessible sources of meaningful information. If the foundation does not support ease of use in unison with flexibility, it will not promote rapid, accurate information gathering during a time of crisis.

The Situation Report (SITREP)

The SITREP is a written record of the status of the event from the perspective of the agency producing the report. It describes fact, not conjecture, so it is usually a reliable source of information. Many response agencies produce SITREPs frequently to document their response efforts; therefore, these reports are valuable sources of information, in both background and detail. SITREPs function as the official means of interagency communication during a large-scale event. Each team should produce its own SITREPs, which can be used to report to team members (both on site and at home), to the National Disaster Management System (NDMS), and

to other interested parties. The report provides a day-to-day record of issues, solutions, personnel responding, assets being utilized, victims treated, etc. Information-gathering personnel should look for situation reports from other agencies routinely during a disaster and include the information from those agencies in their overall picture of the event. Many SITREPs are distributed via e-mail. Team members should seek out the appropriate mailing lists and subscribe to them. Both the Federal Emergency Management Agency (FEMA) and NDMS publish SITREPs at least daily during a large event.

THE TRIGGER TO INITIATE INFORMATION GATHERING

The NDMS has established procedures for notifying its response teams about a deployment. The first level is considered an **advisory**. During this phase, NDMS provides teams with a brief situation report of an event that may result in the need for NDMS assets. Since it is an advisory, NDMS will not reimburse team members for any expenses incurred as the result of the advisory, including those associated with information gathering. However, this is an excellent time for the team to start basic inquiries about the disaster and to anticipate the next notification phase.

The next NDMS level, the **alert**, places certain teams in an increased state of readiness because an event has occurred or is expected to occur. Those NDMS assets might be activated within the next 24 hours. Because the NDMS probably will reimburse team members for some administrative costs (up to a set limit), this is an excellent time for the team to acquire maps of the area, begin making phone calls, and set up information-gathering activities.

Next, teams are activated by NDMS, i.e., they are deployed to the disaster. Team members are reimbursed for costs associated with the activation. Although the team is focused on the packaging of equipment, transport of personnel, and logistical issues at this time,

information-gathering activities should continue. Some of the responsibility for information gathering can be shifted to members of the team who are unable to deploy or who have been designated as home team support. These members may be eligible to be on the team payroll and reimbursed for their time, even though they are not deploying with the team. The disaster is evolving quickly at this time, so it is critical for information to be assessed and disseminated to team leaders. Bad decisions made now may have dire consequences later.

The last phase of deployment is **demobilization**. Even though the team is coming home or is already home and no longer needs to make critical decisions, team leaders and information-gathering personnel can assist the teams replacing them at the disaster site by passing along knowledge of the situation. During Hurricane Marilyn in 1995, the MA-1 and OH-1 DMATs gave a written report of “the situation” as they knew it to the teams relieving them. The document contained information about local customs, a tropical linguistic lesson, and a tropical medicine lesson. Patient treatment statistics had been compiled for the report, as had assessments of inventory items found to be lacking, and others that had been taken in excess. The report provided contact information for major participants, other useful phone numbers, radio frequencies, and descriptions of special situational procedures. This document was prepared through the combined efforts of information-gathering personnel on the two departing teams, who had carefully maintained records of information gathered and were able to organize it in a concise, relevant report format.

The information-gathering group's final task is to provide other teams and NDMS with an after-action report that details lessons learned, what went wrong, what went right, and potential solutions to problems likely to arise during future responses.

It is also prudent for the team to have an additional level in their activation procedures. A **pre-alert** phase will give the team an opportunity to practice information gathering more often. A pre-alert is issued when the team notices an event. Even if the event is not expected to result in deployment, this is an excellent opportunity for team members to become educated about information-gathering tools. Many times, a team member becomes aware of an event before the leaders notice it. Perhaps they work in a fire department or a hospital emergency department and hear about the event through EMS channels; or they could be at home on a day off, watching CNN while they fold laundry. Team members should understand what types of events would create a disaster situation, i.e., “the demands of the event overwhelm response resources.” Team members should be taught how to alert team leaders about an event—its location and type and the source of the information.

Under pre-alert or alert conditions, the team leaders will establish a command center, where the following activities will be coordinated:

- Begin tracking the event in an incident event log
- Notify the team's primary and secondary leaders.
- Begin to implement and manage contingency plans for deployment.
- Begin to implement standard operating procedures and begin using pre-deployment checklists.
- Track tasks completed and document response actions.
- Begin team member tasking.
- Begin tracking use of any information-gathering resources and the information obtained.
- Start regular briefings of team members regarding the situation.
- Depending on the nature of the event, prepare to or begin to activate the team's alert network.

This myriad of information can be monitored on a tracking board—on a clipboard carried by one of the team leaders or, ideally, on a dry-erase board in the team's headquarters or office. (All information on a dry-erase board should be recorded periodically. A simple means of recording is to take photographs of the board at periodic intervals).

UNDERSTANDING THE EVENT

When an event is unfolding, team members need to gain an understanding of it. More than likely, team leaders will be able to convey some knowledge of the event, the potential threat to populations and property, the injury patterns, and the typical consequences. Team leaders should review the data periodically to refresh everyone's memories and identify information resources required. This process also establishes a frame of mind for each team leader and those assisting with information gathering, helping them focus on the facts in relation to the incident and better judge incoming information as being credible (based on what they know is typical for this type of disaster) or a bias or sensationalism from the information source, which lessens the credibility/reliability of the information. The following event specifics should be reviewed:

- Type of disaster: natural, man-made, technological, etc
- Accidental vs. intentional
- Severity and degree
- What other response agencies are involved
- Expected injury patterns for this disaster type, e.g., drowning, exposure and infection during floods, crush, trauma and dehydration during earthquakes
- Vulnerable populations specific to the area

TAKING ADVANTAGE OF THE EVENT

The response team should tactfully take advantage of a disaster by using it to remind local politicians and decision-makers of the potential for this threat in their own locale. The event can also be used to educate the public about disaster response teams and to solicit donations and support. It can help recruit new members as the public sees what the team is doing and to educate employers of current members as to how important the individual is to the success of the team's mission. The local media may view a team's information-gathering personnel as a resource. Reporters may turn to the team for information if they see it as a credible information resource. The two groups share the same tasks (reporters on a daily basis, rescue teams during a disaster): gathering information, evaluating the credibility of the source, and then distributing the information to the public. In turn, the team makes a good human-interest story for the news media: film footage of the team's preparations for deployment can be broadcast while the reporter describes the disaster. The local news media can be a valuable information resource for response teams as well.

TOOLS OF THE TRADE

Although some information gathering and management can be accomplished with pen and paper, probably the most valuable asset for information gathering is a personal computer. Other items helpful for the information-gathering group are a television, HF (short-wave) monitoring equipment, a cell phone, a geographical positioning system (GPS) receiver, and a digital camera. Some of these tools will be under the control of the logistics/communications group. Others may be maintained and utilized by the administrative staff. All of these assets in some way should be available to those responsible for information gathering.

Personal Computer

A personal computer can be used to contact resources via e-mail and to search the World Wide Web. It can also hold a database of resources, the team's event-tracking lists, response checklists, standard operating procedures, personnel database, equipment database, etc. A laptop computer is best for information-gathering purposes. Laptop computers are small, light weight, easily transportable, and draw significantly less energy than conventional desktop computers. Ideally, all persons involved in information gathering should have access to their own computer. If the team does not own a sufficient number of computers for individual use during deployments, team members' personal assets are appropriate. However, prior to deployment, a team member must obtain NDMS approval for the use of personal equipment; otherwise, NDMS is not obligated to reimburse the rescue worker if the computer is lost, damaged, or stolen during the mission.

The software on the computer is also important. At minimum, the computer should be able to dial out with a modem to the Internet. It should be able to send and receive e-mail and browse the World Wide Web. It should have a database and spreadsheet program such as Microsoft Access and Microsoft Excel, respectively. It should have a word processing program such as Microsoft Word. It should also have a floppy drive and CD-ROM, and, if it is going to travel with the team, it must have the ability to function on a 12-volt source (cigarette lighter) as well as battery and AC power. It should be packed in a protective case that will survive the elements and rough handling. It is also helpful for the team to have an Internet account with a national provider such as ATT, WorldNet, or America Online. These companies have access numbers in most major cities. If the computer can connect to one of these services via a cell

phone, the team's ability to gather information in the field will be improved dramatically (assuming, of course, the infrastructure has survived the event).

Everyone on the team should possess basic computer skills, that is, be able to

- ⇒ Launch a computer application
- ⇒ Save work to a computer file
- ⇒ Print a file
- ⇒ Copy a file for use on another computer
- ⇒ Use a standard word processing program to create and edit a formatted document containing tables and graphics
- ⇒ Use electronic mail effectively, observing proper etiquette
- ⇒ Attach a file to email
- ⇒ Access and use the World Wide Web

An assortment of CDs with information resources will also be useful. Some titles to consider are listed below:

- Mapping software such as *Precision Mapping* or *US ATLAS*
- The CIA World Fact Book
- The NDMS Response Teams Manual
- Medical reference books
- HAZMAT guide or manufacturers' safety data sheets (MSDS) for chemicals
- Poison information reference
- Some of the major information resource Web pages downloaded with a Web-caching program

- An image of the computer's hard drive in case it crashes or, at minimum, the manufacturer's "recovery" disks

Because a computer hard drive is prone to damage by shock and travel, it is important that critical data be stored on more permanent media. All critical data should be saved on a CD, which can be carried to the disaster operations site. The information should at least be printed as a copy on paper. It is also wise to have the manufacturer's recovery disks, which re-format the hard drive and reinstall all software as if the computer was just delivered from the factory. Alternatively, software is available that reads the hard drive (including data) and creates its image on a CD. This can be used to restore a damaged hard drive quickly. This level of redundancy should not be overlooked. After unpacking at the scene, if a team discovers that all data have been lost from a hard drive, all the preparatory work will have been in vain.

E-Mail and Internet Mailing Lists

A number of mailing lists provide an ideal method of communication between teams. During an activation of teams, these lists usually receive postings of the situation reports from the USPHS Office of Emergency Preparedness, NDMS, FEMA, and the response teams themselves. At least one person on each response team should subscribe to each list and forward messages to others on the team. Ideally, every response team member should subscribe individually so they can follow discussions both during a disaster and between events. An e-mail address list of response team members, the members of other teams, and other agencies is a valuable asset for information gathering and dissemination. Response team members have been able to answer e-mail inquiries from disaster sites and post updates to the mailing lists. Subscribing to the lists can be complicated, but most lists (including the DMATNEWS list) offer a Web-based form for subscribing and unsubscribing.

Television

In some cases, representatives of the news media reach a disaster site before response agencies arrive. The media then broadcast from the site, and it is not uncommon for agencies such as FEMA and NDMS to watch CNN for details of what is occurring at "ground zero."

As mentioned before, the media can be one of the biggest assets to the information-gathering efforts of the team. Teams are advised to take a small, battery-powered, portable television on a deployment. It can provide useful information to the team as the local media report the developing situation to the local community. Their reports often include shelter locations, the scope of the damage, and the status and availability of health facilities. During a response effort, the local weather forecast may be very important to the safety of a team and its response efforts.

Geographical Positioning System (GPS)

The Geographical Positioning System (GPS), based on military technology and developed by the U.S. Department of Defense, consists of a network of 24 satellites rotating in stationary orbit. Operational since 1995, it provides worldwide satellite-based radio-navigation. The GPS receiver is handheld, relatively cheap, and usually rugged enough for field use. It can identify a position within a few meters; show vertical elevation; and, while in motion, show speed, course, heading, and other navigational data. The GPS can be valuable for a team calling for an evacuation resource, such as a helicopter medevac. Most rescue agencies now use GPS receivers in their aircraft and can find an exact location very quickly, given a location in longitude and latitude. After some disasters, especially after floods or hurricanes, normal landmarks such as road signs are gone. By utilizing a GPS receiver, a rescuer can map important locations (such as a household in need of a follow-up visit). In the reverse, if a rescuer can read

from a map to determine the longitude and latitude of a location of interest, the GPS receiver can guide him right to that physical location, even without landmarks. The GPS system was made more accurate in the spring of 2000; since then, GPS locations have been used to record victims' locations, as some higher priced units are capable of accuracy within centimeters.

Geographical Information System (GIS)

The GIS is a set of computer programs that organize collected data into a map for later retrieval. This map essentially forms a graphic representation of a database as its elements are overlaid. Each part of the database is called a layer. The layers can be overlaid on the map one by one or together. A combination of layers on a GIS map is called a "composition." Relationships between the layers can be made, and a new overlay can represent the relationship between two layers. For example, a map of a disaster area can be stored in the computer as an image. The computer knows the x/y coordinates of any single location on the map. As rescue workers assess the community after a disaster, they might stop door to door to survey the occupants of each structure for useful information: for example, a) Is it a home or business? b) How many people are in the structure? c) Does it have running water? d) Does it have electricity? Each of these elements forms a dataset . If the location of the structure can be determined as corresponding to an x/y coordinate on the map, these data can be placed in the GIS mapping software. After the survey is completed, the GIS software can be asked to report in a graphic map format based on the search criteria. It can highlight all areas where the structure is a) a home, b) has more than five people in it, and c) has no electricity. Some response teams and federal agencies already have made use of GIS mapping to conduct pre-disaster vulnerability surveys and post-disaster impact surveys.

CONCLUSION

The roles of information gathering and information management need to be dispersed through a response team. Many people will be involved. Planning and preparation will pay off in the early stages of response activities. Information-gathering skills require practice and experience. Practicing information gathering during a non-critical event or during a disaster to which the team is not responding is an excellent way to practice and hone skills. Good information-gathering methods will contribute significantly to the successful outcome of a disaster response by providing reliable information to team leaders for their use in decision making.

APPENDIX A: Disaster Outreach Severity Score (DOSS)

The Toledo Area Disaster Medical Assistance Team developed the concept of the Disaster Outreach Severity Score (DOSS) and a survey that allows its calculation. The scoring system is based on subjective and objective values in four categories: environmental, demographic, medical, and psychiatric. These subgroup values are added to yield a total score indicative of the severity of a victim's circumstance. (Lower scores are associated with greater need for assistance.) The information-gathering tool can be used during response team outreach or during the initial assessment of victims arriving in a field hospital. It can be supplemented with GPS data for location, and each individual survey can be input into a GIS system for later retrieval for reports or analysis. The survey and its description are available at <http://medicom.org/public/tadmat/archives/Polman/doss.html>.