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Software Simulation and Emergency Response Training: a Case Study

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Software Simulation and Emergency Response Training:
A Case Study

by

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Abstract

Emergency response training has several shortcomings that affect its effectiveness.   Full-scale exercises are effective, but expensive, cumbersome and time consuming to plan and conduct. Discussion based trainings are much more cost effective and easy to plan, but the retention rate is lower on covered material.   It is important to get the most out of limited training budgets by finding a way to be both efficient and effective with time and money.

In this case study, the problems of the 2002 New Mexico Public Health ICS training are analyzed. This training provides good examples of how traditional training tools, style and impact were not used for the best outcome on retention of how to manage response in the event of an emergency. Methods of addressing these issues by other industries are reviewed and considered for application in the field of emergency response training.

This suggests that using software simulation, it would be possible to harness the experiential learning of a full scale exercise with a more individually tailored and efficient training system. This would result in the ability to train people with greater flexibility than current methods allow, with far better results.

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Executive Summary

This paper presents the case of The New Mexico Public Health Department ICS training that was conducted in 2002. The training used common methods to attempt to teach a new subject to people who would be in charge of managing the pubic health response if there were to be an emergency. However, it was felt for a number of reasons that this training was ineffective and that should there be an actual emergency, the appropriate level of readiness may not have been achieved. Catastrophic events such as Hurricane Katrina showcased how badly prepared other responding agencies were to handle such events when they were put to the test. Agencies were ill prepared to work together, and did not anticipate many of the problems that they would encounter as they tried to respond to this emergency. How could this training be improved so that it was more successful?

This case study was conducted using the illustrative case study methodology. As such, research was done to determine what possible ways there were to improve ICS training, including researching better teaching strategies, and studying what other industries are doing to solve their own training problems. Once this research was completed, it was analyzed regarding its applicability to this specific case.

An increasingly popular method for educating in fields where real life training is prohibitive for reasons such as cost, danger or other factors is software simulation. Software simulation is a cost effective means of replicating a real life scenario requiring active decisions on the trainee's part. This creates an almost real experience of the event, which has been shown to have higher retention rates than simply

discussing what would be done in a situation. Could software simulation help to improve emergency response training?

Reviewing the methods that other industries have used to mitigate their own training problems suggests that applying software simulation to the field of emergency response training would greatly help to prepare responders for the kinds of things that they would encounter in a real emergency. It could allow people to train as much as was needed, both individually and as part of a team. It would also create an easier method of accountability, since people who needed more training would be more apparent by tracking statistics and therefore that could be handled before people's lives were actually on the line.

The research and analysis of the NMPHICS training case suggests that software simulation could provide compelling, assessable and accessible training with much less time and money invested overall. An example outline of such training is provided in the appendix.

Chapter 1 – Introduction

In the case presented in this study, the New Mexico Public Health Department conducted a several day training on the Incident Command System(ICS). ICS is a standardized, incident management approach (FEMA, 2009). This training was not to train first responders to an incident, but rather a training seminar for the people who will coordinate response in the event of an incident. In a training of this kind, people learn not only what their roles in the event of an emergency would be, but what those roles are required to do. Since emergencies are random and unexpected, there are not full time positions set up for management of them at this level, so managers of different programs learn to be able to coordinate a response in the event it becomes necessary.

 The training was taught by an independent contractor, an expert in ICS that had been training firefighters in the use of this system for a number of years. It was conducted in lecture/discussion style and sought to introduce the terms and roles used during an emergency response. For the length of the training, participants sat and were bombarded with the definition of roles and terminology that they would be expected to know how to use in the event of an emergency. At the end of this training, a short game was played that demonstrated that no one really understood anything that had been discussed.

After the training was concluded, it was a popular consensus that no one really retained any of what had been talked about during the training. What role would they specifically be? What does that role do anyway? Would it ever really matter? Some people had been unable to attend the entire training because of the demands of their position. It was considered that the training had been a waste of several days. People went back to their regular work and didn't really give much thought to ICS after that. It

seemed certain that if there were an emergency, no one was adequately trained to react properly.

In 2005, Hurricane Katrina devastated the Gulf Coast, causing more than 81.2 billion dollars in damage, and resulting in at least 1800 deaths (U.S. Department of Health and Human Services, 2009). In the aftermath, the government was blamed with a tremendous failure to appropriately respond to this disaster. In Congressional Reports: H. Rpt. 109-377 – A Failure of Initiative: Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, the report finds that Katrina was a failure of initiative, one that could have been avoided with all the information available at the time.

The consensus among governmental reports on Hurricane Katrina is that lack of training, communication and situational awareness undermined command and control (Daniels, 2006). In the congressional reports, some of the primary failures cited involved people who felt unable to make decisions based on incomplete information they were getting, along with a myriad of problems in getting all the agencies to work together. Some of the problems would have been hard to foresee, but many could have been planned for by conducting adequate training and planning sessions.

It appeared that the training that was taking place for the agencies that handled the Katrina response was as ineffective as the training had been for the New Mexico Public Health Department.

1.1 Problem Statement

Could software simulation be a way to improve emergency response management

training so that it is more effective and efficient?

1.2 Case history regarding emergency response training

Before the events of 9/11 and Hurricane Katrina, emergency response training

was not taken as seriously as it is presently. These two events showcased how

unprepared we were for both manmade and natural disasters. In the Hurricane Katrina

response, for example, agencies were ill prepared to coordinate their response efforts,

which resulted a myriad of problems. There was also no reliable flow of information,

resulting in errors in judgment and inefficiency in response.

A great example of how training has been taken more seriously since that time is

the recent Hudson River crash. In the Hudson River airplane crash, evacuation of the

passengers took place in a well organized manner, and as a result, no lives were lost. The

Coast Guard credited its successful recovery of the passengers with all the training drills

it does, both by itself and with other entities, such as ferry companies, that may be called

to help in such events (CNN, 2009). This is a great example of how proper training can

make a difference in emergency response, especially where multiple agencies may be

called to work together toward a common goal.

Another issue that caused problems was that not every agency was using the same

management system in an emergency. This lack of a common manegement system

prevented agencies from easily working together due to conflicting chains of command

and differing terminologies. In Homeland Security Presidential Directive/HSPD-5, the

department of Homeland security was tasked with establishing a single, comprehensive national incident management system (Bush, 2003). In response to that directive, NIMS was created March 1, 2004 (FEMA, 2004). NIMS is the federally accepted modification of the already existing Incident Command System. The key difference between the two is in the way that intelligence is handled (FEMA, 2004). For example, in NIMS, a sixth functional group can be used to handle both classified and other information during an emergency. This directive allows multiple agencies to ensure that they are all training with the exact same framework using the same terminology.

The current problem is that the effectiveness and efficiency of training has so much room for improvement, especially with the recent advances in technology. It is commonly accepted that full-scale exercises are the most effective forms of emergency response training, because they come closest to replicating real world experiences. However, these exercises can take months of planning and are very expensive. (FEMA, 2009) Finding ways to simulate this learning experience would allow participants to reap the rewards of a full-scale exercise, but without the drawbacks of that method of training. Given today's economic climate, it is imperative to try to find and utilize methods of training that are more efficient and cost-effective without sacrificing overall effectiveness.

Chapter 2 – Review of Literature and Research

There are many concepts central to the theme of improving existing emergency training methods such as using strategies taken from adult learning research. Some of those have to do with the essence of learning, and others in improving the techniques used to respond to the emergency itself.   The goal of this literature review is to educate the reader on some basic adult learning concepts, types of existing training, on what other industries are doing to mitigate their training problems and on some basic elements of the ICS/NIMS programs.

In its most common usage, the word "training" usually refers to the professional education or the physical teaching of a particular subject (Merriam-Webster, 2009). Emergency response training encompasses a wide range of activities, both physical preparations, and the intellectual organization of events and procedures. Therefore, the use of the words "training" and "education" are used synonymously to describe the action of learning taking place on an unfamiliar subject.

2.1 Adult Learning Concepts

Understanding adult education, also known as Andragogy, is an extremely important part of trying to improve on current training methods.   It is agreed upon by numerous adult educators that experience plays a fundamental role in learning as adults as demonstrated by the sheer volume of publications on the subject (Merriam & Caffarella, 1999).   In his book, *Experience and Education*, John Dewey (1938) states

that "all genuine education comes about through experiences" (pg 13). This agrees with the notion that people tend to remember something they did better than something they read about or talked about. Experiences play a vital role in stimulating learning on an active level, rather than on a passive level. Miller and Boud assert that there is a common belief among experts that learning is only taking place when the learner is engaged in the physical experience (1996).

Often a successful way to mimic experience learning is done through simulations. As quoted from Morrison, Ross, and Kemp (2004) "Simulation is an abstract representation of a real life situation that requires a learner or a team to solve a complex problem" (pg 231). There are several types of simulations, those that try to recreate things physically to simulate an experience, and those that make use of technology to virtually act out an event. Computers have become the tool of choice in recreating situations for educational purposes. At one time simulations had to be run on mainframe computers, making them cumbersome, expensive and hard to access. But technology has rapidly evolved, and now personal computers can easily run simulations that are far superior to the ones in the past.

An example of this kind of simulation is a flight simulator. The simulation replicates the conditions that a pilot would be exposed to, requiring specific responses and involving them on a level where they undergo the same stress and pressure that they would in a real situation. (Morrison et al., 2004)

One approach to simulation is using a Microworld design. Microworlds are small complete subsets of real environments that promote discovery and exploration (Driscoll, 2000). They are effective ways to let students explore experiments, concepts and

techniques that would be prohibitive to do in real life. There are many examples of the approach of Microworlds being used effectively for both education and entertainment purposes. These include software titles such as Oregon Trail, and SimCity, and more recently the web based online world "Second-Life".

2.2 Types of emergency training

Over the course of modern history, emergency response training has been conducted in a variety of ways.   Typically training methods can be divided into two categories: 1) Discussion based exercises and 2) Drill based exercises (Columbia University School of Nursing, 2007).

A common training method is the discussion method. As stated by Morrison, Ross, and Kemp (2004), "Discussion is the most common form of face-to-face teaching in which facts, ideas and opinions can be exchanged" (pg 230). In this method people group together and discuss what their various roles would be in the event of an emergency. These trainings tend to be less effective in terms of adult learning techniques since they usually do not build on the experience of the learner.   Therefore, long-term retention can be less in these methods than in those that involve simulation of experiences.

Sometimes discussion trainings incorporate some role-playing activities to try to reinforce what was discussed. Role-playing allows participants to create a spontaneous enactment of how a certain situation might be handled (Morrison et al., 2004).   These

increase the overall retention of what was discussed as it creates an experience for the student.

Full-scale multi-agency trainings are conducted in enactment style, where everyone pretends that an incident has occurred and respond as necessary.   As supported by the above research, these simulations are the next best thing to an actual emergency experience, as far as learning concepts go, because students are able to work together as a group and get a practical feel for an emergency situation. However, this kind of training is very expensive and time consuming, as it requires both extreme preparation and lost on the job hours to complete. A FEMA training handbook lists full-scale exercises as "highly complex and high cost" (FEMA, 2009). It can be difficult to orchestrate, and generally only part of the workforce can be involved, as other employees must still conduct business as usual.

 For example, if a full scale exercise is conducted for 100 people and a median income of $45,000 a year is assumed, it would cost $17,307 just in salary costs for the day. This does not include materials, any overtime costs, the cost of hiring an outside company to come in to run the exercise or any of a number of other costs associated with running a full-scale exercise (FEMA, 2009). These kinds of trainings are most often used by large government entities, especially where many agencies may have to work together, such as fire departments, police agencies and other emergency responders. An example of this is Waste Isolation Pilot Plant accident enactments that involve multiple agencies (Columbia County, 2002). WIPP accident trainings are those in which multiple agencies get together to enact the response to an accident related to the transportation of radioactive waste.

In "*A Comparative Study of Cognitive Retention Using Simulation-Gaming as Opposed to Lecture-Discussion Techniques*", Lucas, Postma and Thompson (1975) found that "Students in U.S. History classes exposed to simulation gaming techniques performed significantly better on a delayed interval posttest measure of cognitive retention than do students in U.S. History classes exsposed to traditional lecture-discussion techniques" (Lucas et al, 1975 pgs 261-266). This is a good description of the fact that when the same subject is taught in two different ways, the one that employs simulation of real life experience leads to longer term retention of the material than does standard discussion.

2.3 Uses of Software simulation

One of the largest occupational fields taking advantage of software simulation is the military. Developers have taken some of the technology from entertainment titles, and applied it to military training software.   What started out as poorly rendered simulations of military operations have become richly detailed, realistic scenarios that much more closely resemble a real life experiences. Larry Mellon, of Emergent Game Technologies says, "Historically, the quality of graphics used in military training applications has lagged behind graphics development in the games industry, and now more resources are being allocated to developing realistic training technology" (Bourge, McGonigle, 2006) The important role that these simulations play has been recognized and now these areas are gaining more respect as useful tools, rather than just games.

Often, the technology used for training simulations is the same as that used for gaming purposes. Only the application and level of realism found in the scenarios are

different.   The military's move toward gaming technology has actually been taking place

for years. One of the earliest examples of this was the creation of a software package

called "*Marine Doom*". "*Marine Doom*" is a modified version of *Doom II* that was

designed for military training purposes. In this game, a team comprised of a team leader,

two riflemen, and one machine gunner, are played by four people on different computers

in the same room. Together, the team works to accomplish a specific mission (McLeroy,

2008).

   Although *Marine Doom* was primitive, it was able to demonstrate to the

military just how games could be used for training purposes. As technology became

more sophisticated, so did the application for training use. Programs such as *DARWARS*

Ambush are currently being used for a more sophisticated training experience. Soldiers

are able to "play" scenarios and modify them to the extent that the system allows. This

allows them to not only learn from the scenarios but to relive and recreate situations that

they have experienced on their own missions (McLeroy, 2008).   This is a tremendous

example of experiential learning at work using software simulation.

  Combat simulations are not the only way that the military is harnessing the

training possibilities of software. In 1999, the U.S. Army Telemedicine and Advanced

Technology Research Center (TATRC) and Research Triangle Institute (RTI) started

developing Simulation Technology Applied to Trauma Care (STATCare). As stated by

Colucci (2004), "STATCare provides game-like scenarios with a physiologically

responsive, pharmakinetically reactive patient who gets better or worse with treatment.

The on-screen patient responds to pain and manifests vital signs and symptoms" (pg 1).

This created a simulated experience of treating a patient and allowed a student to be

subjected to the stresses of real time decision making without actually having to risk anyone's life.

In 2002, Madigen Army Medical Center received a grant from TATRC to study whether Emergency Medical Technicians (EMT) that participate in simulated training using STATCare performed better on their EMT exams than those who do not receive this training. As stated by Ayala (2002), "With the use of RTI's STATCare, students are able to practice real-life trauma assessment and treatment on wounded soldiers right on their laptop computers. The researchers at Madigan are hoping to show that test scores, pass rates, and other variables are improved by adding 3-D simulation software training to the current EMT-B program" (pg 1).

Gaming technology is not only useful when applied to training simulations, but may be beneficial to surgeons even just by playing entertainment titles. A study conducted in 2002 by Dr. James Rosser of the Beth Israel Medical Center suggests that surgeons who have a history of playing video games have better hand eye coordination and make fewer mistakes in Laparoscopic surgery than their counterparts who do not. Those who actively play video games fare better in study results (Dobnik, 2004).

Computer simulation is also being harnessed in other emergency preparation ways, such as fire drill simulation. A team at Durham University has adapted the Half-Life 2 game engine to act as a fire drill simulator. With the simulator, they are able to test out escape routes, and teach best practices in the event of a fire. (BBC News, 2009) Another emergency usage of simulation is *Zero Hour*, which was developed with funding from the Chicago Department of Public Health. *Zero Hour* is a video game simulation

that trains emergency responders how to run an emergency drug dispensing center

following an anthrax attack (Jarventaus, 2007).

2.4 Incident Command System

Incident Command System (ICS) is " a standardized, on-scene, all-hazards incident

management approach." (FEMA, 2009) It was originally developed in the 1970's in

California after massive wildfires caused millions in property damage and numerous

casualties. Studies showed that the problems responders faced were not caused by lack

of resources or tactical errors, but due to mismanagement and lack of communication

(Qureshi, K, Gebbie, K & Gebbie, E 2006)

Some of the problems that were faced by responders at the time were: 1) Unclear chains

of command, and lack of accountability, 2) Inadequate planning process, 3) Poor

communication, combined with different terminologies being used by different agencies,

and 4) No pre-defined way to integrate different agencies to function as a cohesive unit.

(National Wildfire Coordinating Group, 1994)

An interagency task force, Firefighting Resources of California Organized for

Potential Emergencies (FIRESCOPE), was developed to work on a solution to these

management issues. (National Wildfire Coordinating Group, 1994) The response system

that was developed had to meet the following criteria: 1) The system must be flexible to

adapt to incidents of any size, 2) It must be useable for everyday situations, as well as

emergencies, 3) It must allow people from multiple agencies to rapidly meld together and

function in a single management system, 4) Must be cost effective, and 5) Must contain a clear chain of command (National Wildfire Coordinating Group, 1994).

Over the course of several years, the ICS system began to take shape. Flexibility in the structure was achieved by creating a system that could expand or contract based on the needs of the incident. Different levels of organizational staff could be activated and then deactivated multiple times in a single event as was needed. In most situations, only a partial ICS command staff is activated. Only in the biggest incident responses would there be an entire ICS staff activated and on hand (Qureshi, et al., 2006). It was important that there be a unity of command in the system. Each person in the ICS structure reports to only one supervisor. This increases accountability and removes the possibility of receiving conflicting instructions, which were two of the big problems in the pre-ICS era. This is a fundamental concept in the creation of ICS.

Another important development was the use of common terminology. Before, one of the hurdles had been that different agencies used different codes and terms to describe the same thing. This resulted in confusion and lost response time. ICS created a glossary of terms to describe incident related things, so that everyone started on the same page. (see appendix C)

Today ICS has been adopted (and renamed National Incident Management System) by FEMA, police and fire departments, utility works, and private businesses as a model for efficient emergency response. With the flexible structure of the NIMS, it is able to work for agencies that deal in a command and control type structure as well as agencies who typically are more administrative in nature. It is imperative that responding

agencies understand and can use NIMS (Bush, 2003). The following section is a summary of how the ICS (NIMS) system works:

2.4.1 Structure

Under ICS, the staff is led by an Incident Commander (IC) and there are three command staff positions. It is important to note that in each of the ICS positions, multiple people should be able to fulfill every role. Some incidents may go on for long periods of time, and each position will need to be relieved by someone who is capable of assuming that role. It would be possible to simulate each of these roles and their duties in a software simulation training program.

Incident Commander – The Incident Commander is in charge of managing the incident. They are responsible for developing the Incident Action Plan (IAP) along with the help of their staff. They are also in charge of making sure that the necessary ICS sections are activated or deactivated, as needed. Most incidents have only a single commander. In certain situations, such as larger incidents where multiple agencies are involved, there may be a Unified Command in place of the single commander. In such a case, representatives from each of the agencies are the Agency Incident Commanders (AIC) who function together in the Unified Command as a single entity.

Command staff:

Liaison Officer – responsible for communicating with other external agencies, and makes sure that the agencies policies and procedures are respected. This person must be knowledgeable enough to know what needs to be directed to the Incident Commander and what should be directed to a section or a unit.

Safety Officer – monitors safety conditions and is responsible for the safety of both paid and volunteer responders. This person monitors the use of safety equipment and decides which appropriate protective gear should be used depending on the event. This position may be assigned to one specific person, or it may be assigned to a group of people with different specialized backgrounds, and then the role will be filled depending on the nature of the emergency.

Public Information Officer -- responsible for communicating with internal and external stakeholders during the event, such as the media and government officials. This position is also responsible for communicating within the event staff to make sure that information is consistent and clear and is the same as and evolving at the same rate as other agencies that may be involved. This position often fulfils a public relations type of role, and often assists in preparing for or conducting press conferences. All information that is released to the public must be cleared with this position.

General staff or Sections—only the staff or section required for a given incident will be activated. A section may be activated or deactivated more than once during the course of an incident. Color-coding?

Planning/Intelligence Section – The Planning/Intelligence Section is responsible for collecting data and making plans or projections about future needs for the incident. This includes status of resources and overall status of the incident. The data collected can be things like epidemiological data, risk assessments, or toxicity in environmental incidents. Under the National Incident Management System, the intelligence portion of this role can be reassigned to another section if needed. The input from the plans and projections of this group are needed in order to put together an Incident Action Plan. (IAP) The Planning section supports the command staff.

Operations Section – The Operations Section is responsible for carrying out the tasks and objectives of the Incident Action Plan. Operations is the section where the actual responding is done, such as administering vaccines, cleaning up spills, etc. This section is also responsible for carrying out the other essential day to day functions of the agency during the incident. The Logistics and Finance Sections support the Operations section in carrying out the Incident Action Plan.

Logistics Section – The Logistics section is responsible for supporting all the other sections in carrying out their tasks. This can include tasks such as delivering vaccines, acquiring space for incident response, and setting up computers and other equipment as needed.

Finance/Administration Section – The Finance/Administration Section is responsible for several key areas. One of these is administrating emergency procurement contracts, so that everything is in place when an incident occurs. They also track incident related costs, and manage human resource policies.

Branch – The level having functional or geographical responsibility for major parts of the incident reponse.

Division – a division is grouped by geography, within jurisdictions if applicable.

Group – a group is arranged by purpose, or can also be set up based on group resources. It can be within agency lines, if applicable.

Unit – Organizational element that has responsibility for a single logistical, planning, or finance/administration activity

Strike Team – A team is comprised of a group of the same resources, such as 4 police cars

Task Force – A force is comprised of different resources, such as a helicopter, a ambulance and 2 police cars

Individual Resource – smallest level in ICS, is comprised of 1 person or piece of

equipment.

2.4.2 Facilities

ICS uses standard terminology to describe locations crucial to the ICS structure. These

locations could be simulated and used as a part of training for the various ICS roles.

Some of the facilities are the following:

Incident Command Post(ICP) -- The Incident Command Post is where the

Incident commander operates during an incident. The ICP's location can change

multiple times during the course of an incident. It can be located in a building,

trailer, tent or whatever is available. There must be an ICP at every incident.

Emergency Operations Center (EOC) – The physical location in which the

incident information and resources are coordinated and utilized to support the

incident response. EOCs may be organized by agency, jurisdiction or function, or

a combination of the above.

Staging Area – Where resources are located while awaiting tactical instructions.

These areas are managed by Operations.

Base – The primary spot for logistics to coordinate and administer their response.

There is only one base per incident.

Camps – Locations within the general incident area that contain beds, food,

sanitation and other services for responders that are too far away to use base

facilities.

The literature presented in this chapter addresses the myriad of issues that occur

in emergency response training in general as well as in the specific case of the

NMPHDICS training. Discovering ways to improve teaching methods by utilizing

Andragogy strategies, and learning how other industries are mitigating their own training

problems allows a sharper focus to be drawn on the case in question. It is also important

to understand the basics of the material that is being trained, in order to understand the

complexities that occur with it.

Chapter 3 – Methodology

This project has been done using the Illustrative Case Study Methodology. A case study is the collection and presentation of data about a particular subject or group. It is a form of qualitative descriptive research, which looks at specific individuals or subjects and draws conclusions about them in that specific context. There are several types of case studies which can usually be broken down into the following subgroups: 1) Illustrative case studies, 2) Exploratory Case Studies, 3) Cumulative Case Studies, and 4) Critical Case Studies. Illustrative case studies are descriptive studies that serve to familiarize readers with a subject. Exploratory case studies are typically done before a large scale investigation is performed. Cumulative case studies focus on collecting past studies and using them to create greater generalizations without incurring additional costs. Critical case studies examine sites that are highly specialized with little interest in generalizing, or they challenge highly generalized assertions (Colorado State University, 1993-2009). Case study research is a great way to gain understanding of a complex subject or increase existing knowledge (Soy, 1996).

As an illustrative case study, its purpose is to inform the readers about the subject matter, and allow them to understand the background and terminology associated with it (Colorado State University, 1993-2009). To facilitate this, the study is made up of two parts, a research phase and an analysis phase. Before the research phase could begin, it was important to pinpoint the questions that would need to be researched (Soy, 1996). In this case, the questions to be researched were: 1) How were trainings being conducted? 2) How effective were those trainings were felt to be? 3) What were some possible methods

of improvement? 4) What were other industries were doing to solve some of these training issues?   5) Whether their solutions could be applied to the case in question.

The research phase began with conducting several meetings with the New Mexico Department of Health.   These were set up to include a number of people involved with incident responses and with the training of the response itself. In these meetings, data was obtained regarding types of training used for emergency preparedness, and how effective those trainings seemed.   Participants talked about learning the ICS system and how that translated in trainings. General opinions of the types of trainings were discussed, and people brainstormed about the kind of things that would make trainings more useful to them. We discussed an upcoming training drill that was scheduled, and how that had been orchestrated.

After this, research was done to find out more information on current programs across the nation dealing with emergency preparedness, and what training methods these entities were using. The history of ICS was also researched, and simplified for an overview of its functions. This enabled the discovery of what had caused problems in the past for emergency response, and what had gone well..

Another crucial section for research was determining what other industries not specifically involved with emergency response had done to mitigate some of the problems they encountered with their trainings. Every industry seeks to maximize the effectiveness of their trainings, both on a cost basis and on a retention basis. Adult education texts were employed to discover the strategies behind effective instruction and

why some methods work better than others. Some industries have begun to use software simulations to replicate real life scenarios that are problematic.

The analysis phase was conducted by taking all of the information that had been provided from different sources such as emergency response training manuals, adult education texts and articles outlining what other industries have done to adopt technology into their training programs, and deciding what best applied to the current case study. Using that information, comparisons with other fields using software simulation, such as the military, medicine, and public agencies, were drawn. This was later compared as to its potential for applying that solution to this specific case.

Chapter 4 – Project Analysis and Results

The case of the New Mexico Public Health ICS demonstrates a number of things that caused it to be ineffective as a training. Some of the problems people complained about were 1) The information presented seemed very abstract to the people attending 2) It was difficult to envision how it would apply to them in the event of a Public Health Emergency 3) The length of the training was an issue, and 4) It was very inflexible: There were people who were unable to attend parts due to other meetings and the commitments of their various positions. These people missed out on training that they could not make up.

The case of the New Mexico Public Health ICS training was conducted in lecture/discussion format. As was discovered in the Andragogy research mentioned previously, this style of training is much less effective than training that engages a learner's experience, both in the past, and by allowing them to experience the new material rather than merely talking about it. (Miller & Boud, 1996). This would suggest that retention of the ICS information would have been much greater if the students were actively involved with the subject matter, rather than passive participants. This involvement would also have made the information presented much less abstract since it was immediately given a real world context.

Andragogy research also suggested that using simulations as a teaching tool would be much more effective than simply lecturing on a subject (Lucas et al, 1975 pgs 261-266). When considering the methods of simulation, there are few that are applicable for training. A commonly used simulation method for emergency response is the full-

scale exercise. While effective, the full-scale exercise has many drawbacks due to its inflexibility, cost and difficulty to plan. (FEMA, 2009) Software simulation has started to be an effective training tool in many fields and industries where real life training would be problematic due to dangerous conditions, expense, or unavailability of training resources. It can recreate many of the great things about full-scale exercises, while avoiding its drawbacks.

The military has been using simulation for training in various forms for hundreds of years. More recently they have embraced software simulation as a successful method to recreate many training situations. Programs like *Marine Doom* and *DARWARS Ambush* utilize microworld methods to allow the participant to feel engaged by a simulated experience, thus enhancing their retention of what was learned. They require teamwork, and simulate experiences that are difficult to replicate safely in real life. The latter allows for a more meaningful training experience by allowing modification of its scenarios to recreate or reflect the participant's actual experiences in the field (McLeroy, 2008). This suggests that simulations could also be beneficial in the case of the ICS training, because it would allow people to work together while solving a problem that was pertinent to them in their jobs.

Medicine is another field that has embraced technology to simulate real world occurrences for training. Like the case of ICS training, a lot of medical training is often preparation for something that is hoped will not happen, but needs to be prepared for in the event that it does. Getting as close to a real life experience as possible is key to a successful learning experience, but doing so without putting lives at risk can be difficult.

Simulation helps to recreate an experience that is time sensitive and stressful without endangering anyone.

The Chicago Department of Health funded the development of a training game to simulate setting up a drug dispensing center in the event of an anthrax attack (Jarventaus, 2007). This is a great example of using software to prepare staff for their roles in the event of an emergency, using a scenario that is relevant to them in their professional capacities. The same thing could be done with ICS training, by making it relevant to the agency that is being trained.

Software simulation is incredibly flexible. Not only can it be modified to reflect scenarios that are relevant to the participant, but it can be used at a time that is convenient for an individual. This applies to the case of NMPHD because it would allow people to be trained on their schedule, rather than being forced to try to attend a meeting that is during a set block of time. It could create a learning situation that keeps the trainee's attention and interest, resulting in better retention of materials. It would be much more flexible as a training tool, and could allow individuals to train using artificial intelligence to operate unmanned roles, or facilitate training as a group via a LAN or WAN, as the military has done with some of the simulations discussed earlier.

It would also be able to be tracked and assessed, so it would give a better idea of exactly how well different agencies knew the material. In the earlier examples of software simulation, such as those utilized by the military, it is quickly evident which participants are not well versed on the subject matter because they will fail their objectives. This allows problem areas to be addressed before it is tested in a real world environment.

The NIMS/ICS system can be difficult to teach effectively through discussion based training because it can be complex, especially due to its expandable and contractible nature. As previously explained, this expandable and contractible nature allows the NIMS/ICS framework to work for any size response, but it also makes describing which roles will and won't be needed at a given time more complicated. One role may be needed at the onset of a response, and then sent home when their tasks are completed. However, that role may need to be recalled at a later time, depending on the given situation.

As stated in section 2.4.1, each of the roles and locations could be simulated to put them into an understandable context. It can be difficult to visualize what kinds of decisions will have to be made by the various roles. By actually putting those decisions into the context of a specific scenario, it allows the trainee to really get a grasp over what their role, and the roles of others would be expected to do in the event of an emergency. This would avoid the alienation of information that occurred in the case of the NMPHD training.

By simulating a disaster scenario that was relevant to the trainee, immediate interest could be generated in the task at hand. These scenarios could be modified to be useful to whichever agency was conducting the training, and even take into consideration their geographical locations. Using a Microworld design, an experiential learning process could be created. This would allow the trainee to experience many of the decisions and stresses that would occur in a real event. They would be able to experience the fact that in an emergency, they have control over many factors, but there

are also many factors that are outside of their control. Reacting to these and anticipating them can be the key to a successful response effort.

In Appendix A contains a description of how a program like this could be designed to be interactive and educational for both a single user and for multiple users to train them using the NIMS system. Appendix B gives an example scenario showing how the software would function.

Chapter 5 – Project History

In 2001, after the events of September 11, there started to be a push for preparedness training. Employees of the Health department, including the author, were required to attend training to become familiar with the Incident Command System, so that they would be able to respond effectively in the event of an emergency. The trainings were conducted in meeting style, and were largely felt to be "boring" and people reported a low retention rate for the materials covered. It was wondered why there was not a better way to get this information across to people in a way that would be interesting and meaningful to those being trained.

It was certain that in the event of an emergency, few, if any, people would recall much of what was discussed. After all, this type of thing had been being simulated in games for some time…could it not be approached in a similar fashion to educate while keeping people interested? A number of people were approached with this idea, but with no contacts or capital, it was unable to progress any further.

Then, in 2005, Hurricane Katrina showed the world exactly how ready large groups of responders were to work together and respond to an emergency. It was obvious that the training people were undergoing was still ineffective, and resulted in huge losses of life and property. It was at this time that the subject of a project idea to satisfy MSCIT degree requirements came up. Perhaps this could be suggested as a potential tool in the arsenal of preparedness. It would never completely take the place of things like full-scale exercises, but it could do a respectable job at getting people used to their responsibilities in the event of a catastrophe.

Chapter 6 – Lessons Learned and Next Evolution of the Project

Software simulation has the potential to be the next generation of training. With today's technology, it is often far cheaper to simulate an event than it is to actually do it. During the course of this project, the research for this case has surveyed what exactly makes simulation an effective learning tool, and why most discussion-based trainings do not do a good job at getting their message across. It is unlikely that simulation could ever completely replace full-scale trainings, since there really is nothing better than a completely hands-on experience. However, it could certainly do a great job filling in the gaps of existing training methods.

At the time this project began, there was no sign of anyone developing any products such as this paper is suggesting. Recently a few companies have sprung up, offering similar ideas. These products have not been evaluated, and so it is unclear as to whether they will adequately fill the need. However, anything that helps the educational process and helps to make emergency response more efficient is a step in the right direction.

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Appendix A

Incident Command System Response Simulator description

Network

Single user (stand alone) and multi-user options

Start Menu

At the start of the program you will be allowed to set several options:

Number of participants

First you will select how many people will be involved in the training, and which

positions they will be training on. (Single-user or multi-user)

Scenario

Then you will be able to select a scenario from a drop-down menu, or select random on

the menu and it will choose the scenario for you. (The options in the menu are

configured by agency module) The scenarios available will be based on the number of

participants, so in a multi-participant training session, the scenario will never use less

than the number of people available to train. The scenarios that require more than the

number of available players will fill the missing roles with AI participants.

Incident Difficulty

You will be able to select a slider level of difficulty for the scenario, from easiest to most

difficult.

AI Competency

You will also be able to adjust the competency of the AI responses, which will affect the overall difficulty of the scenario. As a baseline, the AI competency will be set at 10% chance of making mistakes. The mistakes would not always be big things, but would affect things like whether or not things were delivered properly or whether or not staff carried out instructions correctly.

Load Saved Incident

Incidents that had been previously saved will be able to be loaded and continued from this location.

Constraints:

Time

Incidents will continue continuously. For scenarios involving incidents that require staffing on a 24-hour basis, the participant's "shift" will end after 12 hours and that person's replacement for the next 12 hours will be done by AI. They will be notified of any decisions or actions done during their time off when they take active control again. This time will be sped up so that the participant returns to active status shortly.

For incidents that only require staffing during "normal" business hours, the participant will be notified on how the incident has progressed since their last activity. The "night" session will also be sped up, to demonstrate the time passing.

Weather

Weather will be randomized so that occasionally, conditions will be less than ideal. This will also serve to affect the chances of certain tasks being completed. It will be customized to represent bad weather possibilities in the geographic region the customer is in.

Activity Screens:

Map Screen

The first screen that will be shown will be a map view of the incident area. This will be customized so that the incident is represented in the geographical area of the customer, so that response efforts will be legitimate. On this screen, the appropriate role will be able to select where they set up the Incident Command Post, Emergency Operations Center, Public Information Area, etc. A button will be available for every role that will take them back to the map screen.

Command Post Screen

By clicking on the Incident Command Post (once it has been established) on the map screen, or on the Command Post button on the menu, a screen of the Command Post will be displayed. On this screen all of the sections that reside in the Command Post will be able to be clicked on and see summary information for each of their statuses. Clicking on the Incident Commander, for example, will give you incident summary information as

though they are briefing you directly. (Each role will only be able to act on information pertinent to their role.)

Emergency Operations Center Screen

By clicking on the Emergency Operations Center (EOC) on the map, or the button on the menu, you be able to gather information from there. You'd also be able to interact with sections in the EOC, such as the Safety Officer, Logistics, and Finance/Administration.

Public Information Area Screen

Lets you interact with the Public Information Officer and get information pertinent to the role being trained.

Menus

Each role in ICS would have different action menus with which to carry out their objectives. Some of the buttons on the menus would be shared by everyone, while each role would have it's own unique functions.

Common Menu Items

Map—takes you back to map screen

ICP – Takes you to command post screen (will be grayed out in scenarios that do not use one)

EOC – Takes you to Emergency Operations Center screen

Staging – Opens up the Staging area screen, allowing you to see operational stats.

PIA – takes you to the Public Information Screen

Call – allows each role to communicate with each other

IAP – Displays the Incident Action Plan

Report

- Send (role)

- Prepare end of shift

Briefing –Role

- Give

- Get

Incident Commander

Call Meeting

- Create IAP

Needing authorization

(Under Call)

- Request Report

Press

Liaison Officer

(under call)

- CDC

- US Military

- Local Police

- Local Fire

- Hazmat

Public Information Officer

Talk to Press

- Write press release

- Make statement

- Hold press conference

A public anxiety meter – showing the barometer of how the public is feeling

towards the incident, from relaxed to hysteria.

Safety Officer

Assess Safety (click on location)

Planning/Intelligence Chief

Gather Information

- From victims

- From labs

- From assisting agencies

- From staging area

- From contamination site

Collect Data

Operations Chief

Set up staging area

- Make POD

Request – (sub menu under call) Allows resources to be requested

Resources – would open a sub menu letting you direct the available resources, for example, sending police cars to close roads. (some functions would not be available until other steps had been completed, such as establishing inter-agency relationship through the Liaison Officer)

Search for Victims

Logistics Chief

Secure Area – allows an area to be selected and secured.

Finance/Administration Chief

Status Screen

Each role would have their own status screen next to the menu, showing the summary of things that are important to that role. For example, Finance/Administration would have a running tally of expenditures, funds available, etc.

Roles

Every role is dependant on the other roles to carry out their missions. Some roles will have more responsibilities in a given incident. Some roles may not be activated at all, if they are not required. Each role is detailed with tasks that they would need to complete throughout the incident, from tasks that take place as soon as they assume command, to those that will repeat throughout their shift, and those that will take place at the end of their shift.

Incident Commander

Job Overview: Organize and direct health department's Emergency Operation Center

(EOC). Give overall direction for emergency response and operation.

Immediate tasks:

- Receiving a full briefing on the incident

- Activate the necessary roles for the incident (this part will be handled at the start

  screen in a multi-participant session)

- Choose location for the Incident Command Post

- Activate the Emergency Operations Center

- Confer with command staff and section chiefs to develop an Incident Action Plan

- Determine what essential day to day services need to be continued

Intermediate tasks:

- Authorize resources that are needed by section chiefs, through

  Finance/Administration Chief

- Conduct routine briefings with Section Chiefs to receive status reports and update

  the action plan as needed

- Maintain contact with relative agencies

- Approve media releases submitted by the Public Information Officer

Extended Tasks: (To be completed before the end of "shift")

- Observe staff for signs of stress

- Provide rest periods for staff

- Prepare end of shift report

<u>**Liaison Officer**</u>

Job Overview: function as contact person for representatives from other agencies

Immediate Tasks:

- Obtain briefing on incident from IC and participate in creating and Incident Action Plan (IAP)

- Establish contact with liaisons counterparts at cooperating agencies

- Keep all agencies updated on changes in response to incident

Intermediate Tasks:

- Respond to complaints and requests from incident responders regarding inter-agency issues

- Relay special information received to appropriate personnel

- Keep all agencies updated on incident status

- Monitor the incident to identify any current or potential inter-agency problems

Extended Tasks:

- Maintain a list of all assisting agencies, including what resources are available

- Observe staff for signs of stress, report issues to safety officer

- Provide rest periods for staff

- Prepare end of shift report for relieving Liaison Officer

- Plan for possibility of extended deployment

Safety Officer

Job Overview: Develop and recommend measures for assuring responder safety (psychological and physical) and assess and/or anticipate hazardous and unsafe situations.

Immediate Tasks:

Receive briefing on incident from Incident Commander

- Set up Safety Command Post in proximity to the Emergency Operations Center (EOC)

- Review the Incident Action Plan for safety implications

Intermediate Tasks:

- Exercise emergency authority to stop and prevent unsafe acts

- Keep staff alert about the need to identify and report all hazardous and dangerous conditions

- Communicate with Logistics to secure areas to limit unauthorized access

- Advise Incident Commander and Section Chiefs of any dangerous or hazardous situations

- Conduct routine briefings with Incident Commander

Extended Tasks:

- Observe staff for signs of stress

- Provide rest periods for staff

- Prepare end of shift report

Public Information Officer

Job Overview: to be department spokesperson and to be responsible for releasing information about the incident to the media, other agencies and the public.

Immediate tasks:

- Obtain a full briefing on the incident from the Incident Commander and participate in creating the Incident Action Plan (IAP)

- Identify restrictions in news release information from Incident Commander

- Establish a Public Information Area away from the Incident Command Post and Emergency Operations Center.

Intermediate Tasks:

- Make sure that all news releases are approved by the Incident Commander

- Issue and initial information report to the media

- Inform on-site media which areas they have access to, and which they don't.

- Coordinate with Safety Officer

- Arrange for interviews, press conferences, teleconferences, web site revisions, etc with the approval of the Incident Commander

- Monitor incident to make changes to public alerts or communications

- Approve initial and updated scripts for interviews, hotlines and web sites

Extended Tasks:

- Notify Media as to incident status

- Review progress reports from section chiefs as appropriate

- Observe staff for signs of stress

- Provide rest periods for staff

- Prepare end of shift report

Planning/Intelligence Section Chief

Job Overview: Document and distribute the Incident Action Plan (IAP) and measure and evaluate progress. Ensure the distribution of critical data. Compile scenario and resource projections from all section chiefs and perform long term planning. Collect data and perform analysis so that trends and forecasts can be made relating to the incident.

Immediate Tasks:

- Obtain briefing from Incident Commander and help to create the Incident Action Plan (IAP)

- Determine data elements required by the Incident Action Plan (IAP)

- Establish access to data sources as needed

- Notify Logistics Chief of any technical support and supply needs

- Establish Planning Center,

- Ensure standardization of data collection

- Collect, interpret, and synthesize data regarding status and response to incident

- Report to Incident Commander

Intermediate Tasks:

- Continue to collect information supporting the IAP

Extended Tasks:

- Document all actions and decisions on a continual basis, forward completed activity logs to the Incident Commander

- Make sure that all requests for information/status are routed through the Public Information Officer

- Continue to receive projected activity reports from all section chiefs

- Observe staff for signs of stress

- Provide rest periods for staff

- Prepare end of shift report

Operations Section Chief

Job Overview: Coordinates and Activates units needed to achieve the goals stated in the Incident Action Plan. Direct specific unit operational plans and identify and dispatch resources as necessary.

Immediate Tasks:

- Obtain briefing on incident from Incident Commander

- Establish Operations Section Center in proximity to the Incident Command Post

- Appoint Operations Section Branch directors

- Brief branch directors on situation and develop a Section Action Plan (SAP)

- Report to Liaison Officer and/or Finance/administration about any tactical resources needed for the Incident Action Plan (IAP)

- Communicate IT and Data entry needs with Logistics and Planning/Intelligence Chiefs

Intermediate Tasks:

- Brief the Incident Commander routinely on Operations Section Status

- Monitor section and available resources needed to achieve mission.

- Request additional resources as needed

Extended Tasks:

- Document all actions and decisions on a continual basis, send log of activity to Incident Commander

- Observe staff for signs of stress

- Provide rest periods for staff

- Prepare end of shift report

Logistics Section Chief

Job Overview: Coordinate, direct, and organize operations associated with maintenance of facilities, security, personnel movement, and provide for shelter and supplies to support the incident objectives.

Immediate Tasks:

- Obtain briefing from Incident Commander about incident and Incident Action Plan

- Establish Logistics Section Center in proximity to the Incident Command Post

- Advise Incident Commander on logistical service and support status

Intermediate Tasks:

- Secure areas as needed to limited unauthorized access

- Review Incident Action Plan and estimate section needs for next shift. Through Liaison Officer initiate contact with area EMS, fire and police services

- Communicate with Public Information Officer to determine media area

- Prepare to manage large numbers of potential volunteers

- Obtain Supplies as required by Operations and Planning/Intelligence Sections

Extended Tasks:

- Maintain Documentation of section actions and decisions and send activity log to Finance/Administration Section Chief

- Observe staff for signs of stress

- Provide rest periods for staff

- Participate in the planning and execution of demobilization and make recommendations to the Incident Commander and necessary

- Prepare end of shift report and present to oncoming IC and Logistics Section Chief

Finance/Administration Section Chief

Job Overview: Ensure expenditures relative to the incident are documented. Monitor the use of financial assets and human resources. Authorize expenditures to carry out the Incident Action Plan (IAP) and make sure it is documented correctly.

Immediate Tasks:

- Obtain Briefing from Incident Commander about incident

- Appoint Finance and Human Resource Unit Leaders

- Confer with unit leaders to create a Section Action Plan (SAP)

- Establish a Finance/Administration Section Operations Center near the Logistics Center.

- Ensure there are adequate documentation personnel

Intermediate Tasks:

- Obtain briefings and updates from the Incident Commander as appropriate

- Approve "cost-to-date" financial status reports in agreement with the Incident Commander,

- Summarize financial data as required, reporting such things as personnel and hours worked, supplies, equipment, facilities and other expenses

- Create financial status reports

- Conduct meetings with unit leaders to update SAP

- Authorize utilization or diversion of financial resources

Extended Tasks:

- Coordinate response regarding staff work related issues, assignments and question

- Observe staff for signs of stress

- Provide rest periods for staff

- Coordinate injury and incident reporting procedures with Safety Officer

- Create end of shift report for Incident Commander and oncoming

  Finance/Administration Section Chief

Documents

When applicable, the actions completed by roles will fill out some of the ICS documents

detailing the completed or projected actions. This will allow people to get used to how

their work fits into these documents, making them easier to use in a real situation. For

example, the creation of the Incident Action Plan (IAP) creates an IAP Objectives form

that can be accessed throughout the incident.

Appendix B

Example Scenario

Manned roles in this example:

Incident Commander

Public Information Officer

Operations Chief

Planning/Intelligence Chief

All other roles will be AI -- For demonstration purposes, they will operate in the background unless their actions are directly related to a manned role, or unless there is a failure that needs to be reported.

The times represented in this scenario are assuming that the players are fairly familiar with their roles, and are attending to their duties. Since time is an important factor in emergency responses, taking too long to make decisions and complete tasks has a negative impact on the scenario.

Incident Briefing:

Day One

8:00pm

A 23-year-old male is admitted to the ER at St. Vincent's Hospital after collapsing at a party. His symptoms are extreme tiredness, muscle aches, a mild fever and a cough. He has just returned from active duty in Iraq.

9:00pm

　　　　The man's fever reaches 104 degrees, he is disoriented and he is experiencing a hard time breathing. A chest x-ray, complete blood count (CBC), and sputum and blood cultures are ordered and he is admitted to the hospital for observation.

9:30pm

The patient is diagnosed with "community-acquired pneumonia." He has increased difficulty breathing, and becomes semi-comatose. Because the patient's symptoms are so severe, the ER physician performs a lumbar puncture and sends the spinal fluid to the hospital lab. The patient is then transferred to the Intensive Care Unit (ICU).

10:00pm

Upon arrival in ICU, the patient's breathing becomes more labored and progresses to respiratory failure. He is intubated and an infectious disease (ID) consult is ordered.

12:00am

In the St. Vincent's Microbiology lab, the preliminary spinal fluid results are ready. The microbiologist is confused, because he does not recognize what he is seeing.   He realizes he is looking at *"Bacillus Projectis"*. He reports his findings to the Infectious Disease (ID) specialist and the infection prevention and control (ICP) professional.

1:00am

In the ICU at St. Vincent's, the ICP reviews the patient's charts and decides that the symptoms are consistent with Projectis.

Day Two

8:00am

St. Vincent's Hospital notifies the Santa Fe Public Health office of a suspected case of Projectis. The anomaly is mentioned, and the patient's sample is sent to the New Mexico Public Health lab for additional testing and confirmation. The Public Health Epidemiologist reports the suspected case of Projectis to appropriate agencies.

9:00am

The patient's mother is at the hospital visiting her son. She mentions to a nurse that she and her family all feel as though they are coming down with a cold. Normally, she wouldn't think twice about it, but since her son was not feeling well when he arrived home, and had some of the same symptoms, she thought it was worth mentioning.

9:15am

The nurse reports the mother's symptoms to the ICP. Since Projectis is not a communicable disease, the ICP tells the nurse that the family probably has gotten sick from the excitement and stress associated with the patient's homecoming and hospitalization. He decides to be on the safe side, so will run tests on the mother.

Meanwhile, the patient has been vaccinated and started on anti-biotic. He has not yet regained consciousness. He does not appear to be responding to treatment at the rate that is usually reported.

10:00am

The St. Vincent Hospital microbiologist, who finds the same "Bacillus Projectis" that he found in her son's samples reviews the mother's tests. He immediately reports this to the ID and the ICP. The mother's fever has worsened and she is admitted to the hospital. She is vaccinated and started on anti-biotic immediately, and appears to be responding.

11:00am

The hospital notifies the Santa Fe Public Health office that another case of Projectis has been confirmed. The epidemiologist notifies the appropriate agencies and the Center for Disease Control (CDC). Based on the positive identification of two cases of Projectis, and the suspicion of more, the Santa Fe Public Health department assigns an Incident Commander (IC).

Active play begins:

12:00pm

(The Incident Commander Screen shows a window asking whether or not they want to set up an Emergency Operations Center (EOC). They must answer yes to begin the exercise.)

IC: Yes

(They are then asked to choose a location for the EOC. Their choices will be based on the estimated response size of the scenario, and they will then select a location out of those that are offered)

12:15pm

IC: Selects the District 2 Public Health Office as the EOC

(At this point, all participants become active. The first thing the IC should do is call a meeting with the appropriate roles to set up an Incident Action Plan (IAP).)

All screens are interrupted for the following news bulletin:

"This is Anne Jennings, and I'm live outside the hospital. It was learned just a short time ago that there are two confirmed cases of Projectis. We'll be back with an update, as soon as we know more!"

12:30pm

IC: (clicks the "Call Meeting" button and selects "Create IAP")

All roles that would be involved in the IAP creation see a window appear on their screen giving them a list of potential action plan items. Each person will then rank these in order of priority from most important, to be handled immediately, to less crucial, that

can be handled in the longer term. The IC sees a summary list of everyone's suggestions,

and is tasked with determining which the IAP will be.

Here is the IAP that everyone will be able to reference throughout the scenario:

ICS Incident Action Plan

INCIDENT OBJECTIVES	1. INCIDENT NAME Projectis Response	2. DATE X/X/2008	3. TIME 12:30pm

4. OPERATIONAL PERIOD (DATE/TIME)
Day2 12:00pm – Day 3 6:00am

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

- Find the source of the toxin

- Secure the contamination area

- Find out how many other people may have been exposed to toxin.

- Find those people and have them treated.

- Keep public updated

6. WEATHER FORECAST FOR OPERATIONAL PERIOD
Clear and Sunny 77 F

7. GENERAL SAFETY MESSAGE
Keep public away from suspected contamination area
Keep public calm
Make sure that all agencies involved wear protective gear around contamination sites.

8. Attachments (☑ if attached)

☐ Organization List (ICS 203)	☐ Medical Plan (ICS 206)	☐	Weather Forecast
☐ Assignment List (ICS 204)	☐ Incident Map	☐	
☐ Communications Plan (ICS 205)	☐ Traffic Plan	☐	

9. PREPARED BY (PLANNING SECTION CHIEF) P/I Chief	10. APPROVED BY (INCIDENT COMMANDER) IC

When this is complete, the IAP button on the planning/intelligence chief's screen flashes, indicating attention is needed. When this button is clicked, it gives the option of distributing IAP to everyone. Once that is done, the IAP button on everyone's screen becomes active, allowing him or her to reference the IAP at any time during the exercise.

1:00pm

Planning/Intelligence Chief (PIC): Clicks the flashing IAP button and answers, "yes" to the query "Distribute IAP?"

Once the IAP is established, all roles can get to work on their prospective duties.

Public Information Officer (PIO): Sets up Public Information Area (PIA) away from the location of the EOC.

PIC: Sets up Planning Center within the EOC

Operations Chief (O): Establishes Operations Center (OC) within proximity to EOC

1:15pm

PIC: Clicks the "gather information button" from their menu and selects "from victims"

This sends a Planning staff member to interview the victims for more information about where they started feeling sick, how long they've been feeling sick, etc. This action will take an amount of time to complete.

PIO: Notices that the "Public" barometer on their menu is red and low, showing a level of "very worried". Clicks "talk to press" and selects "write press release"

This opens a free text window where a press statement can be written. When it is complete, the PIO clicks "send to IC" button at the bottom of the window, and it gets sent to the IC for review and approval. (If the IC is operated by AI, the press release would have a random chance of getting accepted or denied, with a much greater chance of acceptance)

The Santa Fe Public Health department has confirmed two cases of Projectis. We are looking into the cause of these infections, and whether or not anyone else has been impacted. It is important to remember that Projectis is NOT contagious. For more information, call the Projectis line at 555-1234.

O: Sees the "Call" button flashing and clicks on it to receive:

"This is the Liaison Officer, I have made some calls to the various agencies, and now the local police, EMT, and hazmat departments are at your disposal."

1:30pm

IC: Sees the "needing authorization" button flashing on their menu. Receives press release from PIO, reads it, and approves it.

PIO: The press release is submitted to media

2:00pm

PIC: Sees that the "report" button is flashing. Upon clicking it, they receive the interview status report from the PI staff member.

The report states that the soldier's whole family reported feeling sick within 12 hours after his "Welcome Home" party, during which he collapsed. There were 50 of his friends and family members that attended the party at 3100 Cerrillos Rd. The soldier had only had time to go home to 2610 Alamosa Dr and change into his dress uniform after arriving on his flight, and had gone nowhere else. There is a list of party guests. The soldier's five immediate family members have already been admitted to the hospital.

2:15pm

PIC: Clicks send report to: IC, O, LO, PIO, SO

O: Sees report button flashing and clicks it to receive incoming report from PIC. They determine that 45 doses of vaccine and antibiotic will need to be ordered.

PIO: Sees report button flashing and clicks it to receive incoming report from PIC.

IC: Sees report button flashing and clicks it to receive incoming report from PIC.

2:20 pm

O: Clicks the "request resources" button, Finance/Administration (FAC). FAC is informed that 45 doses of vaccines/antibiotics will be needed.

PIC: Clicks on the flashing "Call" button on their screen:

"*St. Vincent's Hospital is being overrun with people who are worried that they have Projectis!!***"**

2:25pm

O: Clicks the "Resources" button and selects "Police".   This brings up a menu showing there are 25 squad cars available. 5 cars are selected to secure 3100 Cerrillos Rd. and 3 more to secure the soldier's home at 2610 Alamosa Dr.

IC: Sees the "authorization" button flashing on their menu. Receives request from FAC to authorize 45 doses of vaccine/antibiotic. Approves this request.

PIO: Starts to see their "call" button flashing, as the public and the media start calling in with questions.

PIC: Sends report about St. Vincent's to O

2:30pm

O: Clicks the "Resources" button and selects "Hazmat". This brings up a menu showing there are 5 of these resources available. 2 Hazmat resources are told to go to 3100 Cerrillos Rd, and 1 is sent to 2610 Alamosa Dr.

PIC: Clicks the "Gather Data" Button to collect the reports of what has gone on so far in the incident.

PIO: Clicks on the flashing "Call" button and receives:

"Is Projectis contagious?"

2:45pm

O: Clicks on flashing report button and receives St. Vincent's report from PIC

2:50pm

O: Clicks "Resources" and selects "Police". This shows that there are 20 police cars available. 10 cars are sent to St. Vincents to allow normal business to continue.

3:00pm

IC: Sees the "Report" button flashing on their menu. Clicks this to receive a report from the Liaison Officer (LO).

The report states that the CDC, Military, and the FBI have all been notified as to the current situation. The Military is looking into where contamination may have occurred before the soldier arrived home. At this time it is not believed that anyone was contaminated during the soldier's trip home.

O: Sets up Staging Area at District 2 Health Office.

PIO: Clicks on the flashing "Call" button and receives:

"This is KRQE calling for an incident status update"

PIC: Starts calculating how many people can be serviced at the staging area

3:15pm

O: Sees the "Report" button flashing. This reveals that the 5 police cars arrived at 3100 Cerrillos Rd, and 3 to 2610 Alamosa Dr.

PIO: Clicks on the flashing "Call" button and receives:

"What are the symptoms of Projectis?"

3:25pm

O: Sees the "Report" button flashing. This reveals that the 2 Hazmat units arrived at 3100 Cerrillos Rd, and 1 to 2610 Alamosa Dr.

PIO: Clicks on the flashing "Call" button and receives:

"I think I'm dying from Projectis! What should I do?!?"

3:30pm

O: Clicks "Search for Victims" button on menu.

This will start people calling the party guests and telling them they need to report to the staging area ASAP.

4:00pm

PIO: Clicks "Talk to Press" and selects "Hold Press Conference"

IC: The "Press" button flashes on the menu, indicating a press event is occurring.

The PIO and the IC will both be involved in a press conference. This brings up a window showing a bunch of reporters and cameras. During this time, questions will be directed at either the IC or the PIO. These will be yes or no questions, such as "Is it contagious?" and "Should the public panic?" Obviously, the answers to these questions will affect the public's reaction to the incident and will be used for news bulletins for the press.

O: Sees the "Report" button flashing. This reveals a report from logistics stating that the truck carrying the vaccines has gotten a flat tire, and so the shipment is not expected to arrive until 8pm.

All Screens are interrupted for the following news bulletin:

"This is Anne Jennings. At a new conference called today by the Santa Fe Public Health Department, It was announced that Projectis is not contagious, and that the public should not panic."

4:30pm

O: Sends report to IC

PIC: Sends report to IC

PIO: Notices that the "Public" barometer has turned green, and is somewhere in the middle, indicating a calming trend.

5:00pm

O: Clicks on "Staging Area" on map to see how many people have reported for treatment, and what their health and happiness levels are, and how many people have not yet been reached. Creates a report on these details and sends it to the IC.

PIC: Clicks on "Staging Area" on map to see how many people have reported for treatment, and uses that figure to plan how many more will still need to be treated during shift 2.

PIO: Clicks on the flashing "Call" button and receives:

"A moose once bit my sister."

5:15pm

PIC: Clicks the "Gather Data" Button

5:30pm

All Roles click "report" to prepare end of shift report.

End of Shift

At this point, AI replacements take over for the night shift, and time is sped up.

Day 3

6:00am

The participants regain control, and all will have their report buttons flashing so that they can read a report of what happened during the overnight shift. The IC will receive all the reports, from each area.

O: Reads Shift 2's end of shift report:

The vaccines/antibiotics arrived at 7:45pm to the Staging area.

Staff were able to contact 35 out of the 45 party guests, 33 of which came in to receive treatment.

The Hazmat units dispatched discovered that the source of contamination was in the soldier's suitcase, and traces were found on the dress uniform he wore to the party. They have worked throughout the night decontaminating both locations, and are still at work doing so.

PIC: Reads Shift 2's end of shift report:

During the shift 33 people were treated. 25 of those people did not yet display any symptoms. The 8 that did were admitted to St. Vincent's for additional treatment.

PIO: Reads Shift 2's end of shift report.

During the shift the media was kept abreast of the situation.

During the shift 33 people were treated. 25 of those people did not yet display any symptoms.   The 8 that did were admitted to St. Vincent's for additional treatment.

The Hazmat units dispatched discovered that the source of contamination was in the soldier's suitcase, and traces were found on the dress uniform he wore to the party. They have worked throughout the night decontaminating both locations, and are still at work doing so.

IC: Reads Shift 2's end of shift report:

During the shift the FAC, the SO, and the LC were released from duty, as they were no longer needed for the incident at this time.

The LO's report:

The Military was contacted and informed as to the Hazmat team's findings at the initial contamination site. They are continuing their own investigation into the source of the contamination.

6:30am

IC: Clicks "Call Meeting" and "Create IAP" The roles involved in the IAP process will again see a list of remaining objectives that they will order according to priority. The IC will make the final decision about the objectives, which will send the IAP to the PIC for distribution.

ICS Incident Action Plan

INCIDENT OBJECTIVES	**1. INCIDENT NAME** Projectis Response	**2. DATE** X/X/2008	**3. TIME** 6:30am

4. OPERATIONAL PERIOD (DATE/TIME)
  Day 3 6:30am – Day 4 6:00am

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

- Search for the rest of the party guests

- Treat them

- Continue to decontaminate areas

- Keep public informed

6. WEATHER FORECAST FOR OPERATIONAL PERIOD
  Partly cloudy 75 F

7. GENERAL SAFETY MESSAGE
  Keep public away from suspected contamination area
  Keep public calm

8. Attachments (☑ if attached)

☐ **Organization List (ICS 203)**	☐ **Medical Plan (ICS 206)**	☐ Weather Forecast
☐ **Assignment List (ICS 204)**	☐ **Incident Map**	☐
☐ **Communications Plan (ICS 205)**	☐ **Traffic Plan**	☐

9. PREPARED BY (PLANNING SECTION CHIEF)	**10. APPROVED BY (INCIDENT COMMANDER)**
P/I Chief	IC

7:00am

PIC: Clicks the flashing IAP button and answers, "yes" to the query "Distribute

IAP?"

PIO: Clicks "Talk to Press" button and selects "write press release—request public

assistance".

During the night, we were able to locate and treat 33 of the 45 guests that we have been searching for. Eight of those people were suffering from symptoms and were transferred to St. Vincent's for further treatment. The Santa Fe Public Health department implores the other 12 people to come in to receive treatment. Anyone having any information about the whereabouts of these people is asked to call the health department.

This press release is submitted for approval to the IC.

O: Clicks the "find victims" button to continue the search for the untreated party guests.

7:30am

IC: Clicks the flashing "needing authorization" button, and reviews the press release. The press release is approved.

PIC: Clicks the "Gather Information" and the "from specialists" button

7:45am

PIO: Submits press release

8:00am

PIO: clicks flashing "call" button and receives this info:

"Hi, I saw this morning on the news that four of the people you were looking for were my neighbors. I went over there and no one answered, but I'm pretty sure I heard something inside. They live at 2233 DeVargas"

8:15am

PIO: Clicks "Report—O" and sends the new information to the O regarding the location of 4 of the missing people.

8:30am

PIC: clicks on flashing "Report" button and reads:

Based on all available data on Projectis infections, we estimate that all untreated people exposed to this will be experiencing symptoms by this point. If they are not found and treated in the next 8 hours, we will likely experience some loss of life.

O: Clicks flashing "Report" button and receives the suspected location of 4 party guests: address 2233 DeVargas

8:45am

PIC: Clicks "Report—OC" and sends the new information to the OC regarding the increased urgency of the search effort.

O: Clicks "resources", "ambulances" and sees that there are 10 ambulances available. 2 are sent to the location: 2233 DeVargas.

9:00am

O: Clicks on flashing "Report" button and receives the info from PIC. Upon receiving this info, a red countdown clock appears in their status window, indicating that there is less than 8 hours left to find the remaining party guests.

PIC: Clicks the "Gather Data" Button

9:15am

O: Clicks "staging area" to see how many people still need to be treated. Since this morning, 5 more people have reported to the staging area for treatment. 7 more people still need to be treated.

O: Clicks on flashing "report" button:

Ambulances have arrived at 2233 DeVargas and located 4 party guests. All are experiencing severe symptoms and are unconscious. They will be transported to St. Vincent's Hospital for treatment.

9:45am

O: Clicks on "Staging Area" and sees that there are still 3 party guests that need to be treated.

PIC: Brief IC

PIO: Brief IC

10:00am

PIO: Clicks "Talk to Press" and selects "Press Release – request public assistance"

Since this morning, 9 additional people have been located and are receiving treatment. It is of the utmost importance that we locate the missing 3 people who still need to be treated. These people may be experiencing symptoms that may be preventing them from getting help. If you have any information, please call.

10:15am

PIO: Sends press release to IC for approval

10:30am

O: Brief IC

IC: Clicks "needing authorization" button and reads and approves the press release

10:45am

PIO: Submits press release to press.

11:15am

PIO: Clicks blinking "call" button and receives info screen:

> *"My brother says he saw some of the people you're looking for hanging out on*
>
> *the plaza."*

11:20am

PIO: Sends report of new information to O

11:25am

O: Clicks blinking "report" button and receives info from PIO

11:30am

PIC: Clicks the "Gather Data" Button

O: Clicks "Resources—Ambulance" and sees that there are10 ambulances available.

3 ambulances are sent to the plaza.

PIO: Clicks blinking "call" button and receives info screen:

> *"Where can the general public get vaccinated against Projectis?"*

12:00pm

O: Clicks flashing "report" button:

The Hazmat team is finished decontaminating 3100 Cerrillos Rd and 2610 Alamosa Dr.

IC: Clicks "Send Home" and selects "PIC".

The PIC has been sent home and is no longer active.

PIO: Clicks blinking "call" button and receives info screen:

"I can't find my dog."

12:15pm

O: Clicks blinking "report" button and receives report:

The ambulances have arrived on the plaza. They have been unable to locate anyone matching the description of the remaining party guests. They are returning to base.

12:30pm

All Screens are interrupted for the following news bulletin:

"Word is just in that 3 ambulances swarmed the Plaza in Santa Fe. We aren't sure at this time what they were looking for, but after causing quite a traffic snafu, it appears they left completely empty handed. This is Anne Jennings with VNN"

12:45pm

PIO notices that the public barometer has sunk to "less confident"

1:00pm

PIO: Clicks blinking "call" button and receives info screen:

"I heard on the radio a while ago that you were still looking for 3 people. I was driving over on Alameda and Canyon Rd just now and noticed a car matching the description given in the ditch on the side of the road."

1:15pm

PIO: Sends report of new information to O.

1:30pm

O: Clicks flashing "report" button and receives new information from PIO

1:45pm

O: Clicks "Resources – Ambulances" and sees that there are 12 ambulances available. 2 are sent to the intersection of Alameda and Canyon Rd.

2:30pm

O: Clicks flashing "report" button and sees:

Ambulances have arrived on scene at the intersection of Alameda and Canyon Rd. They have located the car and found the three missing party guests. The driver of the car, a 75-year-old male, was declared DOA. The two passengers are both unconscious and in critical condition. They are being transported to St. Vincent's Hospital for treatment.

2:45pm

O: Sends a status report to the IC

3:00pm

PIO: Clicks "Talk to Press" and "Write Press Release—Informational"

All Victims have been located and are receiving treatment. We'd like to thank the public for their assistance.

<u>3:15</u>

PIO: Sends press release to IC for approval

IC: Clicks "needing authorization" button and reads and approves press release

<u>3:30</u>

PIO: Submits press release

IC: Clicks "Call Meeting—Demobilize"

>   All participants will see a summary screen, detailing how much money was spent,
>
>   how many people were treated, how many lives were lost, and how much
>
>   property damage was done. They will also see a rating of how they performed as
>
>   a group, and how they performed as individuals.

Appendix C

---A---

ACTION PLAN: (See Incident Action Plan.)

AGENCY: An agency is a division of government with a specific function, or a non-governmental organization (e.g., private contractor, business, etc.) that offers a particular kind of assistance. In ICS, agencies are defined as jurisdictional (having statutory responsibility for incident mitigation) or assisting and/or cooperating (providing resources and/or assistance). (See Assisting Agency, Cooperating Agency, and Multi-agency.)

AGENCY EXECUTIVE OR ADMINISTRATOR: Chief executive officer (or designee) of the agency or jurisdiction that has responsibility for the incident.

AGENCY DISPATCH: The agency or jurisdictional facility from which resources are allocated to incidents.

AGENCY REPRESENTATIVE: An individual assigned to an incident from an assisting or cooperating agency who has been delegated authority to make decisions on matters affecting that agency's participation at the incident. Agency Representatives report to the Incident Liaison Officer.

AIR OPERATIONS BRANCH DIRECTOR: The person primarily responsible for preparing and implementing the air operations portion of the Incident Action Plan. Also responsible for providing logistical support to helicopters operating on the incident.

ALLOCATED RESOURCES: Resources dispatched to an incident.

AREA COMMAND: An organization established to: 1) oversee the management of multiple incidents that are each being handled by an Incident Command System organization; or 2) to oversee the management of a very large incident that has multiple Incident Management Teams assigned to it. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources based on priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed.

ASSIGNED RESOURCES: Resources checked in and assigned work tasks on an incident.

ASSIGNMENTS: Tasks given to resources to perform within a given operational period, based upon tactical objectives in the Incident Action Plan.

ASSISTANT: Title for subordinates of the Command Staff positions. The title indicates a level of technical capability, qualifications, and responsibility subordinate to the primary positions. Assistants may also be used to supervise unit activities at camps.

ASSISTING AGENCY: An agency directly contributing tactical or service resources to another agency.

AVAILABLE RESOURCES: Incident-based resources which are ready for deployment.

---B---

BASE: The location at which primary logistics functions for an incident are coordinated and administered. There is only one Base per incident. (Incident name or other designator will be added to the term Base.) The Incident Command Post may be collocated with the Base.

BRANCH: The organizational level having functional or geographic responsibility for major parts of incident operations. The Branch level is organizationally between Section and Division/Group in the Operations Section, and between Section and Units in the Logistics Section. Branches are identified by the use of Roman Numerals or by functional name (e.g., medical, security, etc.).

---C---

CACHE: A pre-determined complement of tools, equipment, and/or supplies stored in a designated location, available for incident use.

CAMP: A geographical site, within the general incident area, separate from the Incident Base, equipped and staffed to provide sleeping, food, water, and sanitary services to incident personnel.

CHECK-IN: The process whereby resources first report to an incident. Check-in locations include: Incident Command Post (Resources Unit), Incident Base, Camps, Staging Areas, Helibases, Helispots, and Division Supervisors (for direct line assignments).

CHAIN OF COMMAND: A series of management positions in order of authority.

CHIEF: The ICS title for individuals responsible for command of functional sections: Operations, Planning, Logistics, and Finance/Administration.

CLEAR TEXT: The use of plain English in radio communications transmissions. No Ten Codes or agency-specific codes are used when utilizing Clear Text.

COMMAND: The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. May also refer to the Incident Commander.

COMMAND POST: (See Incident Command Post.)

COMMAND STAFF: The Command Staff consists of the Information Officer, Safety Officer, and Liaison Officer. They report directly to the Incident Commander. They may have an assistant or assistants, as needed.

COMMUNICATIONS UNIT: An organizational unit in the Logistics Section responsible for providing communication services at an incident. A Communications Unit may also be a facility (e.g., a trailer or mobile van) used to provide the major part of an Incident Communications Center.

COMPACTS: Formal working agreements among agencies to obtain mutual aid.

COMPENSATION UNIT/CLAIMS UNIT: Functional unit within the Finance/Administration Section responsible for financial concerns resulting from property damage, injuries, or fatalities at the incident.

COMPLEX: Two or more individual incidents located in the same general area which are assigned to a single Incident Commander or to Unified Command.

COOPERATING AGENCY: An agency supplying assistance other than direct tactical or support functions or resources to the incident control effort (e.g., Red Cross, telephone company, etc.).

COORDINATION: The process of systematically analyzing a situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The coordination process (which can be either intra- or inter-agency) does not involve dispatch actions. However, personnel responsible for

coordination may perform command or dispatch functions within the limits established by specific agency delegations, procedures, legal authority, etc.

COORDINATION CENTER: Term used to describe any facility that is used for the coordination of agency or jurisdictional resources in support of one or more incidents.

COST SHARING AGREEMENTS: Agreements between agencies or jurisdictions to share designated costs related to incidents. Cost sharing agreements are normally written but may also be oral between authorized agency or jurisdictional representatives at the incident.

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: (See Single Resource.)

---D---

DELEGATION OF AUTHORITY: A statement provided to the Incident Commander by the Agency Executive delegating authority and assigning responsibility. The Delegation of Authority can include objectives, priorities, expectations, constraints, and other considerations or guidelines as needed. Many agencies require written Delegation of Authority to be given to Incident Commanders prior to their assuming command on larger incidents.

DEPUTY: A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior and therefore must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors.

DEMOBILIZATION UNIT: Functional unit within the Planning Section responsible for assuring orderly, safe, and efficient demobilization of incident resources.

DIRECTOR: The ICS title for individuals responsible for supervision of a Branch.

DISPATCH: The implementation of a command decision to move a resource or resources from one place to another.

DISPATCH CENTER: A facility from which resources are assigned to an incident.

DIVISION: Divisions are used to divide an incident into geographical areas of operation. A Division is located within the ICS organization between the Branch and the Task Force/Strike Team. (See Group.) Divisions are identified by alphabetic characters for horizontal applications and, often, by floor numbers when used in buildings.

DOCUMENTATION UNIT: Functional unit within the Planning Section responsible for collecting, recording, and safeguarding all documents relevant to the incident.

---E---

EMERGENCY MANAGEMENT COORDINATOR/DIRECTOR: The individual within each political subdivision that has coordination responsibility for jurisdictional emergency management.

EMERGENCY MEDICAL TECHNICIAN (EMT): A health-care specialist with particular skills and knowledge in pre-hospital emergency medicine.

EMERGENCY OPERATIONS CENTER (EOC): A pre-designated facility established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency.

EMERGENCY OPERATIONS PLAN: The plan that each jurisdiction has and maintains for responding to appropriate hazards.

EVENT: A planned, non-emergency activity. ICS can be used as the management system for a wide range of events, e.g., parades, concerts, or sporting events.

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FACILITIES UNIT: Functional unit within the Support Branch of the Logistics Section that provides fixed facilities for the incident. These facilities may include the Incident Base, feeding areas, sleeping areas, sanitary facilities, etc.

FIELD OPERATIONS GUIDE: A pocket-size manual of instructions on the application of the Incident Command System.

FINANCE/ADMINISTRATION SECTION: The Section responsible for all incident costs and financial considerations. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and Cost Unit.

FOOD UNIT: Functional unit within the Service Branch of the Logistics Section responsible for providing meals for incident personnel.

FUNCTION: In ICS, function refers to the five major activities in the ICS, i.e., Command, Operations, Planning, Logistics, and Finance/Administration. The term function is also used when describing the activity involved, e.g., the planning function.

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GENERAL STAFF: The group of incident management personnel reporting to the Incident Commander. They may each have a deputy, as needed. The General Staff consists of:
Operations Section Chief
Planning Section Chief
Logistics Section Chief
Finance/Administration Section Chief

GENERIC ICS: Refers to the description of ICS that is generally applicable to any kind of incident or event.

GROUND SUPPORT UNIT: Functional unit within the Support Branch of the Logistics Section responsible for the fueling, maintaining, and repairing of vehicles, and the transportation of personnel and supplies.

GROUP: Groups are established to divide the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division. (See Division.) Groups are located between Branches (when activated) and Resources in the Operations Section.

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HELIBASE: The main location for parking, fueling, maintenance, and loading of helicopters operating in support of an incident. It is usually located at or near the incident base.

HELISPOT: Any designated location where a helicopter can safely take off and land. Some helispots may be used for loading of supplies, equipment, or personnel.

HIERARCHY OF COMMAND: (See Chain of Command.)

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ICS NATIONAL TRAINING CURRICULUM: A series of 17 training modules consisting of instructor guides, visuals, tests, and student materials. The modules cover all aspects of ICS operations. The modules can be intermixed to meet specific training needs.

INCIDENT: An occurrence either human caused or by natural phenomena, that requires action by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources.

INCIDENT ACTION PLAN: Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The Plan may be oral or written. When written, the Plan may have a number of forms as attachments (e.g., traffic plan, safety plan, communications plan, map, etc.).

INCIDENT BASE: Location at the incident where 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 collocated with the Base. There is only one Base per incident.

INCIDENT COMMANDER: The individual responsible for the management of all incident operations at the incident site.

INCIDENT COMMAND POST (ICP): The location at which the primary command functions are executed. The ICP may be collocated with the incident base or other incident facilities.

INCIDENT COMMAND SYSTEM (ICS): A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries.

INCIDENT COMMUNICATIONS CENTER: The location of the Communications Unit and the Message Center.

INCIDENT MANAGEMENT TEAM: The Incident Commander and appropriate Command and General Staff personnel assigned to an incident.

INCIDENT OBJECTIVES: Statements of guidance and direction necessary for the selection of appropriate strategy(s), and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

INFORMATION OFFICER: A member of the Command Staff responsible for interfacing with the public and media or with other agencies requiring information directly from the incident. There is only one Information Officer per incident. The Information Officer may have assistants.

INITIAL ACTION: The actions taken by resources which are the first to arrive at an incident.

INITIAL RESPONSE: Resources initially committed to an incident.

INCIDENT SUPPORT ORGANIZATION: Includes any off-incident support provided to an incident. Examples would be Agency Dispatch centers, Airports, Mobilization Centers, etc.

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JURISDICTION: The range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographical (e.g., city, county, state, or federal boundary lines) or functional (e.g., police department, health department, etc.). (See Multijurisdiction.)

JURISDICTIONAL AGENCY: The agency having jurisdiction and responsibility for a specific geographical area, or a mandated function.

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KIND: Refers to the nature of a resource i.e. Single, Strike Team, etc.

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LANDING ZONE: (See Helispot.)

LEADER: The ICS title for an individual responsible for a Task Force, Strike Team, or functional unit.

LIAISON OFFICER: A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies.

LOGISTICS SECTION: The Section responsible for providing facilities, services, and materials for the incident.

LIFE-SAFETY: Refers to the joint consideration of both the life and physical well being of individuals.

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MANAGERS: Individuals within ICS organizational units that are assigned specific managerial responsibilities, e.g., Staging Area Manager or Camp Manager.

MANAGEMENT BY OBJECTIVES: In ICS this is a top-down management activity which involves a three-step process to achieve the incident goal. The steps are: establishing the incident objectives, selection of appropriate strategy(s) to achieve the objectives, and the tactical direction associated with the selected strategy. Tactical direction includes: selection of tactics, selection of resources, resource assignments, and performance monitoring.

MEDICAL UNIT: Functional unit within the Service Branch of the Logistics Section responsible for the development of the Medical Emergency Plan, and for providing emergency medical treatment of incident personnel.

MESSAGE CENTER: The Message Center is part of the Incident Communications Center and is collocated or placed adjacent to it. It receives, records, and routes information about resources reporting to the incident, resource status, and administrative and tactical traffic.

MOBILIZATION: The process and procedures used by all organizations federal, state, and local for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

MOBILIZATION CENTER: An off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment.

MULTI-AGENCY INCIDENT: An incident where one or more agencies assist a jurisdictional agency or agencies. May be single or unified command.

MULTI-AGENCY COORDINATION (MAC): A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICSand is not involved in developing incident strategy or tactics.

MULTI-AGENCY COORDINATION SYSTEM (MACS): The combination of personnel, facilities, equipment, procedures, and communications integrated into a common system. When activated, MACS has the responsibility for coordination of assisting agency resources and support in a multi-agency or multijurisdictional environment. A MAC Group functions within the MACS.

MULTIJURISDICTION INCIDENT: An incident requiring action from multiple agencies that have a statutory responsibility for incident mitigation. In ICS these incidents will be managed under Unified Command.

MUTUAL AID AGREEMENT: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

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NATIONAL INTERAGENCY INCIDENT MANAGEMENT SYSTEM (NIIMS): An NWCG-developed program consisting of five major subsystems which collectively provide a total systems approach to all-risk incident management. The subsystems are: The Incident Command System, Training, Qualifications and Certification, Supporting Technologies, and Publications Management.

NATIONAL WILDFIRE COORDINATING GROUP (NWCG): A group formed under the direction of the Secretaries of the Interior and Agriculture to improve the coordination and effectiveness of wildland fire activities, and provide a forum to discuss, recommend appropriate action, or resolve issues and problems of substantive nature. The NWCG has been a primary supporter of ICS development and training.

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OFFICER: The ICS title for the personnel responsible for 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 specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours.

OPERATIONS SECTION: The Section responsible for all tactical operations at the incident. Includes Branches, Divisions and/or Groups, Task Forces, Strike Teams, Single Resources, and Staging Areas.

OUT-OF-SERVICE RESOURCES: Resources assigned to an incident but unable to respond for mechanical, rest, or personnel reasons.

OVERHEAD PERSONNEL: Personnel who are assigned to supervisory positions which include Incident Commander, Command Staff, General Staff, Directors, Supervisors, and Unit Leaders.

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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. On larger incidents, the planning meeting is a major element in the development of the Incident Action Plan.

PLANNING SECTION: Responsible for the collection, evaluation, and dissemination of tactical information related to the incident, and for the preparation and documentation of Incident Action Plans. The Section also maintains information on the current and forecasted situation, and on the status of resources assigned to the incident. Includes the Situation, Resource, Documentation, and Demobilization Units, as well as Technical Specialists.

PROCUREMENT UNIT: Functional unit within the Finance/Administration Section responsible for financial matters involving vendor contracts.

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RADIO CACHE: A supply of radios stored in a pre-determined location for assignment to incidents.

RECORDERS: Individuals within ICS organizational units who are responsible for recording information. Recorders may be found in Planning, Logistics, and Finance/Administration Units.

REINFORCED RESPONSE: Those resources requested in addition to the initial response.

REPORTING LOCATIONS: Location or facilities where incoming resources can check-in at the incident. (See Check-in.)

RESOURCES UNIT: Functional unit within the Planning Section responsible for recording the status of resources committed to the incident. The Unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

RESOURCES: Personnel and equipment available, or potentially available, for assignment to incidents. Resources are described by kind and type, e.g., ground, water, air, etc., and may be used in tactical support or overhead capacities at an incident.

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SAFETY OFFICER: A member of the Command Staff responsible for monitoring and assessing safety hazards or unsafe situations, and for developing measures for ensuring personnel safety. The Safety Officer may have assistants.

SECTION: That organization level with responsibility for a major functional area of the incident, e.g., Operations, Planning, Logistics, Finance/Administration. The Section is organizationally between Branch and Incident Commander.

SECTOR: Term used in some applications to describe an organizational level similar to an ICS Division or Group. Sector is not a part of ICS terminology

SEGMENT: A geographical area in which a task force/strike team leader or supervisor of a single resource is assigned authority and responsibility for the coordination of resources and implementation of planned tactics. A segment may be a portion of a division or an area inside or outside the perimeter of an incident. Segments are identified with Arabic numbers.

SERVICE BRANCH: A Branch within the Logistics Section responsible for service activities at the incident. Includes the Communications, Medical, and Food Units.

SINGLE RESOURCE: An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work supervisor that can be used on an incident.

SITUATION UNIT: Functional unit within the Planning Section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the Planning Section Chief.

SPAN OF CONTROL: The supervisory ratio of from three-to-seven individuals, with five-to-one being established as optimum.

STAGING AREA: Staging Areas are locations set up at an incident where resources can be placed while awaiting a tactical assignment. Staging Areas are managed by the Operations Section.

STRATEGY: The general plan or direction selected to accomplish incident objectives.

STRIKE TEAM: Specified combinations of the same kind and type of resources, with common communications and a leader.

SUPERVISOR: The ICS title for individuals responsible for command of a Division or Group.

SUPPLY UNIT: Functional unit within the Support Branch of the Logistics Section responsible for ordering equipment and supplies required for incident operations.

SUPPORT BRANCH: A Branch within the Logistics Section responsible for providing personnel, equipment, and supplies to support incident operations. Includes the Supply, Facilities, and Ground Support Units.

SUPPORTING MATERIALS: Refers to the several attachments that may be included with an Incident Action Plan, e.g., communications plan, map, safety plan, traffic plan, and medical plan.

SUPPORT RESOURCES: Non-tactical resources under the supervision of the Logistics, Planning, Finance/Administration Sections, or the Command Staff.

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TACTICAL DIRECTION: Direction given by the Operations Section Chief which includes the tactics appropriate for the selected strategy, the selection and assignment of resources, tactics implementation, and performance monitoring for each operational period.

TASK FORCE: A combination of single resources assembled for a particular tactical need, with common communications and a leader.

TEAM: (See Single Resource.)

TECHNICAL SPECIALISTS: Personnel with special skills that can be used anywhere within the ICS organization.

TEMPORARY FLIGHT RESTRICTIONS (TFR): Temporary airspace restrictions for non-emergency aircraft in the incident area. TFRs are established by the FAA to ensure aircraft safety, and are normally limited to a five-nautical-mile radius and 2000 feet in altitude.

TIME UNIT: Functional unit within the Finance/Administration Section responsible for recording time for incident personnel and hired equipment.

TYPE: Refers to resource capability. A Type 1 resource provides a greater overall capability due to power, size, capacity, etc., than would be found in a Type 2 resource. Resource typing provides managers with additional information in selecting the best resource for the task.

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UNIFIED AREA COMMAND: A Unified Area Command is established when incidents under an Area Command are multijurisdictional. (See Area Command and Unified Command.)

UNIFIED COMMAND: In ICS, Unified Command is a unified team effort which allows all agencies with responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility, or accountability.

UNIT: The organizational element having functional responsibility for a specific incident planning, logistics, or finance/administration activity.

UNITY OF COMMAND: The concept by which each person within an organization reports to one and only one designated person.