Training Development for Colleton County

Training Development for Colleton County (S.C.) Fire-Rescue Command Personnel

EXECUTIVE ANALYSIS OF FIRE SERVICE OPERATIONS IN EMERGENCY MANAGEMENT

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

The problem was that Colleton County (S.C.) Fire-Rescue (CCFR) had no training program for the development of incident command personnel, which puts those operating on incidents at risk. The research purpose was to identify improvements that can be made to the training program for prospective and existing incident command personnel in order to improve their ability to manage incidents.

Using descriptive research, questions about the training challenges that exist for incident command personnel, what programs exist to improve incident command personnel capabilities, how other departments have addressed incident command personnel development, and what CCFR can do to address this issue were answered.

The results identified a multitude of training approaches that address the training challenges that exist for command personnel, a number of training adjuncts that can be used in the development of command personnel, training and experience requirements of command personnel in other fire departments, and an approach that CCFR could take to address this issue. The recommendations were for CCFR to develop a standard that incorporates both education and experience by using a multi-faceted approach to training command personnel, including computer simulations, after action report reviews, and an evaluative tool.

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Introduction

The problem is that Colleton County Fire-Rescue (CCFR) has no formal training program for the development of incident command personnel, which puts those operating on incidents at risk. The research purpose is to identify improvements that can be made to the training program for prospective and existing incident command personnel in order to improve their ability to manage incidents.

Using a descriptive research method, a review of existing literature was conducted and a questionnaire was distributed to other members of the fire service in order to answer the following research questions: (a) what training challenges exist for incident command personnel, (b) what programs exist to improve incident command personnel capabilities, (c) how have other departments addressed incident command personnel development, (d) what can Colleton County Fire-Rescue do to address this issue?

Background and Significance

Colleton County Fire-Rescue (CCFR) is a combination all-hazards fire-rescue department responsible for providing service to an area of 1,697 square kilometers and a population of approximately 40,000 people. CCFR is responsible for providing fire suppression, inspections, and investigations. Additionally, CCFR is Colleton County's only hazardous materials mitigation, technical rescue, and advanced life support treatment and transport provider. CCFR provides service from 30 stations with a staff of 70 full-time and approximately 240 volunteer/paid on-call personnel. All full-time personnel are cross-trained as firefighters and as emergency medical technician-basics. Approximately half of the full-time staff is trained to emergency medical technician-

paramedic level. Standard staffing has a full-time firefighter as a sole driver/operator on an engine in three stations 24 hours a day. Six advanced life support ambulances are staffed 24 hours a day with two firefighters. Additionally, five stations are staffed with sole driver/operators during daytime hours, Monday through Friday, as this is the time period when the bulk of the volunteer work force is unavailable due to their full-time occupations. Minimum staffing requires all 24-hour positions to be filled, but occasionally allows for a daytime firefighter position to be uncovered.

Incident command personnel, or those responsible for commanding and controlling incidents, vary often. Each shift has a Battalion Chief who is responsible for the daily activities; however, given the large area of Colleton County, there are often other personnel acting in the role of incident commander. These incident command personnel have a wide range of training and experience from little or no experience to those who are very well versed in incident command and control. Additionally, higher-ranking officers that arrive at the scene after a lower ranking officer has established command frequently do not assume command of the incident in an effort to allow the lower ranking officer to gain command experience. In some cases, the higher-ranking officer will then assist in management of the scene; however, more often, the higher-ranking officer becomes involved in hands-on, task level operations that prevent the higher-ranking officer from assisting with command. In such a case, the incident commander may be a full-time firefighter or volunteer officer with little or no incident command training or experience. There currently is no minimum training standard for incident command personnel within Colleton County Fire-Rescue beyond the courses mandated by the federal National Incident Management System initiatives.

A training program for the development of potential and the improvement of existing incident commanders is needed in order to provide for safe and effective incident scene operations within Colleton County. This research is directly linked to Chapter 2 of the Executive Analysis of Fire Service Operations in Emergency Management student manual, which addresses Incident Command Systems and the responsibilities of Incident Commanders (IC). One of these responsibilities is the IC, "ensures safety of all personnel on the incident" (FEMA, 2007, p. 2-5). Additionally, this research is linked to two United States Fire Administration operational objectives, which are: Reduce the loss of life from fire-related hazards, particularly among firefighters and appropriately respond in a timely manner to emergent issues. Continued research into incident command training improvement will equip our current and future incident commanders with the knowledge and experience to ensure the safety of all personnel on the incident, which will reduce the loss of firefighters' lives from fire-related hazards. Moreover, research must be completed in order to identify ways of training for highly technical incidents, such as hazardous materials responses, weapons of mass destruction mitigations, and mass-casualty incidents, which is an emergent issue given the current war on terrorism and the need to be fully prepared for these types of incidents.

Literature Review

Incident commanders today are faced with countless challenges. Incident command personnel are responsible for responding to a multitude of incident types and ensuring safe and effective operations during the course of these incidents. "The purpose of your fire department is to solve customers' problems. The purpose of an incident commander is to make sure that customers' problems are solved intelligently and safely"

(Emery, 2007, p. 60). Our customers' problems are coming in different forms in today's fire service, thus requiring incident command personnel to be well versed in many areas. Incident commanders are now required to be knowledgeable in areas of hazardous materials response, confined space and technical rescue mitigation, weapons of mass destruction, urban search and rescue and a variety of other specialized incidents. The mitigation of many of these types of incidents is routinely considered the sole responsibility of the modern fire service. In addition, incident command personnel must be well versed in structural fire command. Given that each fire is different from the last, preparation for this alone is an arduous task.

In today's world, we are continually faced with multi-agency (public agencies, nongovernmental organizations, industry and general public) and multidiscipline responses that have become the norm . . . However, incidents, like fingerprints, are never identical and once initial response actions have been taken, responders must continually assess the situation and tailor their strategies and tactics to match the reality of what they are faced with in the field (Deal, Bettencourt, Huyck, Merrick, Mills, 2006, p. xvii).

Gasaway (2007) concurs, citing the following:

Whether it is a house fire, a high-rise building fire, a plane crash, a hazardous materials spill or a mass casualty incident, fire incident commanders must make critical life and death decisions. The challenges faced by fireground incident commanders are complex, unpredictable and stressful. The success or failure of saving lives and property depends upon firefighters being knowledgeable and experienced subject matter experts on fireground operations. In turn, the success or failure of the firefighters, working as a

team to achieve this goal, depends upon the ability of the fire incident commander to make quality, effective and timely strategic decisions (p. 8).

In cases where an overwhelming event will bring assistance in the form of state and federal responders, it is easy to forget that the initial incident commander will be solely responsible for the scene operations until assistance, in the form of state or federal resources, arrives. "On the day the Big One hits our community, the locals will be it for the first couple of hours" (Brunacini, 2004, p. 101). One does not have to examine types of incidents that require assistance from outside agencies in order to understand the challenges incident commanders face today. Even the routine incident types have changed. The research indicates that the fire service must prepare for both the unusual incident that requires outside assistance and for the routine incident that is handled with local resources.

Building fires have changed in the last decade as well. Today's lightweight construction coupled with the synthetic fuels translates into a fire that burns faster and hotter and a building that fails and collapses quicker. This means that the incident command personnel of today must be trained to a higher level than those of years past. Chiaramonte (2002) agrees stating, "Let's start with a simple truth: today's fire officers need to be more educated then (sic) ever" (p. 12). Many tie this demand for a higher level of education to a higher level of responsibility. As Coleman (2008) outlines, "Command is on the top of the pyramid or flowchart and, as such, should be held ultimately responsible for the outcome of the incident" (p. 6). The United States military has known for many years that delegating command authority to subordinates requires that you first educate them in what is expected of their performance. Additionally, only

those who have been properly educated in command can be placed in command positions. General George C. Marshall, while serving as General of the Army, was quoted as saying, “If your subordinates cannot do [the work] for you, you haven’t organized them properly” (Puryear, 2000, p. 261).

Given the depth and multi-faceted nature, education is not easy to attain. Additionally, many in the fire service believe that education cannot replace experience. “Experience is critical in the creation of tacit knowledge and the use of intuitive decision-making skills. There is a growing body of literature documenting that senior managers routinely make decisions based on tacit knowledge grounded in experience” (Gasaway, 2007, p. 12). Schank (1997) concurs, stating, “There’s no substitute for learning by doing. The medieval concept of apprenticeships survived as a teaching tool until relatively recently, when the giganticism of the modern workplace made true and de facto apprenticeships impractical” (p. 6).

Although the idea that education cannot replace experience appears to be valid, the fire service generally does not apply it to new firefighters. “Hopefully, we are all aware of needs for education and training of new and experienced firefighters” (Jug, 2005, p. 10). As Jug indicates, we normally do not take a firefighter without experience or training and have them learn by running into burning buildings and simply surviving the event. We prepare them by educating them with the skills they will need to operate at an incident. Moreover, we continually educate experienced firefighters in order to maintain and learn new skills. This initial and continued education also gives firefighters the confidence to perform. Confidence is something that incident command personnel must also be given prior to being tasked with commanding an incident. Confidence leads

to the building of what many authors have referred to as command presence. "The key to command presence is an attitude that allows you to run the fire and not let the fire run you" (Coleman, 2008, p. 22). The education and experience of incident command personnel is a means to a clear and collective end. "The ending goal is that incident commanders and fire companies are on the same page and know each others expectations" (Ray, 2004, p. 12). Experience is, according to many authors, the foundation by which incident command personnel create workable solutions to problems that present themselves with incomplete information. "How do experienced ICs come up with a workable solution quickly? One reason offered is that they compare the present situation with situations they have experienced in the past" (Montagna, 2008, p. 111). If Montagna's notion is accurate, it presents a complex situation if an incident commander is presented with a situation that they have not previously encountered, as they will have no past experience by which to compare the present situation.

However difficult it is for incident command personnel to attain adequate and appropriate education to prepare them for command, it is even more difficult to attain experience. "There is no substitution for real-world experience, but we can't schedule 'real' fires. In addition, we can't stop the action at a real fire to figure out if we are doing the right things (strategy and tactics)" (Brunacini, 2002, p. 56). However difficult it is to learn from real world situations, the opportunities are on a statistical decline. As Brunacini (2004) notes, "At the beginning of my career the old-timers used to say, 'Son, we don't get as many fires as we used to'" (p. 89). Statistics show this statement to be true. According to the National Fire Data Center (1997), residential fires declined by 27.9% from years 1985 to 1994 (p. 58) and the United States Fire Administration (2004)

shows a continued decline of 21% from years 1992 to 2001 (p. 4). The United States Fire Administration (2007) indicates that the decline has continued with a 4% decrease of residential fires from years 1995 to 2004 (p. 46). With fires on a nationwide decline, many fire service advocates are seeking alternatives to gaining knowledge through experience. One solution is to utilize practical hands on training drills.

However, hands on training involving command of incidents can be time intensive and costly. In describing a military/civilian mutual aid hands on training drill, Sherwood (1979) notes that, "The first two days' drill, under the leadership of NPTR Assistant Chief Joe Goodwin and coordinated by Imperial County Assistant Chief Carl Shwettman, put to use over 200 manhours, 2000 gallons of fuel, and 100 gallons of lightwater concentrate" (p. 42). The costs alone may be difficult to absorb by any organization. Additionally, Romundstad, Sundnes, Pillgram-Larsen, Roste, and Gilbert (2004) note that coordination of large numbers of resources is difficult citing, "Land forces numbering approximately 12,000 personnel took part in the military North Atlantic Treaty Organization (NATO) exercise 'Joint Winter 2000' in northern Norway during March 2000" (p. 179). Having a comparable amount of fire service resources at any given drill is nearly impossible. However, if a relatively large amount of resources, by comparison to the military, were deployed to a specific location for a training drill, it would likely require an incident commander to coordinate the resource deployment prior to the actual execution of the drill. As Azis (2001) identifies, live exercises are both "expensive and time consuming to set up" and "can expose personnel to real risks" (p. 5). This can be clearly seen in the Joint Winter 2000 example Romundstad, et. al cited

wherein during this military exercise a snow-laden roof collapsed and caused three deaths and 26 injuries.

Another educational adjunct is to gain knowledge through others' experiences. This can be done through reading case reviews, after action reports, or incident critiques. The modern progressive fire service documents, reviews, analyzes and attempts to learn from incident operations that involve the death of firefighters. This review is essential to ensure that any mistakes that were made are not repeated in the future.

After action reports have been used for centuries by military organizations permitting commanders to learn from the failures and successes of other military officers. During the Vietnam war, military officers who took the time to research the after action reports of other units in their area of operation usually found sufficiently valuable information on the enemy's tactics that their soldiers were able to survive in a very hostile environment (Strawn, 1986, p. 47). As Strawn has demonstrated, there is an obvious benefit to learning from others' experiences, and in particular, learning from others' mistakes.

McCreight and Hagen (2007) stress the importance of recording and specifically compiling the lessons learned by incident command personnel in their citation of the following:

What is needed is nothing less than a rigorous and comprehensive database of actual emergency deployments sorted by state and locality that are differentiated solely by the type of emergency scenario encountered. These observations would be distilled as "lessons learned" and used extensively in follow-up exercises and continuing training as

insights are shared across jurisdictions and examples are collected of best practices (p. 28).

Although there are benefits to reviewing both the positive and negative things that other departments have experienced, they are not department specific. Carter (2001) suggests the following:

What I am suggesting is that you and your fire department develop a post-operations critique procedure. This recommended procedure would mandate that you assess your performance while the facts are still fresh in your mind. And you would be required to do it in standard fashion, in a way that could be repeated systematically throughout your department. In this way you could compile a history of lessons learned (p. 64).

When reviewing or critiquing the operations of your own department, it is essential to obtain the truth from those participating in the collection of facts. Without obtaining the truth, the incident cannot be accurately examined. In many departments, it may be difficult or impossible to gather this information accurately.

Gayk (2007) agrees stating the following:

To be honest, I don't know why we waste our time with critiques when no one provides honest information about their performance on the fireground. I've worked for three different departments and I haven't noticed a huge difference within the fire service after participating in formal and informal critiques because no one tells the truth, and, therefore, no one learns anything (p. 141).

Dr. Harry Carter (2001) concurs by writing, "It is very important that each member of the team speak openly and honestly. This session is not for blame or

apologies. It is a fact-finding session. And if the mood of the group is defensive, nothing positive will happen" (p. 66).

Critiques and after action reports, if accurate and used properly, can benefit future incident operations. "The success of future disaster operations depends on this early detection and correction of deficiencies" (Morris, 1988, p. 15).

Case reviews and critiques may also be offered in an atmosphere that is different from simply reading an after action report or another department's critique of their incident operations. The Norfolk Fire Department uses interactive television training by which participants can view instructors demonstrating proper techniques for specific tasks and then view case studies where the tasks are applied, both correctly and incorrectly. When describing its effectiveness when applied to the department's medical first responders, Gardner (1984) remarks that, "it provides cost- and time-effective emergency medical training for Norfolk fire personnel – and in a newer, more stimulating learning environment" (p. 38). The benefits of this technology are that it allows the participant to review the information at their leisure and is department specific.

The Melbourne, Australia Fire Department uses a more advanced method where both the internal and external perspective of the incident commander can be reviewed after completion of commanding a practice scenario. By using a head-mounted camera as well as a hand held camera, the incident commander can review their performance from two different perspectives after a training simulation. McLennan, Pavlou, Klein, and Omodei (2005) identify utilization of this technology to document practice scenarios and after action reviews of their performance and cite the following of the participants, "They also offered spontaneous comment about the advantages of having video footage

of their feedback to review subsequently, rather than having to rely totally on their memory of the feedback content" (p. 13). Although video and television-based trainings save money on requiring instructors to be physically present, there are costs associated with the technology to facilitate this type of instruction.

Table top exercises offer an additional educational element by requiring participants to manage a simulated area and resources; however, Azis (2001) notes that table top exercises are, "difficult & time consuming to set up, difficult to assess & record results objectively" and "rarely possible to simulate incidents in 'real time'" (p. 5). Tabletop exercises offer management experience in a miniature world but may lack something that many authors think is necessary in command training, stress. Stress during training will bring about intense feelings and according to Schank, this is a better way of reinforcing the information.

Intense feelings stick with people; anything that packs an emotional or visceral punch imprints itself on their minds. That's why dry, boring, lifeless manuals and lectures are instantly forgettable. It takes the emotional intensity of experience – or a simulation of that experience – for stories to stick (Schank, 1997, pp. 41-42).

Cook (1994) agrees citing, "Officers should be assessed on their performance under the high stress levels that are inevitably present at a fire incident" (p. 19). He continues with the following:

The observable symptoms of a person under stress are: a) Slow reactions, b) An inability to consider more than one factor, c) Perceived tension, d) Freezing of thought and action in extreme cases . . . There is, therefore, a need to develop responsibility/stress

training to provide personnel to operate these systems safely and to demonstrate their ability to do so before taking up their responsibilities (p. 20).

The training evolution wherein stress is applied to its participants also offers a more realistic, real time scenario. It requires that a participant become comfortable with taking in large amounts of information, processing it, and making intuitive decisions based on it in a very short period of time. Jameson (1996) notes that, "Incident command relies almost entirely upon the information held or supplied. Command is inseparable from intelligence and operational effectiveness indivisible from the quality of information available" (p. 44). Additionally, Emery (2007) notes that, "It's easy to lose track of time on the fireground. As 10 minutes become 20, then 20 minutes become 30, it becomes harder and harder to broadcast 'still offensive'" (p. 67). This means that the stress of everyday fire ground operations can create a virtual time compression which makes receiving information, processing that information and decision making that much more important. Tabletop exercises, case reviews, and television-based training may not be capable of producing this real time, stressful, experience-oriented education as the literature indicates these types of training adjuncts are time expanded.

Many researchers have begun to look at simulation-based training, specifically those that are created and operated by computer. These types of programs operate on a level beyond the theory of command, case reviews, and tabletop exercises. Many authors have cited the importance of this.

If your personnel have limited exposure to command and management principles, it is equally important that they be taught planning, communicating, and controlling, in addition to ICS organization. The final aspect of any ICS training program should be

simulated emergency situations that provide an opportunity to apply the ICS and management principles to a variety of emergencies (American Fire Journal, 1988, p. 32).

Dunn (1999) agrees with the use of computer simulation training in his citation of the following:

When you consider how long it takes an officer or a chief to learn the many aspects of his profession, you realize that there must be other ways to gain experience. The computer has given the fire service another way to learn life-and-death decision making. The closest thing to making decisions at an actual fire is by way of computer simulation. Recently, the Fire Department of New York obtained a computer program that simulates the type of buildings, the type of fire spread, and the type of strategies and tactics used by the department. This computer program is successfully being used to train both new and veteran chief officers. During this training, a new chief officer stands in front of a large screen that shows a moving image of a real-life spreading fire (p. 13).

The New York City Office of Emergency Management (NYC OEM) has also purchased and is utilizing a multi-station virtual reality training system. It contains a full library of scenarios that can be customized. Erich (2008) indicates the following:

The NYC OEM contract covers a multidiscipline team-training system and full library of customized scenarios, with an integrated after-action review and evaluation component. Officials will use it in their Citywide Incident Management System (CIMS) training. “The idea of ADMS is that it’s a bridge between classroom instruction and live field experience,” says ETC Simulation Product Manager Adam McCard. “It allows trainees to actually work under the stresses of an evolving situation, with a realism you

can't get with standard tabletops. Plus, you can prepare for events that are impossible to train as live exercises" (p. 24).

Erich has identified several benefits to virtual reality training, the realism, the simulated stresses placed upon the participants, and the evaluation or after action review component.

Think of computer simulations as a live-fire exercise without the heat . . . Considering the logistics and cost of live-fire training, computer simulations are becoming an increasingly economical alternative as a means to provide firefighters with some of the skills necessary to their jobs (Riecher, 2002, p. 18).

These computer simulations offer computer-generated incidents with real-world problems that the incident command personnel must solve. Although research into this type of training has been fairly limited, there are many organizations outside of the fire service that are successfully utilizing this type of training.

Jewett (1990) identifies that, "similar simulation systems have been used for years to train combat leaders, pilots, and nuclear power plant operators. The National Aeronautics and Space Administration and the Department of Defense funded the development of early simulator hardware and software" (p. 49-50).

Willy, Sterk, Schwarz, and Gerngross (1998) remark that the military has determined computer simulation to be a feasible alternative to replicating difficult conditions, citing the following:

Training military physicians in trauma management is a dilemma in peacetime because there are few opportunities to gain clinical experience within the military care system. One way to ensure that combat-eligible physicians gain experience with

sufficient numbers of severe trauma cases is to use a computer-aided instruction program (p. 236).

Additionally, Lewis (1997) comments that the Department of Energy benefits greatly from the use of computer-based virtual reality programs writing, “With its high stakes and ‘hot cells,’ the nuclear-power industry perhaps has the most to gain by using virtual reality in safety training” (p. 41).

The oil refinery industry has also begun to use advanced computer simulation to train its operators. As Brown and Comtois (2007) identify in their research into the oil industry training programs, “The foundational piece of the new training approach was a computer simulation program” (p. 53). Brown and Comtois further identify that, “by expanding the scenarios and incorporating new functionalities into the Simulator, the training experience has only improved” (p. 55).

Fire service organizations have also begun to use computer-simulated training. Marks (2008) notes the following:

Each year fire agencies around Australia and New Zealand run numerous training exercises created through the use of a computer-generated incident command system known as Vector Command. Not only does this software generate scenarios for live training exercises but it plays a much larger role in specialist training for operational command and incident management. . . One of the issues faced by fire services all over the world is the compelling need to train firefighters in effective methods of incident management. Although valuable, conducting live full-scale exercises can be expensive and require a large amount of resources, so an alternative system was required (p. 34).

One of the difficulties for computer-based, virtual reality training is creating realism. Markley (2008) agrees citing, "Whether off the shelf or unique, the challenge for any simulation program is realism. And it is not just video-game-quality graphics that are important – simulations have to mimic real situations" (p. 66).

Perhaps Lewis (1997) identifies one of the largest benefits to computer-based training in his citation that, "Not only does virtual reality provide a risk-free environment, it also offers unparalleled freedom for the user to make decisions in the training environment" (p. 39). Montagna (2008) agrees, stating, "Simulation training is a method of training that gives ICs, company officers, and firefighters a chance to gain experience without encountering the associated risks of live emergency response" (p. 113). Azis (2001) agrees citing the following:

Training in the Fire Service can be described as a dichotomy (it must address two priorities. First, it has to be realistic (the purpose of training is to ensure that firefighters are equipped to deal with situations at operational incidents. On the other hand, training must be executed in such a way that it does not expose participants to unnecessary levels of risk (p. 3).

Stehr and Appleton (1998) also agree, noting that, "computer simulations are especially advantageous in situations where traditional methods of learning from experience are either too dangerous or are not feasible for ethical or legal reasons" (p. 49). Jewett (1990) notes that the military use of computer simulators are "a lot less destructive, and still cheaper, than staging a war" (p. 50).

Additionally, Azis (2001) writes that, "Computer based simulations can be set up immediately and significantly cheaper to run than a real exercise, can in principle

simulate any incident in 'real time' and is easily repeatable, and places no personnel at risk" (p. 5).

Computer-based, virtual reality scenarios can also produce stressful scenarios that will help to build the confidence of the incident command personnel who participate in this type of training. "A real-time fire simulation enables you to challenge the student with decision making under pressure while giving him a chance to develop his fireground communication skills under that same pressure" (Montagna, 2008, p. 125). Coleman (1994) suggests that the additional stress places the participants' senses at a higher level of concentration and notes that, "Virtual reality can simulate that stress, and as a result we can learn more from it" (p. 32).

Computer-based training can also prepare prospective incident command personnel to manage the massive amount of information that will accompany a large incident scene. Stanovich (2006) recognizes this benefit while describing a computer-based training software utilized by the United States military in the following citation:

The result is "information overload," a cascade of data that exceeds the finite limits of information that can be processed and acted upon by a human being in a stressful and complex, multi-tasking environment. What is new is the potential for inundating all participants with an ever-increasing flow of data masquerading as information because it has been slickly packaged within the common operating picture . . . creating strong incentives for all to engage in information overload in an attempt to maintain their bearings in this overly ambitious big picture (p. 58).

There are also many different types of computer software available to simulate different incident types. "Ops-Plus for WMD Hazmat is designed to prepare fire, police

and EMS personnel for WMD hazmat response. It takes place in a Virtual Terrorism Response Academy (VTRA) with many different kinds of training and topics related to terrorism response" (Farmer, 2007, p. 37).

As compared to tabletop or role-playing scenarios, Schank (1997) remarks that there are benefits to live and role-playing exercises, but, "Computers, however, are much more learning-friendly; they provide an environment that is more conducive to learning than a role-playing scenario" (p. 128).

The effectiveness of computer-based, virtual reality applications can be debated. However, if one examines its use in fields outside of the fire service, the usefulness and benefits are clearly seen. For example, computer-based, virtual reality technology has been successfully used by psychologists in the treatment of post-traumatic stress disorder in the aftermath of September 11, 2001. Difede, Hoffman, and Jaysinghe (2002) note the following:

Virtual reality affords both the clinician and the patient several advantages over other types of exposure therapy . . . The program gives severely traumatized patients the opportunity to gradually and systematically approach multiple feared situations associated with the World Trade Center attacks, including fears of flying, heights, and elevators, in addition to the traumatic event itself (pp. 1083-1084).

One of the drawbacks to using computer-based simulations and virtual reality training that has been identified in past research is the cost of the hardware required. McLennan, et. al (2005) cite that, "While advances in computer-generated simulations, such as VectorCommand and computer-video supported simulations such as MINERVA and HYDRA, will continue, such systems have their own drawbacks – notably relatively

high purchase, start-up, development, and ongoing updating costs; and uncertain psychological fidelity" (p. 14). However, Jewett (1990) disagrees citing that, "Years ago, the cost of computer hardware and software was very high, and so the use of costly interactive instructional technology was limited to situations allowing few mistakes. But today's personal computer can do what yesterday's mainframe computers did" (p. 50).

Despite the costs, many authors are fully supportive of utilizing computer-based virtual reality programs to train incident command personnel. Most authors agree that it is an excellent way to offer experience-based learning to participants. "We consider that all officers would benefit from being exposed to the training and assessment scenarios that could be made available through technological advances" (Cook, 1994, p. 19).

Stehr and Appleton (1998) agree with the following:

We identify computer-based simulations as an important tool that can help emergency-response planners to better train for disasters. We argue that computer-based simulations (CBS) are a largely untapped resource for bridging the gap between disaster planning and emergency response. Computer simulations of disaster situations have the potential to improve both the problem solving skills of key response team members, which, in turn, leads to more effective organizational learning, and the coordination between and among response organizations. In short, CBS are a useful tool as both a heuristic device designed to improve organizational learning, and as an aid in the development of organizational capacity to manage emergency response (p. 39).

Gasaway recommends a blend of several techniques including classroom, practical computer-based simulations, and evaluations. Gasaway (2007) writes the following:

Training for incident commanders needs to include classroom and practical modules designed to blend the best of rational and intuitive decision-making processes . . . Evaluations should be completed after catastrophic fireground incidents to determine the decision-making style deployed by the fireground incident commander and to evaluate the role intuitive and/or rational decision-making processes played in contributing to the failure of, or prohibiting the success of, the incident (p. 17).

"The fire service cannot afford to miss out on this opportunity. Those who assume command in the next several decades will not have the benefit of an entire generation's firefighting experience" (Coleman, 1994, p. 32). According to the research computer-based, virtual reality simulations are an effective means of training current and future incident command personnel and the fire service should seize the opportunity to use these technological advances to increase the abilities of today's and future incident commanders. This is a viable alternative, and as Coleman identifies, future generations will not benefit from the infrequently occurring live experiences of the current generation. It appears that there are many challenges in training command personnel and the literature review has identified several methods of delivery used by several different departments throughout the world.

The literature reviewed identifies that command training must be practical in nature. The educational component is important but a practical session must be included to offer student experience. Command training must also cover a wide range of incidents and problems that may be encountered during those incidents. The literature also suggests that command training must have an evaluation or performance critique component in order to be truly effective. Additionally, command training must be as

realistic as possible. The training must be stressful or as Schank identified, the training must be intense. This helps with realism, prepares the student to deal with the stresses they will face on incident scenes and the intensity helps to reinforce the experiences during the training. These challenges must be addressed and overcome when developing or selecting a command training delivery type.

Procedures

The procedures the author used for this descriptive research project began with a review of existing literature. The literature review commenced in the Learning Resource Center at the National Fire Academy in September of 2008. It was the author's intention to use existing literature to help answer the following research questions: What training challenges exist for incident command personnel? What programs exist to improve incident command personnel capabilities? How have other departments addressed incident command personnel development?

Additionally, a questionnaire (Appendix A) was developed to gather general information regarding what the experience and training requirements other departments are using for incident command personnel. Using three closed ended questions, respondents were required to pick from a series of options. A fourth question was inserted to record from which state the respondent is a fire department member. The author did not use this data for statistical importance but to insure that the respondents were not from one area of the country. This questionnaire was distributed to a group of South Carolina fire service leaders listed on the firefighter mobilization email group. Additionally, the questionnaire was distributed to several Executive Fire Officer email lists in order to gather information from other parts of the United States. The results of

this questionnaire help to answer the following research question: How have other departments addressed incident command personnel development?

The current incident command training courses utilized by the State of South Carolina were examined to identify their suitability for use within Colleton County Fire-Rescue. Additionally, command-training facilities were examined across the country in order to identify strengths and weaknesses of the delivery methods. This information will help to answer research question number two: what programs exist to improve incident command personnel capabilities? Multiple attempts to contact the training bureaus at California Department of Forestry (CALFIRE), the Fire Department of New York (FDNY), and the Phoenix Fire Department were unsuccessful.

There are several limitations to this research. First, a questionnaire was distributed to those departments in South Carolina that are registered with the firefighter mobilization committee or with the state fire academy. It is possible that smaller departments not registered with the firefighter mobilization committee or the state fire academy do, in fact, use some form of incident command training for their personnel. Their omission limits the validity of the resulting data. Additionally, the questionnaire was distributed to several executive fire officer email lists in order to determine what other areas of the country are using for incident command training. This email list is not a random sample and represents only those departments with executive fire officer students or graduates; therefore, the data received from the questionnaire is limited by the nature of its distribution. It was not the author's intention to use the data for statistical significance but more to identify an approximation of what methods of incident command training other departments are using.

While researching other incident command training delivery methods, the author contacted several command training facilities. The delivery method processes could be fully explained by the training facility personnel; however, when questioned about the overall feedback from the facility's participants, the facility representative indicated the overall feedback without being required to produce data. There was no empirical data regarding its success or failure. This limited the evaluation of each facility's delivery method.

Most of the terms used in this research are unambiguous. However, for the purposes of communications with others, the term incident command personnel was defined as personnel authorized to serve as incident commander over an incident.

Results

Mr. Robert J. Bennett, Incident Management Response Specialist in the Response Branch of the National Fire Academy indicated by email that the computer-based software application used during the Executive Analysis of Fire Service Operations in Emergency Management is a proprietary version. However, he indicated that another version, distributed by Emergency Services Interactive Simulators, is free of charge and available for download from the Internet. This version gives the user the ability to take pictures of buildings within their jurisdiction and add fire and smoke where appropriate to simulate a local emergency. Additionally, Mr. Bennett indicated that the Federal Emergency Management Agency has released a training course on DVD that can be ordered for free. This course focuses on incident management of large-scale disasters where a multi-agency approach will be taken and includes six scenarios such as a Sarin

gas attack, and an explosion and building collapse. A web-based platform of this training is planned for the future.

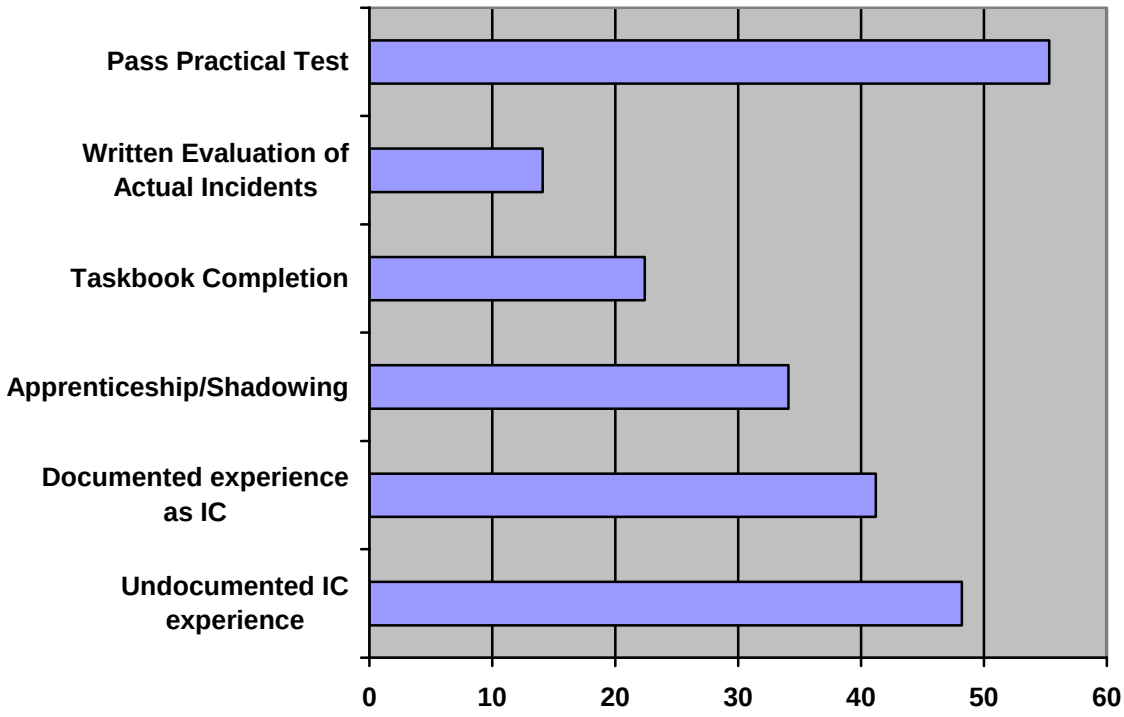
Additionally, a computer-based virtual reality class has recently been deployed by the South Carolina Fire Academy. The coordinator for this course, Mr. Rick Dunn, a South Carolina Fire Academy adjunct instructor and Captain with Columbia (S.C.) Fire Department, was contacted regarding its deployment and use. He indicated that the platform is called National Incident Management Simulator and is available for download from the Internet free of charge. Mr. Dunn indicated that although its participants have rated the software very high, it only offers a few scenarios and cannot currently be customized to include local buildings and local units. Mr. Dunn also stated that the sheer logistics of putting on a class such as this made it difficult for small departments without access to a number of laptop computers, network connections and classroom resources.

Representatives from fire departments across the nation completed the distributed questionnaire. Although only 88 questionnaires were completed, the results can offer some insight into what other fire departments are doing in the area of incident command training. Just over 87% of the respondents indicate that their department currently has training and/or experience requirements for personnel in command of incidents.

When questioned regarding what the experience requirements for personnel authorized to serve in command of incidents are, the questionnaire reveals that the largest percentage of respondents, just over 55%, requires their incident command personnel to pass a practical test/demonstrate proficiency as incident commander. The second largest percentage, over 48.2%, uses a candidate's undocumented experience as incident commander. The third largest percentage, 41.2%, uses a candidate's documented

experience from incident reports. The fourth largest percentage, just over 34%, requires an apprenticeship or shadowing of another incident commander to be completed prior to the candidate being authorized to serve as incident commander. The fifth largest percentage, 22.4%, requires the completion of a task book wherein the candidate must complete and be evaluated on required tasks prior to being authorized to serve as incident commander. The lowest percentage, just over 14%, requires a written evaluation of actual incidents where the candidate acts as incident commander. Figure 1, better demonstrates what experience requirements are being required by other departments according to the questionnaire results.

Figure 1 - Experience Requirements for IC (Percentage of Respondents)

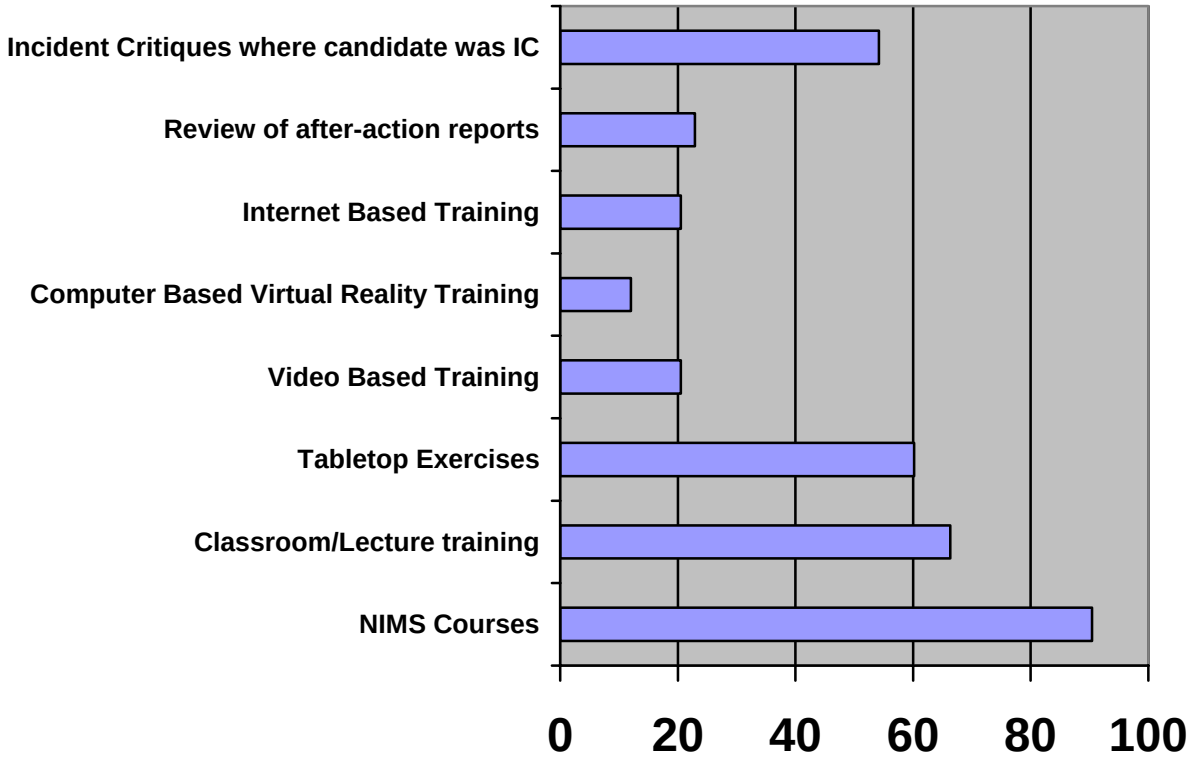


When questioned regarding what the training requirements for personnel authorized to serve in command of incidents are, 90.4% of respondents indicate that they require their command personnel to complete the federally mandated National Incident

Management System (NIMS) courses. The second largest percentage of respondents, 66.3%, indicates that they require their incident command candidates to complete classroom training/lecture of specific command training, for example, incident command training for single family dwellings or for high rise structures. The third largest percentage, just over 60%, indicates that they require their incident command personnel to participate in tabletop exercises. The fourth largest percentage, 54.2%, requires incident critiques or other review of operations where candidate was the incident commander. The fifth largest percentage, nearly 23%, requires a the incident command candidate to review after-action reports, for example, case studies or reports issued by the National Institute of Occupational Safety and Health. The sixth and seventh largest percentages, both 20.5%, require candidates to complete Internet based courses, for example, National Fire Academy Online courses and to complete video-based training. The eighth and lowest percentage, 12.0%, requires incident command personnel to complete computer-based virtual reality incident command training. Figure 2, illustrates the percentage of respondents for each educational category.

The final question in the questionnaire indicates that responses were received from 23 different states, which demonstrates the responses were not from only local personnel. The final question in the questionnaire indicates that responses were received from 23 different states throughout the United States, which indicates the responses were not solely from local personnel. This was important, as it was the author's intention to gather experience and training of incident command personnel data from areas other than this state or region of the country.

Figure 2 - Training Requirements for IC (Percentage of Respondents)



The data gathered indicates that there is a multitude of computer-based virtual reality training platforms available to the fire service. Many of these software programs are available free of charge. Although each has its drawbacks, the bulk of them create a realistic environment in which an incident command candidate can practice the skills needed to efficiently manage an incident. Moreover, a paramount benefit is that mistakes can be made in this environment without putting personnel at risk of injury or death.

The questionnaire reveals that the respondents place more of an emphasis on training than experience. Within the question gathering information regarding experience requirements, only approximately 55% state that their department requires their incident command candidates to pass a practical test or demonstrate proficiency as an incident

commander. Only a small number of respondents, 14.1%, indicate that their department is using a written evaluation of actual incidents where the candidate acts as the incident commander in their incident command personnel development.

However, within the question gathering information regarding training requirements, over 66% of the respondents indicated that their department requires classroom training or lecture of specific command training other than the federally mandated National Incident Management System courses. Even with the massive number of benefits of computer-based virtual reality training identified in this research, only a small number of respondents, 12%, are using this approach in their incident command personnel development.

The literature review identifies the many training challenges that exist for incident command personnel, which clearly answers research question number one. The literature review also revealed a number of programs and approaches that can be implemented to improve incident command personnel capabilities, which clearly answers research question number two. The questionnaire results, which examined a number of various experience and training based approaches, clearly illustrates how other departments have addressed incident command personnel development, which answers research question number three.

Discussion

Emery and Gasaway defined the role of an incident commander and the challenges they face early in the literature review. The role of an incident commander is to “make sure that customers’ problems are solved intelligently and safely” (Emery, 2007, p. 60). Gasaway (2007) concurs by writing, “Whether it is a house fire, a high-rise

building fire, a plane crash, a hazardous materials spill or a mass casualty incident, fire incident commanders must make critical life and death decisions" (p. 8).

Special type incidents such as technical rescues and hazardous materials releases tend to be more methodical or more to the point, slower. As a result, these incidents themselves are not easier to manage, but the operational tempo allows for an easier management of the players performing the task level work. Command training for special type incidents must be specific to the strategies to be accomplished and the tactics to achieve those strategies. However easier the operational tempo of these types of incidents is, there is a need to practice commanding them without putting personnel at risk. Montagna (2008) recommends using simulation training as it gives, "firefighters a chance to gain experience without encountering the associated risks of live emergency response" (p. 113). Azis (2001) concurs stating that not only must training be realistic, but also it, "must be executed in such a way that it does not expose participants to unnecessary levels of risk" (p. 3). Aside from the rare, special type incidents, command personnel must also be trained to deal with the routine, equally hazardous incidents, such as building fires.

The questionnaire revealed that only 34.1% of respondents indicate their department is using an apprenticeship or shadowing of another incident commander by the incident command candidate. Schank (1997) writes that although this form of learning by experience has no substitute, "the medieval concept of apprenticeships survived as a teaching tool until relatively recently, when the giganticism of the modern workplace made true and de facto apprenticeships impractical" (p. 6). Moreover, both Brunacini and the United States Fire Administration have recognized a nationwide

decline in the number of building fires each year. As a result, in areas where staffing and personnel allow an apprenticeship approach to command training, a candidate will have fewer opportunities to learn by experience. Therefore, another approach or a multi-faceted approach is needed to prepare incident command personnel.

Perhaps Dunn (1999) best captures the approach that needs to be taken by the modern fire service by using computer simulation in his citation of, "when you consider how long it takes an officer or a chief to learn the many aspects of his profession, you realize that there must be other ways to gain experience" (p. 13). Computer simulation appears to be the best way to train command personnel by incorporating experience in a safe educational environment. Moreover, it may pack the emotional and stressful impression necessary for retention. As Schank (1997) writes, "intense feelings stick with people; anything that packs an emotional or visceral punch imprints itself on their minds" (pp. 41-42). Additionally, computer simulation approach gives the candidate an experience to which to refer. Montagna (2008) states that this past experience reference is essential to command personnel. Montagna (2008) states that when an incident commander is faced with a problem, they will likely develop the solution by comparison of, "… the present situation with situations they have experienced in the past" (p. 111). The questionnaire revealed that the lowest amount of respondents, 12%, is using computer-based virtual reality simulations in the training of their departments' command personnel. As Jewett (1990) identifies, the lack of use by the fire service cannot be due to the cost of the hardware citing, "years ago, the cost of computer hardware and software was very high, and so the use of costly interactive instructional technology was limited to situations allowing few mistakes. But today's personal computer can do what

yesterday's mainframe computers did" (p. 50). The research has also revealed that many of the software platforms are available free of charge.

An examination of those outside the fire service who are using computer simulations for other approaches reveals the multitude of its uses. Willy, et. al remark that the military has determined computer simulation to be a feasible alternative to replicating difficult conditions, while training military physicians in trauma management. Additionally, Lewis (1997) notes that the Department of Energy is using computer-based virtual reality programs to train the nuclear power industry writing, "With its high stakes and 'hot cells,' the nuclear-power industry perhaps has the most to gain by using virtual reality in safety training" (p. 41). Private sector organizations are also using computer simulations to train their personnel. As Brown and Comtois (2007) identify in their research into the oil industry training programs, "the foundational piece of the new training approach was a computer simulation program" (p. 53). In addition, fire services outside the United States are using computer simulations to train personnel. As Marks (2008) notes, "each year fire agencies around Australia and New Zealand run numerous training exercises created through the use of a computer-generated incident command system" (p. 34). Difede, et. al also cited its use in the treatment of post-traumatic stress disorder in September 11, 2001 terrorist attack survivors.

Coleman (1994) notes that the fire service should seize the opportunity to use computer simulation given the decline in actual incidents during which incident command candidates gain experience citing, "those who assume command in the next several decades will not have the benefit of an entire generation's firefighting experience" (p. 32).

The lack of use of computer simulations in the fire service is likely due to the fact that it is a relatively new technology. According to the research it is beneficial in its scope, relatively cheap to deploy, and approaches incident command personnel development by offering education, experience, and a realistic stressful environment. Moreover, it provides incident command personnel an experience by which to base future decision-making. Mistakes can be made without concern for personnel safety.

It would also benefit the development of command personnel by learning from the mistakes of others. This can be accomplished by reviewing after action reports that are published in the aftermath of major fires or fires during which a firefighter fatality occurs. Strawn (1986) indicates that during the Vietnam war, "military officers who took the time to research the after action reports of other units in their area of operation usually found sufficiently valuable information on the enemy's tactics that their soldiers were able to survive in a very hostile environment" (p. 47). This military approach has a fire service application. Incident command personnel can learn from the decisions made by other command personnel throughout the country. Additionally, Carter (2001) also suggests that a critique of operations be conducted within the fire department immediately after a major incident, "… in a way that could be repeated systematically throughout your department. In this way you could compile a history of lessons learned (p. 64).

The best approach to incident command personnel development appears to be a multi-faceted one. Using several techniques will cover the most approaches noted by the authors within this research. As Gasaway (2007) recommends, training should include both classroom and practical training, "designed to blend the best of rational and intuitive

decision-making processes . . . Evaluations should be completed after catastrophic fireground incidents" (p. 17). This classroom, practical training followed by command performance evaluations stands to aid the most in the development of command personnel.

Colleton County Fire-Rescue currently requires National Incident Management System courses for command personnel; however, the department has yet to take an active approach to command personnel development. The research results have identified improvements that can be made to the training program for prospective and existing incident command personnel in order to improve their ability to manage incidents.

Recommendations

Colleton County Fire-Rescue has no formal training program for the development of incident command personnel. Colleton County Fire-Rescue should begin implementing the various approaches identified in this research in order to prepare those responsible for incident management. A minimum standard should be developed which sets forth the requirements for command personnel. This standard should include both classroom or lecture training and federally mandated courses, such as the National Incident Management System courses. Given the feasibility of computer-based virtual reality training, this should be incorporated into the training program for command personnel. This approach should give command personnel experience-based training and provide an environment in which mistakes can be made, evaluated and corrected without putting personnel at risk. Additionally, a review of after action reports of major incidents throughout the country should be incorporated into the training program for command

personnel. A critique or formal evaluation of the candidates' performances should also be conducted on a routine basis.

By taking advantage of and utilizing this multi-faceted approach, command personnel within the department can be better prepared to deal with the various incidents that will be encountered both now and in the future. This approach will improve the training program for prospective and existing incident command personnel in order to improve their ability to manage incidents and is what Colleton County Fire-Rescue can do to address this issue. This clearly answers research question number four.

Further research in the improvement of command training should be conducted. The research should include a larger number of fire departments nationwide to determine any other feasible options to improve command training. Additionally, several of the large progressive fire departments that the author was unsuccessful in contacting should be included in future research. In addition, more platforms should be developed to improve experience-based education in order to improve the abilities of all present and future incident commanders. This will provide for a safer future for the Colleton County Fire-Rescue and the fire service nationwide.

References

American Fire Journal. (1988, March). Practical ICS-Training the incident commander. *American Fire Journal,* 40, 32.

Azis, J. (2001, May). Command training in the fire service. *Health and safety for fire and emergency service personnel,* 12, 3-5.

Brown, M. & Comtois, W. (2007, Fall). Oil refinery incident command training using advanced computer simulation. *FS-World,* 52-54.

Brunacini, N. (2004, April). Stay Safe: modern firefighting challenges make safety a priority for incident commanders. *Fire-Rescue magazine,* 22, 88-101.

Brunacini, N. (2002, December). Command performance. *Fire-rescue magazine,* 20, 48-52.

Carter, H. (2001, February). Post-operation critiques. *Firehouse,* 26, 64.

Chiaramonte, M. (2002, July). LODDs should prompt study of those in command. *Fire chief,* 46, 12-14.

Coleman, J. F. (2008). *Incident management for the street-smart fire officer.* Tulsa, OK: PennWell.

Coleman, R. (1994, April). So there's no substitute for experience?. *Fire chief,* 38, 28-32.

Cook, A.P. (1994, June). Simulation is a cost effective aid to command and control training. *Fire,* 87, 19-20.

Deal, T., Bettencourt, M., Huyck, V., Merrick, G., & Mills, C. (2006). *Beyond initial response: Using the national incident management system's incident command system.* Bloomington, IN: AuthorHouse.

Dunn, V. (1999). *Command and control of fires and emergencies.* Saddle Brook, NJ: Fire Engineering Books & Videos.

Difede, J., Hoffman, H., & Jaysinghe, N. (2002, September). Innovative use of virtual reality technology in the treatment of ptsd in the aftermath of September 11. *Psychiatric services,* 53, 1083-1085.

Emery, M. (2007, February). What does a competently managed fireground look and sound like?. *Firehouse,* 32, 60-63.

Erich, J. (2008, September/October). Virtually real. *EMS product news,* 16, 24.

Farmer, T. (2007, May/June). Virtual reality training-high quality at a reasonable price. *Fire chief,* 43, 37.

Gardner, T.E. (1984, August). Interactive television training. *Fire command,* 51, 38.

Gasaway, R. (2007, January). Making intuitive decision under stress: Understanding fireground incident command decision-making. *International fire service journal of leadership and management,* 1, 8-17.

Gayk, R. (2007, February). A waste of time? An honest look at the lack of honesty plaguing post-incident critiques. *Fire-Rescue Magazine,* 25, 141-143.

Jameson, J. (1996, August). Virtual reality: The tool for incident command?. *Fire,* 89, 44-45.

Jewett, E. (1990, March/April). Mass-casualty computer simulations. *Rescue,* 3, 46-52.

Jug, A. (2005, October). Simulation & training-how computers & firefighters interact. *Industrial Fire Journal,* 10.

Lewis, D. (1997, January). Will virtual reality become the standard in safety training?. *Safety and Health,* 155, 38-43.

Markley, R. (2008, June). Virtual training: Computer simulations add dimension to preparation for mass-casualty incidents. *Fire chief,* 52, 66-67.

Marks, G. (2008, Summer). Incident management training and computerised simulation. *Fire Australia,* 34-35.

McCreight, R. & Hagen, J. (2007, May). Strategic aspects of emergency management: Examining incident command issues, problems of coordination and the importance of capturing lessons learned. *Homeland Defense Journal,* 5, 22-28.

McLennan, J., Pavlou, O., Klein, P., & Omodei, M.M. (2005, August). Using video during training to enhance learning of emergency incident command and control skills. *The Australian journal of emergency management,* 20, 10-14.

Montagna, F.C. (2008, April). Simulation training: Decision-making aid. *Fire engineering,* 4, 111-112.

Morris, G.P. (1988, January/February). Get the most from critiques. *Minnesota fire chief,* 24, 14-22.

National Fire Data Center. (1997). *A profile of fire in the United States, 1985-1994.* (Misc. No. FA-175). Emmitsburg, MD: Author.

Puryear, E.F. (2000). *American Generalship: Character is everything: The art of command.* New York: Random House.

Ray, S. (2004, March). Involving the incident commander in training. *The instructor,* 1, 11.

Riecher, A. (2002, November/December). Virtually destroyed. *Industrial Fire World,* 17, 18-20.

Romundstad, L., Sundnes, K.O., Pilgram-Larsen, J., Roste, G.K., & Gilbert, M. (2004, April-June). Challenges of major incident management when excess resources are allocated: Experiences from a mass casualty incident after roof collapse of a military command center. *Prehospital and disaster medicine,* 19, 179-184.

Schank, R. (1997). *Virtual Learning: A revolutionary approach to building a highly skilled workforce.* New York: McGraw-Hill.

Sherwood, R.P. (1979, June). Military/civilian mutual aid hot drill. *Fire command,* 46, 42.

Stanovich, M. (2006, April). Network-centric emergency response: The challenges of training for anew command and control paradigm. *Journal of emergency management*, 4, 57-63.

Strawn, H.O. (1986, September/October). After action reports: What use are they? *Minnesota fire chief,* 23, 47.

Stehr, S.D. & Appleton, A. (1998). Predicting the rise and avoiding the fall? Computer-based simulations and emergency planning. *The journal of the American society of professional emergency planners,* 39-51.

U.S. Fire Administration (2007). *Executive Analysis of Fire Service Operations in Emergency Management.* Emmitsburg, MD: Author.

U.S. Fire Administration. (2007). *Fire in the United States 1995-2004* (USFA Publication No. FA-311). Emmitsburg, MD: Author.

U.S. Fire Administration (2004). *A profile of fire in the United States 1992-2001* (USFA Publication No. FA-293). Emmitsburg, MD: Author.

Willy, C., Schwarz, W., Sterk, J., & Gerngross, H. (1998, April). Computer-assisted training program for simulation of triage, resuscitation, and evacuation of casualties. *Military medicine*, 163, 234-238.

Appendix A – Incident Command Training and Experience Requirements

1. Incident Command Training and Experience Requirements
Does your department currently have training and/or experience requirements for personnel in command of incidents? (Answer "Yes" if your department has training and experience requirements to be promoted to a rank responsible for serving in command of incidents).

2. Experience Requirements
What are the experience requirements for personnel authorized to serve in command of incidents (ICs)? (Check all that apply)
- Undocumented experience as IC
- Documented experience as IC (from Incident Reports)
- Apprenticeship/shadowing of another IC must be completed prior to candidate being authorized to be IC
- Completion of taskbook (candidate must complete and be evaluated on required tasks prior to being authorized to serve as IC)
- Written evaluation of actual incidents where candidate acts as IC
- Pass practical test/demonstrate proficiency as IC

3. Training Requirements
What are the training requirements of those authorized to serve in command of incidents (ICs)? (Check all that apply)
- NIMS Courses (I700, I800, I100, I200, I300 and/or I400)
- Classroom training/lecture of specific command training (for example, ICS for single family dwellings, ICS for high rise structures)
- Participation in tabletop exercises
- Video based training
- Computer-based virtual reality ICS training
- Internet Based Courses (National Fire Academy Online)
- Review of after-action reports (Reviewing a case study or NIOSH report)
- Incident Critiques (Review of operations where candidate was the IC)

4. Location
In what state is your department located? (i.e. South Carolina, Alabama, etc.)