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Executive Analysis of Fire Service Operations in Emergency Management

The Effectiveness of the Department Training Program for the Chili Fire Department

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Appendices Not Included. Please visit the Learning Resource Center on the Web at http://www.lrc.dhs.gov/ to learn how to obtain this report in its entirety through Interlibrary Loan.

Certification Statement

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Abstract

The problem was Chili Fire Department (CFD) firefighters have shown dissatisfaction in training through a lack of interest and the inability to maintain knowledge, skills, and abilities necessary for safely performing their job. The purpose of this research was to identify components of effective and compliant training. Recommendations included incorporating scenario, computer, and competency based training. The project included surveys, interviews and literature review using a descriptive method of research to answer: what are the characteristics of the current "department training" program? What are other departments doing to meet their training requirements? What are the key elements needed in an effective training program? What are the applicable federal, state, and local requirements for a training program in CFD?

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The Effectiveness of the Department Training Program for the Chili Fire Department

"The years 1987 – 2001 saw a 31 percent drop in the incidence of structure fires throughout the United States" (Lindsey, 2006, p. 279). Generally thought of as positive, this results in firefighters on the whole having less fireground experience than their predecessors had a generation ago. Less experience equates to an increase in the danger for firefighters operating at these fires. This situation demands a comprehensive training program for the success of training and educating the new generation of firefighters for keeping them safe while working in an already dangerous profession.

The problem is Chili Fire Department (CFD) firefighters are showing dissatisfaction in training through a lack of interest and the inability to maintain knowledge, skills, and abilities necessary for safely performing their job. Training is vital to operational effectiveness, efficiency, and safety as well as the success of the organization in fulfilling its mission (Fleming, 2003). The purpose of this research is to identify and describe the characteristics of the current "department training" program in the CFD, what other similar departments in New York provide in terms of training programs, what the key elements of an effective fire service training program are, and determining the applicable federal, state, and local requirements for an effective fire service training program. Descriptive research will be used to answer the following questions: 1. What are the characteristics of the current "department training" program? 2. What are other departments doing to meet their training requirements? 3. What are the key elements needed in an effective training program? 4. What are the applicable federal, state, and local requirements for a training program in CFD?

Research procedures will include interviews with recognized authorities, a survey of CFD firefighters, and a survey of like fire departments in New York State. Literature will be obtained from the National Fire Academy Learning Resource Center, the New York Office of Fire Prevention and Control, Monroe County Fire Bureau (MCFB), and the Internet.

Background and Significance

The Town of Chili is located 10 miles west of the City of Rochester in upstate New York. The Chili Fire Department, Inc. provides fire suppression and emergency medical care to a community of 27,000 people encompassing 31 square miles. The town is predominately a bedroom community with commercial occupancies and light industry throughout its suburban and rural base. The majority of the district is

composed of single-family dwellings, some mercantile facilities and a few industrial plants. The southern end of the town is more sparsely populated and includes agricultural areas.

Fire protection and emergency medical services (EMS) including basic life support (BLS) and transport are the primary functions of the CFD. Secondary services include community fire prevention activities. The CFD responds to an average 1100 fire and 1600 ambulance incidents each year (C. Fish, personal communication, April 16, 2006).

The department was formed in 1931 as a volunteer organization and has grown to 183 current members (P. Quinn, personal communication, April 15, 2006) operating out of four firehouses and a rescue squad (ambulance) base. The only paid employees of the CFD are four full time dispatchers (one per shift), four part time dispatchers who fill in as needed and one part time corporate secretary. The CFD is incorporated and managed by a department elected Board of Directors. The town contracts with the fire department to provide fire protection and BLS transport services. A fire chief heads the line division. There are two departmental deputy chiefs. One deputy chief is responsible for personnel and training. The other deputy chief is responsible for apparatus and equipment. The remaining officer positions are divided among four fire companies and a rescue squad. A battalion chief, captain and two lieutenants manage each company and rescue squad.

Volunteers who join the fire department are assigned to the company nearest their residence. They have two years to complete their initial mandatory training certification offered through MCFB. Firefighter I certification is administered by State Fire Instructors. The 81-hour curriculum includes basic firefighting skills including fire behavior, hose and nozzle evolutions, and personal protective equipment (PPE). Upon successful completion of the course, the recruit must pass written and practical tests before being state certified. Students are also offered the opportunity to test for national Firefighter I certification. National certification is not a requirement in New York State. When the firefighter returns to the CFD, following the training, they must demonstrate proficiency in their PPE and self contained breathing apparatus (SCBA) before being qualified as an “interior” firefighter by their training lieutenant.

Upon completion of initial training, firefighters must continue training to maintain their skills and become qualified on a host of specialized equipment used in the fire service. Training and drills typically occur in the CFD on Monday nights. Each Monday night of the month represents a different meeting or

training function for the organization. The first Monday of the month typically is reserved for a company training event. This event includes topics that may be specific to that company, for example, company 3 may train on extrication, as they are the extrication company of the fire department. The second Monday of the month includes a short, one hour company training function followed by a departmental meeting. The third Monday is for department drills. These drills are agreed upon by the deputy chief of training and first lieutenants at the beginning of the year. These drills represent the scope of this report. The fourth Monday is designated for a company drill followed by individual company meetings. Companies provide other dates for members to obtain their mandatory training for those working opposite shifts.

The first lieutenant of each company is charged as the company training officer. It is that officer's responsibility to provide the opportunity for appropriate training to individuals at their company (Chili Fire Department [CFD], 2002). Company drills are designed and may be conducted by the first lieutenant of the company. They may pertain to district hazards, pre-incident planning, or physical hands on training involving tools or equipment. These officers track and ensure training for drivers of apparatus who must initially qualify after 10 hours of drive time and adequate pump training and the re-qualification for each of these firefighters on a six month basis. They ensure quarterly SCBA training for interior firefighters and annual accountability training. They set up qualification on specialty items for the company, including aerial operation, water rescue, and extrication. The first lieutenant is arguably the most important company officer, since the company relies on this person for the quality of instruction and providing familiarity with equipment.

Another form of training tracked by the training officer within the CFD includes the "department training" program. The "department training" program is the foundation for this report. The intent of this training is to standardize the training among all companies. Prior to this attempt at standardized training, each of the five companies would train on whatever it felt applicable and the operations at one company would not mirror similar training at another company within the CFD. An attempt was made at bringing all companies together for training, however, that was too daunting a task to incorporate manipulative, hands-on activity. A decision was made to develop a department wide program for annual training.

A committee, consisting of the training/personnel deputy chief and each company first lieutenant, annually develops a list of drills that each member must attend throughout the year to complete

their departmental training requirement. These department training drills have associated lesson plans developed to ensure the training is uniform among all companies. Each drill topic is offered as training at each fire company multiple times throughout the year. It is possible for a member to attend the required drill at another CFD company, other than the one to which they are assigned to complete the drill. Failure to complete the required department training drills will prevent a member from receiving the benefit of the CFD Length of Service Award Program (LOSAP).

The LOSAP provides a monthly monetary reward beginning at age 60 to the volunteer, based on the number of years the member has served. The LOSAP requires a member to complete the eight department training drills, respond to 10 percent of the member's company total fire calls, and meet a minimum of 50 points. These 50 points are derived from many different sources including fire calls, funeral details, work details, truck checks, meetings, training, as well as other categories.

Department drills include federally mandated training for the first two months of the year. Refresher courses for hazardous materials and bloodborne pathogens are administered and listed as required training. All members must complete this training by year-end. Failure to meet this requirement results in the member being placed on limited duty assignment which prevents the member from responding to emergencies until the mandatory drills are completed.

The remainder of the department drills may include, for example, initial fire attack, ladder/ventilation, hydrant/hose lays, water/ice rescue operations, response safety, and rapid intervention team operations. These selected topics were used for 2006 "department training." Each subject utilizes a two-hour lesson plan, incorporates a Occupational Safety and Health Administration (OSHA) topic and is administered by the company training officer or a department trainer. Failure to accomplish all eight of these drills results in a member not qualifying that particular year for the LOSAP.

Federally mandated drills have been in place for more than 15 years, requiring members to complete annual refresher training. The effectiveness of this training has recently come into question. One example of training failure involved a hazardous material encountered during an EMS/ambulance call. The ambulance was requested for a person who inhaled an unknown liquid substance from an unlabeled bottle at the roadside. The victim was experiencing trouble breathing. Two fire companies responded along with the ambulance, a paramedic and a Monroe County Sheriff Deputy. First responders did not follow correct

procedures for dealing with the unknown material in the unlabeled bottle and treated the patient. The unknown substance was transported to the hospital with the victim. Hospital staff recognized the hazard in the substance and asked that it be removed from the facility. The sheriff deputy transported the substance back to his substation. After a few days, when the commander of the sheriff's substation called the MCFB to have it removed, a level 0 hazardous material incident was declared at the substation. One would hope that the training would have made the responders aware of the hazard before transporting it to multiple facilities.

Occasionally, the lieutenant may be required to attend the officer's meeting rather than administer the drill. On these nights (once a month), the lieutenant may seek out a senior or more experienced member to administer the drill. This is often done with no notice and the selected instructor may not have had adequate time for preparation. As an example, one evening, a lieutenant asked a firefighter to proceed with instructing members in a rope rescue drill. The firefighter declined the opportunity to teach that evening because he had not had a chance to review equipment and lesson plan. During this instance, the lieutenant selected another member to provide the training with the same disadvantage as the first firefighter. Other companies have reported the same occurrence indicating this is not an isolated issue at a single company. This practice does not provide for a prepared instructor and thereby affects the quality of training firefighters receive.

Members selected for instructing need not have any credentialed instructor position, or experience teaching. They typically are members who have been past officers or have more experience than other members. It is also noted that the training lieutenant position only requires a three year active membership in the CFD (CFD, 2002).

"Department training" has been in place for nine years. Veteran members know their responsibilities for completing the training, however, every year it becomes a race in late November and early December for some members to meet the year-end deadline. Historically, the company lieutenant would make every attempt to provide the training. As a result, classes would be held for one or two firefighters. It is apparent that this type training would not be equivalent to a regular class and circumvented the entire philosophy. A concerted effort was made in 2002 to prevent this occurrence.

The attempt at equivalent training was in place; however, some firefighters would be influenced by who

would be instructing a class at their assigned firehouse. While members are allowed to attend other firehouses for training, they choose to report to a company that may not put as much time or effort into the training as their assigned firehouse would, therefore the member anticipates the training to be completed faster.

While the administration made an effort to prevent unfairness in the system, the responsibility to prevent other problems fell to the training instructor. During one drill, a personally owned vehicle stopped on the CFD training grounds and a member called the instructor to his vehicle. A brief conversation occurred and the drill resumed. Upon completion of the drill, the name of the firefighter in the vehicle, who did not attend the event, appeared on the attendance sheet for the drill. At this same training event, a firefighter arrived with 10 minutes remaining in the drill and signed the drill sheet to indicate completion of the training.

It is anticipated that with an increased lackadaisical attitude toward training, the future holds only firefighters who have paperwork showing they are trained. These firefighters will not possess the knowledge, skills, or abilities to effectively perform their job. This compromises their own safety, the safety of all others operating on the fireground, and the safety of the community being protected.

There has not been a formal study of the CFD department training program. Management has not addressed whether the department training program is meeting its objectives and providing adequately trained firefighters. This study will utilize the data collected to evaluate the current "department training" process through descriptive research methods by answering the research questions. This method was selected because the research questions require collection of data for present time conditions.

This study is related to United States Fire Administration operational objective three, reducing loss of life from fire of firefighters (National Fire Academy, 2003). The need to ensure well trained, educated, and prepared firefighters will go a long way toward preventing firefighters from encountering an unfamiliar situation and will attempt to prevent firefighter line of duty deaths.

Specific to the course, *Executive Analysis of Fire Service Operations in Emergency Management*, determining the effectiveness of training can be tied to unit 4: community risk/capability assessment (United States Department of Homeland Security, 2005). A component of the risk assessment process is to evaluate the fire departments capabilities. This applies directly to ensuring firefighters are adequately

trained to safely meet critical risks in their community.

Literature Review

A review of literature was conducted to determine what other researchers encountering similar problems have found, with respect to the problem statement and research questions.

What are the characteristics of the current "department training" program?

Training is the means to an end, and the end result, fireground operations, is usually reflective of the amount of training that has taken place with a department. Find a fire department that performs well on the fireground, and you'll find an effective training program (McCormack, 2003). The success of a fire attack operation revolves around the ability of attack crews to execute certain basic skills and evolutions. These fundamentals must be executed with proficiency and consistency. The development of this high level of proficiency can only result from training (Snook, Johnson, Olsen, and Buckman, 1998).

"Learning by experience, alone, is a slow process that can never lead to a broad subject of knowledge" (Snook et al., 1998, p. 43). While individual experiences may provide an adequate ability to perform, it cannot provide the insight needed for the wide range of responses to differing emergency incidents. On the contrary, the most trained firefighters may not be prepared for some responses without mixing in some experience. Brunacini (1985) has compared training and experience to oregano saying they have to be mixed with a lot of stuff to create something good.

McCormack (2003) warns of another phenomenon to watch for, the "paper firefighter." The "paper firefighter" focuses on a certification attained from a course, rather than on any increase in performance of the student. This seems to be on the rise throughout the entire profession. It becomes increasingly troublesome as the fire service has grown to accommodate personnel from a more diverse background with a varying knowledge base. Twenty or 30 years ago many firefighters possessed trade skills related to equipment and construction. Some firefighters today, however, may not know how to operate basic tools and machinery, or have any experience driving a large truck. These firefighters with widely divergent backgrounds will require fundamental training in simple mechanical skills necessary for some basic firefighting operations (Theil, Stern, Kimball, Hankin, 2003). Certification is a start, but it only indicates a minimum level of competence (Steele, 2006).

Contrary to the beliefs of some in the volunteer system, the responsibility for in-service training does

not lie solely with the training officer (Buchanon, 2003). "The key ingredient for effective training is the right attitude, which must be present in all levels of the department" (McCormack, 2003, para. 5). Members must want to learn. The adage that you can lead a horse to water, but you cannot make it drink is applicable in comparison to the firefighters at a training session. Steele (2006) points out these members as the ones who show up late for training and leave early after making sure their name is on the attendance list. The individual firefighter must put forth the effort to make the training successful.

Another aspect of the training program includes a lack of competent instructors. As a result, some volunteers quit because they are not learning enough, or feel that the instructors are not teaching the right things the right way (Bush, Shaenman, and Theil, 1998). As firefighters have less and less experience, so do the instructors (Thiel et al., 2003). It is important for members to perceive that their time is being well spent and their efforts at training are meaningful.

Providing meaningful and effective fire service training is not an easy task. Buchanon and Dale (2000) say that many training officers find it difficult to blend the necessary lectures with the much-needed hands-on applications within the constraints of the volunteer firefighter's schedule. The larger the block of time required for training, the more of a barrier it is. Studies by Snook et al. (1998) agree with the difficulty and cite increased volunteer turnover as a result of inadequate or lack of training for the loss of members.

Many departments have attempted to expand their service delivery with special operations responses. This expansion includes, technical rescue, haz mat, and EMS. These specialized areas require extensive training times. Making time for these duties reduces the time available for training in basic fire evolutions (Thiel et al., 1998; Hankin, 2003; Reeder, 2006a).

The fire service is quite repetitive. The same things are done over and over again. This repetition is required to increase confidence and proficiency in younger firefighters and hone and maintain skills for older firefighters. Skill levels will deteriorate over time unless they are used or refreshed periodically (Reeder, 2006b). Many times firefighters will resist doing the same task over and over again. "We've already done that!" "We did that last week (or last month, or last year, as the case may be)!" (Bachtler, 1989). Hinton (2006) pokes fun at the phenomenon by saying; "we often don't know we need training, until we get it" (p. 64).

What are other departments doing to meet their training requirements?

The fire service has relied predominantly on two methods of training: knowledge delivery and skills demonstration. Traditionally, knowledge training has been delivered through instructor-led classroom training, which is difficult to tailor to the skills, needs, and schedules of individual volunteers (Sprenger, 2002). It also cannot be reviewed easily or assessed by training officers. Classroom training, also, often takes away from valuable hands on skills demonstrations that should be more widely delivered and practiced.

Despite the challenges of today, workshops at the 2000 National Volunteer Fire Summit (2001) revealed some volunteer fire departments still maintain strong memberships because they have taken steps to adapt to today's society and hectic schedule. The traditional methods have had their successes; however, today's fire service is vastly different from its predecessors. The computer age has allowed an expansion of training. Many current leaders are already seeing a move toward Internet based training (Sprenger, 2002; Chaiaramonte, 2006). This form of training is an effective vehicle for knowledge-based training. Many government and other industry studies encourage this form of instruction as student retention rates have been shown to increase 30 – 50 percent through interactive learning (Sprenger, 2002).

Zigmont (2007) does not believe volunteer firefighters should be held to a lesser standard than their paid counterparts, however, he does recommend organizations look at what is required and find creative ways to meet those needs. It is not sufficient for a firefighter to only possess knowledge; they must also master the skill. The goal of competency testing is to teach the firefighter what they must be able to do, as well as, what they must know (Shaw, 1998). One method many departments have instituted is the use of a standard set of evolutions that each firefighter is expected to be able to perform without flaw, such as advancing a handline up a ladder and into a third floor window. Additional training may include learning how to use new tools and equipment as well as refreshing, reinforcing, or updating knowledge and skills that are related to the different aspects of firefighting (Ward, 2006).

A new training concept that some departments are beginning to embrace is called training in context. This approach involves training for specific operational scenarios and provides much more realistic training. Training in context allows combining skills the student learned in a basic firefighting class into a mock scenario. "This type of training allows students to put to use many of the skills they have learned, is

more fun than practicing one skill alone, and seems highly relevant to them" (Bush et al., 1998, p. 62).

Safe, effective, and realistic firefighter training is essential in preparing the fire service to achieve its mission of preserving life and property (Thiel et al., 2003). Bingham (2004) explains that situation training is an excellent learning tool. He considers every fire response as a training session and supports his statement as minor incidents are training grounds for major incidents. Many times routine incidents are taken for granted. The apparatus will return from an incident and there will be no follow up, no discussion, no critique and consequently, no learning. Experience is great, but in the absence of training, it holds only minimum value. Without structured training, the only experience gained may be bad experience (Hinton, 2006).

What are the key elements needed in an effective training program?

Training is a core activity for fire departments to ensure that every firefighter can perform competently as an individual and every company is prepared to operate as a high performance team. "Fire service training must anticipate high-risk situations, urgent time frames and difficult circumstances" (Ward, 2006, p. 124). It can be argued that after emergency responses, training for these incidents is the fire department's next highest priority (Goodson and Sneed, 1998).

Lindsey (2006) describes the secret of running a successful training program in three words: plan, conduct, and evaluate. The first step in the planning process is to refer to a needs assessment to identify any skill deficiencies that may exist. This shall give guidance on direction for training development. Then, by assessing firefighters skills before the training program has begun and measuring them again six to 12 months later, the organization can obtain valuable information on members' progress in skill development and job performance (Connors, 1995; Buchanan, 2003).

The amount and type of training depends on the functions being performed. In all areas, training involves both job related and interpersonal skills. The job related skills are usually a mix of hands on and classroom or knowledge building skills (McCormack, 2003). The process can be enhanced through establishing and using performance levels. These should be determined using job performance requirements (JPR's) and department job descriptions (Reeder, 2006a). The National Fire Protection Association (NFPA) requires an evaluation of job tasks annually (NFPA 1500, 2002).

Many NFPA standards are presented as a set of performance objectives that can easily be converted to

individual fire department standards. These help to ensure that candidates for certification can be evaluated fairly. Job performance objectives have three required elements: what must be done, what tools and knowledge need to be used, and to what standard of performance must the task be completed. According to Cote (2003), fire departments can use these three elements to develop questions and skill tests that are fair, comprehensive, and afford trainees every opportunity to succeed.

NFPA also offers guidance to meet the challenge of determining what acceptable performance is and provides a method to measure these abilities and establish in-service training priorities through NFPA 1410, *Standard on Training for Initial Emergency Operations* (2005). This standard offers a baseline assessment for training and evaluating actual performance. "One of firefighters' greatest complaints is that training becomes boring or redundant. Using a baseline measurement to establish the in-service training priorities will help keep the training focused where it needs to be, on the essentials of firefighting" (Buchanon, 2003, p. 111).

Many authors (Bizjak, 1999; Gerardi, 2004; Steele, 2006; Walsh, 2006) are in agreement on the need for every training session to have a pre-determined measurable and obtainable objective. "This objective should not only be to justify some legal requirement or support corresponding paperwork; every drill should be focused on improving attendee's knowledge and skills" (Gerardi, 2004, p. 42). The more clearly the training goals are defined in the needs assessment process, and communicated to members throughout the program, the more successfully volunteers will learn (Connors, 1995).

"Effective instructors are the foundations upon which effective training programs are built" (Bizjak, 1999, p. 257). Effective instructors can teach, lead, motivate, inspire and change an organization. Organizations often invest too little effort and consideration in the selection of competent instructors. It is important that these instructors have credibility with those they are training. Credibility can be earned through technical proficiency and evidence of formal training and education. Most often this is accomplished by meeting Instructor I qualifications, as described in NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications* (2002).

The position of fire instructor is not to be underestimated. The instructor plays a key role in formulating, supervising, and conducting practical training evolutions (Bizjak, 1999). The need for a competent instructor has previously been addressed, however, there is much more to the process than just

having a qualified person in front of the class. Numerous authors (Bachtler, 1989; Bizjak, 1999, Buchanan, 2003; Lindsey, 2006) have written books dedicated to the fire service instructor. These books detail the learning process of students, explain the importance of completing a needs analysis, provide resources to aid in the development of a training goal, performance objectives and lesson plan (Bizjak, 1999). Development of any program would be remiss if these valuable resources were not utilized.

When conducting training choose instructors who are proficient with the subjects they are teaching. When instructors are mandated to drill in areas where they are not comfortable, training often suffers. Instructors should be chosen by their expertise, and not on their rank (Bingham, 2004). Planning a lesson helps instructors to carefully think out and write what is to be taught and to plan strategies for teaching. "Instructors cannot just walk into a classroom and begin teaching without some plan as to what they will do, where they will go with the information, and how they will get there" (Bizjak, 1999 p. 113). Bingham suggests instructors should use fewer lectures and more class participation. They should ask more probing questions reflecting real life situations to stir students' minds. A good instructor is only limited by his or her imagination. Finally, building a core group of instructors within your department and from the surrounding area creates a solid foundation for future success. These dedicated few will become key players in the future administration of the program (Buchanon and Dale, 2000).

Training is often a point of contention when discussing recruitment and retention of volunteers. Training requirements have increased with the intention of making operations safer and more effective. However, the time demands are burdensome to many volunteers (Bush et al., 1998). Effective training requires ongoing instruction with efficient scheduling (Lindsey, 2006). Training must be affordable, accessible in the field, scheduled on nights and weekends, and conducted in a time span that works (Bush et al., 1998). Consequently, to recruit and retain volunteers, it's imperative for fire departments to modernize training programs and support methods that will provide the most effective, time-efficient learning environment without sacrificing quality or skills based training time (Sprenger, 2006).

Zigmont (2007) explains that most of the training requirements of fire departments are competency requirements. While there are exceptions, many require a firefighter to show competence. Zigmont discusses the traditional department has translated competency to mean, "seat hours" or the number of hours someone physically spends on training. He presents a solid argument for organizations to abandon

"mandatory hours" and implement mandatory competencies. Zigmont poses a tirade of applicable questions:

> How can you determine that any member is competent, even after two hours of training? Where does the two hour figure come from? Is there testing of both skills and knowledge? If so, if they can pass the exam before the two hours, do they still have to sit through the class? What if they are not competent after the two hours? (para. 19).

Training is often the scapegoat excuse for a failure in operations by personnel. However, "it is important to realize that training is not always the answer to performance problems in an organization" (Bizjak, 1999, p. 254). Many times the training manager is charged with using training to correct problems and issues that simply are not training issues. The problems may be with equipment, or simply a breakdown in supervision as opposed to a training problem. It is all too easy to blame training for a failure in the system.

As a final component of the course development process, the program must be evaluated (Lindsey, 2006). Has the desired outcome of the training been achieved? Has learning taken place? Has the training prepared the firefighters for the real thing? "There should be only one accepted motive when dealing with fire service training – to provide the best possible training, in the safest possible manner, while providing the most realistic, up to date and accurate information available on the specific subject" (Gerardi, 2004, p. 42).

What are the applicable federal, state, and local requirements for a training program in CFD?

A unique aspect of the fire and emergency services profession is that the consequences of wrong actions can be devastating. Firefighters often face potentially life-threatening situations and must be able to react to those conditions quickly, effectively, and safely. The safety of these professionals and those whom they are to rescue depend on the quality of training that they receive in their organization (Bizjak, 1999). As a result, the federal government has instituted training requirements that must be achieved.

"Federal requirements for hazardous material training are referred to in the Superfund Amendments and Reauthorization Act of 1986. The requirements are found in OSHA 29 *Code of Federal Regulations* (CFR) 1910.120" (Klinoff, 2003, p.282). *Standard for Hazardous Waste and Emergency Response* requires firefighters to complete hazardous material operations level training. CFR 1910.120 spells out the eight-

hour original course curriculum that is designed for defensive operations to contain the hazardous material release from a safe distance to keep it from spreading and protect exposures (Pinsky, 2005). This regulation requires annual refresher training, however, does not specify a minimum number of hours.

States that assert their own jurisdiction for the enforcement of occupational safety and health issues are required to meet or exceed the federal OSHA requirements. Under its OSHA-approved State Plan and in accordance with Section 27-a(4)(a) of the Public Employees Safety and Health (PESH) Act, New York has adopted and enforces occupational health and safety standards in the public sector which are identical to OSHA's.

"One of the most critical OSHA regulations is covered under 29 CFR 1910.134, which focuses on respiratory protection" (Thiel et al., 2003 p. 19). The *Standard on Respiratory Protection* provides for the training, use and maintenance of respirators, as well as establishes guidelines for annual fit testing of SCBA facepieces. Many organizations elect to provide quarterly donning and doffing SCBA skill drills.

Federal requirements also specify that all "employees" of a business that may come into contact with blood or potentially infectious materials be protected. The regulations are designed to protect firefighters as employees of the fire department. Since any member may come in contact with blood or potentially infectious material all members must be protected (Pinsky, 2005). The *Standard on Bloodborne Pathogens*, OSHA regulation 29 CFR 1910.1030, mandates that fire departments must ensure workers receive training that covers the dangers of bloodborne pathogens, preventive practices, and post-exposure procedures. This training must be given on initial assignment to the job and at least annually thereafter.

New York State has adopted the "fire brigade" standard (Pinksy, 2005). 29 CFR 1910.156 directs a fire brigade to provide training and education for all members commensurate with those duties and functions that they are expected to perform. The employer shall assure that training and education is conducted frequently enough to assure that each member of the fire brigade is able to perform the member's assigned duties and functions satisfactorily and in a safe manner so as not to endanger fire brigade members or other employees. All fire brigade members shall be provided with training at least annually. In addition, fire brigade members who are expected to perform interior structural fire fighting shall be provided with an education session or training, at least quarterly.

Prior to 1970, there were about 20 fire service standards that should have been addressed by fire

departments pertaining to training. Since that time, nearly four times as many have been developed (Davis and Colletti, 2002; Sprenger, 2002). Without effective and efficient training, responders are placing themselves and the public at risk.

NFPA standards are recommendations and guidelines developed by committees of chief officers, volunteer representatives, union officials, and industry representatives. "They are not per se, legally binding, but whether or not NFPA standards have become adopted locally or not they have become the 'standard of care' for the industry" (Theil et al., 2003, p. 17). It is, therefore, important to provide a review of applicable standards with respect to training in an organization.

Possibly the most recognized standard in the fire service, NFPA 1500, *Standard on Fire Department Occupational Safety and Health Programs* (2002), requires fire departments to establish and maintain a training and education program to prevent deaths, injuries and illnesses. Departments must provide for the training and education for all members commensurate with the duties and functions they are expected to perform.

Section 5.3 of NFPA 1500 provides for training frequency and proficiency. The fire department must provide an annual skills check to verify minimum professional qualifications. The standard does state that a skill set should be practiced regularly but not less than annually to prevent skill degradation. It is important to note that this section in the 2002 edition of the standard represents a change from the 1998 standard which required 24 hours of annual training with a minimum of 10 monthly structural firefighting training sessions for interior firefighters (3-3.4).

A less recognized NFPA standard is 1201, *Standard for Providing Emergency Services to the Public* (2004). NFPA 1201 clearly defines and assigns the management function of determining the fire training needs of an organization to a fire-training manager. NFPA 1201 also assures program review by saying; "the effectiveness of department training shall be evaluated on an ongoing basis by department staff, using critiques as an aid in such evaluation" (4.11.3.7.1).

NFPA 1720, *Standard for Organization and Deployment of Fire Suppression Operations by Volunteer Fire Departments* (2004) addresses training with respect to the response capabilities of the fire department with one sentence. "The fire department shall have a training program and policy that ensures personnel are trained and competency is maintained to effectively, efficiently, and safely execute all responsibilities

consistent with the department's organization and deployment" (5.3).

The fire department may be called upon to respond to rope rescues, people trapped in a vehicle accident, a building collapse, confined space emergencies, water rescue situations and trench related incidents. These incidents represent technical rescue situations. Most fire departments respond to some or all of these incidents and should have a plan to address response to these types of events. NFPA 1670, *Standard for Operations and Training for Technical Rescue Incidents* (2004) establishes three levels of operations: awareness, operations and technician. The fire department shall provide for training commensurate with the identified operational capability of each member. The minimum training for all members, however, is awareness level. NFPA 1670 further explains what is expected of each operational capability with respect to technical rescue situations. The standard does not indicate any time elements to each level of training.

Training for firefighters has grown more formal and comprehensive in the past 30 years. The standards are designed to increase safety awareness and establish minimum competencies at various training levels. In 2000, *NFPA 1001, Standard on Professional Qualifications for Firefighters* formally outlined a national standard for a qualified firefighter. Specifically, it introduced Firefighter I and Firefighter II, arguably the most radical change in the fire service in some time (Chiaramonte, 2006). The intent of this standard is to specify minimum JPR's, which can be used to determine that an individual, when measured against the standard, possess the minimum knowledge, skills, and abilities to perform the duties of a firefighter. As previously mentioned, these standards have increased training time substantially (Bush et al., 1998). More than 30 states now require Firefighter I certification (Sprenger, 2006).

Bush et al. (1998) acknowledge that basic training is required to ensure firefighters know how to perform certain tasks in a safe and efficient manner; however, they say that training standards should not be set so high that they discourage volunteerism. Every year training requirements increase while volunteer recruitment declines. They include ways to reduce requirements or make them more tolerable, which include: reducing initial training requirements by devising a multi-year training ladder (Firefighter I the first year, Firefighter II the second year), and incorporating mandated annual training into existing training modules.

"There is no New York State statute or regulation governing the training of volunteer firefighters, equipment to be worn by firefighters, physical fitness requirements, or general firefighting practices"

(Pinksy, 2005, p. 41-1). New York does not require any level of training for volunteers. However, paid firefighters in fire departments with six or more firefighters are required to attain "Firefighter" certification, a 229-hour initial training course, and maintain 100 hours of in-service training each year.

Most states require a minimum number of annual training hours, usually 36, for a firefighter to remain in good standing (Steele, 2006). According to Klinoff (2003), however, there is no set time requirement to be spent on firefighting skills maintenance. He reports many departments use a standard rule of thumb of two-hour drills. The drills should involve all manipulative and technical training and practice the department requires. The two hours should be actual application of skills and not simply discussing the topic.

Insurance Services Office (ISO) forces training in the fire service through its influence on insurance rates in jurisdictions. ISO evaluates municipal fire-protection efforts in communities throughout the United States and insurance companies use the information to help establish fair premiums for fire insurance — generally offering lower premiums in communities with better protection. Many communities use ISO as a benchmark for measuring the effectiveness of their fire-protection services (Vickson, 2001). The standard ISO uses for fire company training is 20 hours per month; that means each company should devote an average of 2 hours per shift to training. This is based on firefighters working a three-platoon shift (Goodson and Sneed, 1989). There is no delineation between career and volunteer, however. ISO standard for training of a recruit firefighter during initial training is 240 hours. Training makes up nine points of a 100 point rating. Only water supply, staffing, and engine companies account for more credit. The easiest way to gain the credit from this category is to conduct eight multi-company drills, each three hours long (C. Fish, personal communications, April 14, 2007).

In the area of EMS, the requirements are established on the state level. Training hours and requirements including re-certification are provided to maintain proficiency and competency. Reeder (2006b) provides a unique analogy between the fire service and the EMS professionals. EMS professionals long ago recognized the need to validate their skills through a re-certification program. The fire service has not embraced this same principle. However, in an operational area that claims more lives and creates more injuries, it should be evident that the fire service needs to develop a similar program and no longer accept the concept of "certified for life" in terms of state or national certification levels.

In most organizations, training is a challenging responsibility because there are more training requirements than available training time (Bizjak, 1999). This problem is addressed by Zigmont (2007) who considers reviewing these regulations as the first step in determining the need for training. Fire departments must determine exactly what training is needed and what the requirements are. He explains, "it is too easy to say, 'OSHA says' without knowing exactly what OSHA does say" (para. 10).

Literature Review Summary

The literature review provided direction and framework for the four research questions. This summary will include short answers obtained during the literature review stage of the report.

Providing meaningful and effective fire service training is not an easy task. Training officers must blend lecture with much needed hands-on skills. Instructors are presented with a variety of problems to overcome: including specialized training, repetitive skills and drills, volunteer's schedules and assisting students with developing a learning attitude.

Fire service leaders are seeing a move toward Internet based training. This is a proven effective method of providing knowledge-based skills. Development of hands on skills is achieved through two predominant methods: completion of a standard skill set that every firefighter is expected to perform and through realistic scenario based staged incidents.

The design of an effective training program should follow the cycles of plan, conduct, evaluate. An assessment of firefighter skills should direct training development. The instructor also plays a vital role throughout the training process. Assurances should be made for a qualified, credible, and competent instructor. Use of pre-determined, measurable objectives are needed to provide direction to the training. The training should be evaluated to ensure the desired outcome is being achieved.

There are a myriad of regulations and standards associated with compliance of federal and state requirements. Hazardous materials, bloodborne pathogens, and SCBA are among the applicable federal regulations. NFPA contains numerous standards that pertain to training. The state of New York, however, has no training requirements for volunteer firefighters.

Procedures

Definition of Terms

Company. Basic organizational unit of the CFD. Each company is composed of several pieces of

apparatus, members and company officers. Company does not refer to an individual operating unit.

Exterior Firefighter. Firefighters who do not wear self-contained breathing apparatus (SCBA). These members are trained for activities occurring outside the hazard zone at an incident scene.

Interior Firefighter. Members that have completed Firefighter I and SCBA quarterly training programs. These members are trained for all anticipated assignments on the fireground.

Level 0 Hazardous Material Incident. Formal declaration of a hazardous material situation. This type incident can be handled by the local jurisdiction with mutual aid from the Monroe County Haz Mat team for technical advice.

Limited Duty. Active duty firefighters may be placed on limited duty status after an injury that will not allow them to perform at full capability as a firefighter. A medical doctor may assign this status preventing a firefighter from participating in responses or drills, other than classroom only training. The Fire Chief may also assign this status for members not completing required annual training. The firefighter may remain on this status until the required training is completed.

Rescue Squad. This group of CFD members is charged with operation of the department ambulances and providing EMS. The rescue squad-ambulance is distinctly different from a rescue company within the CFD.

Research Methodology

The problem statement was developed from a discussion with the Deputy Chief of personnel for the CFD. He expressed concern over several recent incidents where it was evident that adequate training had not taken place and other times when members lacked a general desire to perform training. This information served as the background and significance for this paper.

This research project employed a descriptive research methodology to determine: (a) what are the characteristics of the current "department training" program (b) what are other departments doing to meet their training requirements (c) what are the key elements needed in an effective training program, and (d) what are the applicable federal, state, and local requirements for a training program in CFD.

A survey instrument was developed that was used for gathering internal data that would address the department training program. The intent of the survey was to evaluate positive and negative aspects of the department training program, as provided by the members who are participating in the training. The survey

is represented in Appendix A. The desire was for an honest evaluation by Chili firefighters on the training that is provided to them.

Following development of the survey, it was validated with five Chili line officers. They completed the sample survey and two questions were changed to better clarify the intention of the questions. Surveys were provided to five battalion chiefs for completion at their respective company meetings. Each company held a meeting on the evening of 5/22/06 and the members that attended the meeting were provided an opportunity to complete the survey.

The population of the fire department is 180 members and an appropriate sample size would be 123. Attendance at the five company meetings equated to 119. There were 97 completed surveys returned. In an effort to better understand the responses of firefighters, 13 special duty firefighter (ambulance medic only) surveys were reviewed for their recommendations only. Since these members do not participate in department drills, they did not answer questions that pertained to training. This removed 12 surveys, for a total of 84 responses.

Completing surveys at the company was accomplished in a more manageable method than completing them as an entire group on general meeting night when all companies are together. Secondly, each company answered independently and the answers were categorized according to company. This would reflect differing opinions on the quality of instruction from one fire company to another. Each company's totals were compared with the overall total from all fire companies.

An external survey instrument was prepared for determining how other volunteer fire departments are performing their training. This short survey instrument was designed (Appendix B) to gather information on how volunteer fire departments are performing and measuring their training. Information gathered from literature review was the inspiration of several questions. Early in the process it was determined that New York had no certification requirements for volunteer firefighters. This was used to question fire departments how they initially train their firefighters. It is difficult to provide refresher training if all members are not receiving the same uniform training in the beginning, and while it may possibly be uniform in-house, a standard level of refresher may not be possible for the state.

It became possible to narrow the search to a list of fire departments as broken down by county. This was the first objective. With this information, a sample size was determined. Criteria for the sample

included upstate New York, suburban, volunteer fire departments. The survey was to include Monroe County, Erie County (Buffalo), and Onondaga County (Syracuse) fire departments. It was anticipated that these data would provide similar demographics to CFD. The survey was not to include full career or rural fire departments. Surveying the "big three" upstate counties would also provide a similar economic status. Many downstate fire departments are more financially secure. While the majority of these fire departments are significantly smaller in membership size than Chili, the method CFD uses for training allowed for inclusion of data from smaller organizations. Each CFD company has less than 60 members assigned to it and trains independently from the other companies. It is typical to have 15 – 20 firefighters per drill at each Chili firehouse.

The external survey was developed online and a link to the survey was created. The survey was distributed to 35 students of numerous fire departments in a fire suppression technology class at Monroe Community College. These students validated the survey and as a result of their input, two survey questions were changed to revise ambiguity. Following discussion with Sam DeRosa at the MCFB, an email was sent to him with a link for the survey. DeRosa forwarded the email to all 36 Monroe County fire chiefs. This method was determined to be the best route of distribution and ease in completion with no need to use the Postal Service to mail items back and forth. DeRosa utilized a closed list to send out this email. The list was not available for the author to email directly each fire chief.

The county fire coordinators in Erie and Onondaga were each contacted on 4/23/07. They were asked to forward the email to their respective fire chiefs. These lists included 92 Erie County, and 52 Onondaga County fire departments for a total population of 180. There were 98 responses to the survey for a response rate of 54.44%.

The first of two interviews with CFD authorities was held at Pizza Hut in Chili on 4/30/07. Lieutenant Tom May was interviewed because of his extensive training background. May has more than 10 years as a training officer in CFD. May also is a career firefighter serving as a captain with Rochester Fire Department and has more than 10 years as a county fire instructor with MCFB. During a one hour interview May was asked; (a) what is your evaluation of the department training program (b) discuss the advantages and disadvantages of this program (c) how would competency training increase or decrease the value of training (d) would computer based training be beneficial to complement hands on training and (e)

what are the qualities of a good drill?

The second interview was conducted with Deputy Chief Pat Quinn on 5/2/07. Quinn is responsible for training administration and has been involved with development of department training from its inception. Quinn was provided with the same questions as the first interview. The intent of these interviews was to gather specifics concerning the department training. This one and a half hour interview was conducted in the dispatch office of CFD.

Literature review and information gathered from interviews as well as personal communications with department representatives was used to identify applicable federal, state, and local requirements. A comprehensive review of laws pertaining to training time would be impossible; therefore, a focused approach was made. Information related to volunteer fire departments and recommendations from recognized experts provided guidance.

Literature review specific to the OSHA fire brigade standard referred to a training program provided by New York State Association of Fire Chiefs (NYSAFC). Thomas Labelle, executive director of NYSAFC was contacted in an effort to gather appropriate information on OSHA/PESH requirements for volunteer firefighters in New York State.

On 4/26/07 a 20-minute phone interview was conducted with LaBelle from his office in Albany. The interview was designed to gather information on NYSAFC's role in OSHA/PESH training. The following questions were asked of Labelle: (a) how has NYSAFC decided upon the hours required for OSHA training and refresher (b) where do the standard drill topics originate (c) does NYS mandate any other training than required in federal legislation (d) why are there initial training requirements for career firefighters and annual refresher training, however, the volunteer firefighter need not meet any initial state training?

Sam DeRosa was interviewed on 4/9/07 at the Public Safety Training Center. DeRosa serves as Executive Deputy County Coordinator for MCFB. It is DeRosa's responsibility to schedule training classes in coordination with fire departments throughout Monroe County and the Office of Fire Prevention and Control. These classes include initial firefighter I training courses. During the 45-minute interview, DeRosa was asked; (a) what are the initial training requirements for volunteer firefighters in New York (b) do all Monroe County fire department recruits participate in Firefighter I training (c) what training is

solicited from MCFB to address annual required training? (c) what are local departments doing for training needs?

Each procedure, whether interview or survey, involved multiple research questions. The results section shall depict the answers to these questions**.**

Assumptions and Limitations

An assumption of this study was that all collected data retrieved from Chili firefighters reflected their honest opinion of training. The notation that the survey was for the NFA may cause members to answer questions in a positive manner to prevent a negative light on their organization.

The study was limited to main elements of training programs. This research is not comprehensive in terms of the development of a training program. The intent was to focus on improvement within the context of the regulations and standards and improve the quality of training, whereby improving desire for participation and active learning of CFD firefighters.

CFD members were questioned on the quality of training they receive. While analyzing data from the survey, it was realized that most members have no training with other organizations to compare with CFD training. This is seen as a limitation.

A few limitations were discovered in selection of sample size and distribution of an Internet based external survey. In determining the sample size, it was impractical based on time and needs to survey all of New York's 1,792 fire departments. The attempt at reducing this to like, volunteer, equivalent size departments was met with equal difficulty. There was no easy system of locating fire department sizes. Local contacts did not have this information; county officials believed it was possible to gather the information from the state's National Fire Information Reporting System. Contact with the Office of Fire Prevention and Control was made and the determination that gathering this information was not possible. Use of census data was not helpful because there may be numerous fire departments within an individual town. Chili is a prime example. Census data on Chili is readily available, but four Chili fire companies, Clifton Fire Department, and Gates-Chili Fire District all service the town.

A final limitation included the findings from literature review. Research of external sources, magazines, journals, and newspapers failed to provide any data on training of firefighters. Most of the information and documentation was derived from the fire service community, while an attempt was made to review outside

sources from the fire service; there was no pertinent data. The subject nature of this project was specific in nature to the fire service with very limited information from the public or private sector.

Results

What are the characteristics of the current "department training" program?

An internal survey was completed by 71 firefighters and 13 officers of CFD. Of the 84 members, the largest percentage was from the 0 – 5 year membership category, with 32 firefighters. The next largest group came from senior members with more than 20 years service, 27 firefighters. Those members in between were 6 – 12 years, 12 members and 11- 20 years, 13 members.

As shown in Table 1, the results of some of the survey questions indicate that overall, most CFD members are content with the present department training program. Results of the entire survey are shown in Appendix C.

Table 1

CFD Applicable Survey Questions

Question	% Yes	% No	# Answering
Is department training challenging enough?	77.5	22.5	80
Does CFD provide you enough hands on experience?	80.25	19.75	81
Do you need more training than department drills?	38.55	61.45	83
Have you attended training at another company?	69.5	30.5	82
Has department training resulted in better performance?	93.83	6.17	81
Do selected drill topics address correct areas of concern?	92	8	75
Would computer based training be a benefit to you?	52	48	75

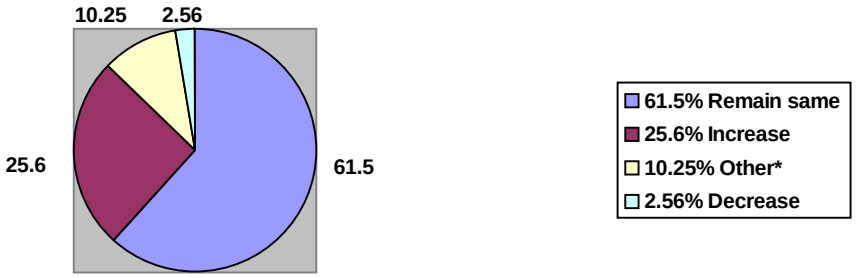
The majority of respondents believe (67.9%) that department training is "directly related to the job of a firefighter," while only 7% do not believe the training relates and one firefighter (1.2%) believes it to be a "waste of time." More than half, 53.1%, of the firefighters felt obligated to attend training four nights a month.

CFD firefighters rated the organization of department training overall as "average" at 71.25%, and only 8.75% with feelings of "poor" or "fair" organization. They were content with the quality of instruction as well, with 86.42% grading it as average or excellent. Only 13.58% replied, "fair" and no one said "poor."

Based on the experience and observations of members, more than half the respondents would like no change in the current department training system, as shown is figure 1.

Figure 1

CFD Members' comments on changes in department drills



Note. Other comments/changes are listed in Appendix C.

Quinn (personal communication, May 2, 2007) summed up the Department Training concept by saying that, "the program looks great on paper but in essence was really established in an effort to satisfy OSHA requirements." The quality of the program is low simply because of the number of firefighters being pushed through it; whereby a member needs to attend the drill instead of complete a task. May provided an example, all members must complete the department drill on water rescue. The company had completed this drill, however, of the nearly 60 members, only four had actually entered the water for qualification.

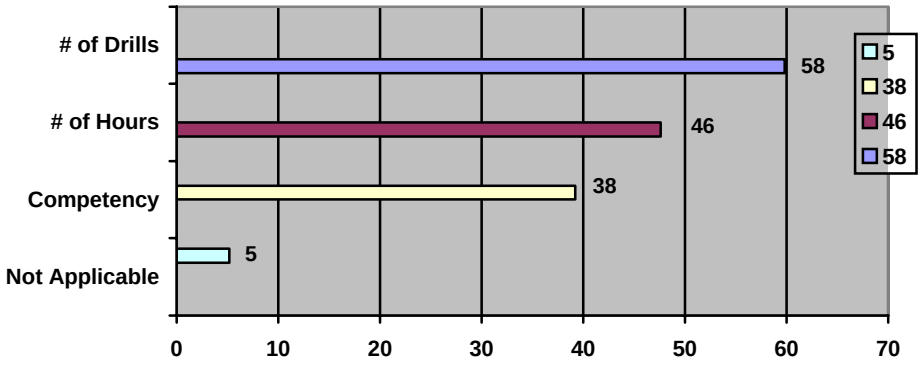
Another common discrepancy, identified by May (personal communication, April 30, 2007) and Quinn, was the quality of training from one company to another. Some lieutenants provide the training in an effort to educate and train their personnel while fulfilling the OSHA objectives and other companies do the bare minimum to gain credit for a drill. Both companies have complied with the training requirement but only one has ensured it's members have learned.

What are other departments doing to meet their training requirements?

An external survey of 176 fire departments in New York was conducted. The data indicated that, of the 98 returned surveys, 85.5% have training requirements in their organization in addition to the required federal training. How each fire department completes this training is a close debate among respondents. While the majority of departments use the number of drills to measure training, a smaller percentage use the number of training hours and some use competency as evident in figure 2.

Figure 2

How external departments measure annual training



Note. This is based on 98 fire departments reporting how they measure training.

The surveyed departments responded that 56.7% of the times, the required topics for training are selected by a training officer or instructor, followed closely by the fire chief in 54.6% of the time. A similar response was found for who is conducting the training. A tie occurred between a training officer and a line officer, with both at 66%.

There was a very wide variance in responses to the question concerning fire department action if a member does not complete the required training by year end. While 15.5% reported they do nothing, 35.1% suspended the member, and 44.6% treated the member in some other manner, including providing different types of warnings, change in status, placing the member on limited duty, or meeting with fire chief/officers.

The surveyed fire departments were asked if they used any type of competency testing for its members, to which 52.2% reported they do not. These departments also reported that 86.5% of them do not use any form of computer-based training. The organizations that do use this type of training indicated they are used for fire service simulators, firehouse software, Action Training software, and in-house content used for learning, and for emergency medical technicians (EMT's) and paramedic re-certification. Complete results of the external online survey are listed in Appendix D.

The MCFB assists Monroe County fire departments with federally mandated training by providing county instructors to teach hazardous material and bloodborne pathogen refresher classes. MCFB routinely administers this training throughout the county on an individual fire department basis by request. While there are occasions that county fire departments request and instructor to administer OSHA training in two

part sessions, DeRosa (personal communications, April 9, 2007) says many organizations complete this training in-house.

DeRosa reported that 94% of Monroe County fire departments have their recruit firefighters attend the state instructed Firefighter I course. This is an 81-hour course requiring a 70% academic average or better and completion of skills testing on PPE, forcible entry, two firefighter roof ladder deployment, and flat hose loads. The online external survey indicated that 72.4% of organizations required their recruits to participate in Firefighter I training, without requiring them to complete national certification. Eight departments perform in-house training with a range of 15 hours to 120 hours of training, with an average of approximately 44 hours.

What are the key elements needed in an effective training program?

CFD authorities (May and Quinn) are in agreement on the need for effective training to be hands-on in nature. Quinn would rather include many scenario-based drills to place the student in a position where their actions will facilitate learning. May recommended this type training to place firefighters into distinct roles for a drill. Under the current system, it is too easy for a member to stand in the back and not participate. Many CFD members asked to include more real life scenarios in the training program.

May explained the importance of a positive attitude for those involved with training. The instructor plays a vital role in the class. The instructor must be prepared for the class, have a lesson plan, reviewed it ahead of time and have an idea how the training will be administered. The training program cannot be developed in the front seat of the truck as it leaves the firehouse en route to the drill site. It takes a concentrated effort to keep 25 firefighters busy learning and prevent standing around. The delivery by the instructor can also make for a good drill or a poor drill. Even a good lesson plan could be presented in a bad manner, making students not want to participate.

The training must be student applicable, according to May. It must be something that is worthwhile to the member. The classes should be presented in a variety of manners to facilitate the best learning while attempting to prevent the boredom of the same drill every time. Again, planning the drill is an important responsibility. Drills can be modified so it is not the same drill every time, even though, for example, the crew has made the hydrant every time. The manner in which the task was accomplished may have been altered. A crew makes the hydrant because the firefighters advancing the line have used the tank.

Although not the initial purpose, the hydrant was made, providing training.

What are the applicable federal, state, and local requirements for a training program in CFD?

The CFD must maintain compliance with federally mandated laws. These laws include hazardous material training. Members are to receive operations level training upon entering the fire department and then refresh annually. Likewise, new members must receive initial bloodborne pathogen training and an annual refresher. Compliance must be maintained with training, use and fit testing of SCBA. In accordance with the "fire brigade" standard, CFD must have a training and education program for all members, commensurate with the duties and functions that each is expected to perform. This training must occur on an annual basis as a minimum.

There are no state requirements for volunteer fire departments in New York. There are no initial training requirements or annual training for the state level. Each fire department has the luxury of selecting its own requirements of firefighters in their jurisdiction. LaBelle (personal communication, April 26, 2007) explained that that law specifically exempts volunteer firefighters from any training requirement and places the responsibility on the authority having jurisdiction (AHJ). The state expects the AHJ to be familiar with the hazards and site specific scenarios that may be encountered in each fire department response area.

Local requirements for training are established through the CFD. "In January the Chiefs office will establish the training requirements. All Active *(sic)* members must complete the minimum mandatory training annually" (CFD, 2002, p. 11). The only exemption to this training is for those firefighters who have reached entitlement age (65) for the LOSAP. Those members, if they have issued a statement of intent not to respond on emergency calls, are not required to complete the minimum mandatory training.

CFD training is further defined in standard operating guidelines. "All interior firefighters, shall receive a minimum of eight hours annually per OSHA 1910.156" (Chili Fire Department [CFD], 1995). The following categories and time requirements are mandated: general hazard recognition (30 minutes), fire station safety (30 minutes), response safety (45 minutes), protective clothing (1 hour), SCBA (2 hours completed through 30 minutes quarterly), tool and equipment safety (1 hour), recent developments in fire safety (1 hour) (CFD, 1995).

While a comprehensive review of OSHA 1910.156 showed no time requirements listed, LaBelle explained that the time requirement was added around 1984 as a "gentleman's agreement" between the

New York Department of Labor and NYSAFC. Although promulgated as a recommendation of categories, many New York fire departments use this as guidance for meeting the training requirements of the Fire Brigade Standard by eight hours of refresher training and 15 hours of initial training.

Discussion

What are the characteristics of the current "department training" program?

Learning exclusively through "on the job" experience in the fire service is a thing of the past (Snook, et al., 1998). Firefighters go through training when they first enter the fire service and they are provided constant in-service type training to maintain their skills. This requirement is essential to safeguard themselves and the public they are to protect (Buchanon and Dale, 2000).

McCormack (2003) has warned to be on the lookout for the "paper firefighter." As the data is reviewed, one may question if McCormack's fears hold true to CFD. A review of the internal survey revealed the majority members participating had between 0 – 5 years in the CFD. These are the members who are voting that they do not need any more training than offered at eight department drills throughout the year. 61.45% members report they have had enough hands on training with the six department drills (hazardous material and bloodborne pathogen are lecture only). These firefighters may have gained Firefighter I certification, but as Steele (2006) reminds, certification is only a minimum level of competence. This competence may not continue to bloom into proficiency without practice.

The other large voting majority of CFD firefighters came from members with more than 20 years of service. These members have performed the skills over and over throughout the years. If they choose to remain active members they must demonstrate they can still fulfill the responsibilities of firefighter. It is in training of these personnel that the training officer must become clever. These members have seen the same drill over and over. The phenomenon is not unique to CFD. Authors Bachtler (1989) and Hinton (2006) discuss how many resist training with comments such as, "we just did that." The training instructor must now make an effort to develop a different scenario, change the context of the drill, and make what they "just did" simply part of the entire drill.

Buchanon (2003) has discussed the individual's responsibility to want to learn and in comparing these thoughts with those of CFD firefighters, members feel they are adequately trained, however, 53% feel obligated to attend training four nights a month. If they desire no change in the current system, and can

accomplish all the required training needed in eight nights, why would they feel obligated to report to the firehouse weekly? It is possible that these members desire training; however, resist the implementation of a system that requires them to attend additional drills.

A closer look at the department training program shows differences in opinions from members to administrators. Many members are content with the current system, while the experts are frustrated that the program does not provide hands on experience for all firefighters. It is possible that members claim they are content with the current system for fear of change. Any change in the fire service is met with resistance, as it goes against tradition and, "how we have always done things." Meanwhile, the administration desires a system where more people have the opportunity to practice their skills. Literature review has shown two plausible methods of completing this mission: realistic training scenarios and competency testing.

What are other departments doing to meet their training requirements?

Although the fire service has traditionally relied on classroom instruction and manipulative exercises, some volunteer organizations have taken steps to accommodate today's busy lifestyle and technological advances (National Volunteer Fire Council, 2001). Sprenger (2002) and Chiaramonte (2006) speak of the increased use of Internet based training. Data compiled from the external study, however, does not support their findings in New York. These departments replied that 86.5% do not use this type of training. This method has not been utilized by CFD. Quinn reported, though, that the CFD ambulance is beginning an online system of training to gain continuing education credits for EMT's. This training may not have gained widespread acceptance due to the age of members and their lack of familiarity with computers. It is surmised that young members would rather gain hands on work than computer learning. Data from the internal survey support the implementation of this in CFD. All companies supported computer-based training with exception of company 2. Company 2 voted distinctly different than the department as a whole in their vote of 8 in favor and 14 opposed.

Member opinions gained from the internal survey appear to correspond to what Bush et al. (1998) suggests, training through use of scenarios. This realistic type of training allows the most opportunity for needed experience while tying training together. This method also allows the training officer to evaluate members' skills in a real time situation. This type of training was requested several times in comments

from the internal survey.

The external survey indicated 85.4% organizations require some form of training above federal requirements. What is concerning is that 14 fire departments only complete the federal training and nothing more. This is a case where, when Hinton (2006) asks, "How much training is enough?" The answer possibly is, more than what is required.

Fire departments that provided additional training were questioned on how they measure training. Results of the external survey provided no clear method. Fire departments are using number of drills, number of hours, and competency throughout New York. Zigmont (2007) has provided arguments against use of both number of drills and number of hours in saying neither can show if a member is proficient in what was learned. Snook et al. (1998) have cited time requirements as a detriment to retaining volunteers. This leaves competency as an avenue to reduce time requirements and number of drills. Competency is also the most widely accepted method accepted by NFPA to determine if a firefighter possesses the necessary skills (Zigmont, 2007).

Considerable research went into literature review with respect to gathering what has been said concerning fire department training in newspapers and magazines from outside the fire service. The topic of training was mentioned multiple times recently especially with the death of a Baltimore Fire Department recruit in a live training burn (Linskey, 2007). However, nothing was found in newspapers detailing how training occurs. This may lead to the belief that a fire department is well trained. There is no accurate measure of how trained a fire department is or what training takes place above federal requirements.

What are the key elements needed in an effective training program?

Designing training for a fire department requires a skills survey or assessment be completed. This assessment will provide valuable information to the training officer by clearly defining the skills to be improved. Gerardi (2004) desires a drill that focuses on improving knowledge and skills, not simply to meet legal requirements. The current CFD program, according to Quinn is aimed at compliance with legal requirements, rather than skills building. It should be clear that a shift is needed toward manipulative training exercises.

A move to competency testing had both May and Quinn skeptical. Quinn considered the system too daunting a task, while May was concerned that it may be more complex of a system than CFD currently

uses. He assumes there would be many more competencies than current drills. The use of competency testing, however, would appear to alleviate some problems with not providing enough hands-on experience. It is noted that administrators, and members alike requested more hands-on drills. This system would also reduce differences in training among companies. There is one method of completion and the training officer would ensure the members all perform the task in the same manner.

May's fears of a more complex system are well received. The increased time demands of a more complex system have been responsible for the loss of many members (Bush, et al., 1998). Springer (2006) believes the only way to retain volunteers is to modernize training methods. While change is met with resistance, a move to implement computer based knowledge training and use of competencies may serve a better purpose than the current program. Computer training can take the place of classroom time. Competencies can be developed and used throughout the year and from actual incidents. This system will give administrators a valuable way of ensuring proficiency, provide members with hands-on experience, increase knowledge, and reduce "seat time."

A common denominator is the training officer. Both literature review and CFD experts cite the need for a qualified training officer. This was summed up on a response from the internal survey saying, "CFD goes to great measure to ensure a qualification program for all apparatus operators; however, it does not use the same formula when discussing the qualifications to administer training to its members." Bush et al. (1998) speak of volunteers quitting their organizations as a result of poor training and a lack of competent instructors. We must realize that our personnel are our greatest asset. We can purchase the best of apparatus and equipment, but if members are not trained properly, it is to no avail. It is imperative that members have the proper training to do their job.

With agreement between literature review and CFD authorities, it is interesting to find that the position of training lieutenant with CFD has only the requirement of three-year membership. There is no requirement for any advanced training courses or instructor certification. Bingham (2004) spoke of ranking officers not always being the best choice of instructors. It is in the best interest of firefighters to have an instructor who has experience in the drill topic and is certified to teach the material.

Goodson and Sneed (1998) consider training for emergency response the highest priority following the emergency response itself. Since CFD does not respond to a multitude of incidents and those that it does

respond to are small in nature, it would be advised to ensure a quality training program to prepare for the infrequent responses. Use of scenario training and the guidance of NFPA 1410 (2005) would help achieve this, while providing a degree of experience to firefighters.

The Erie County Deputy Fire Coordinator Tiger Schmittendorf uses a closing on all of his emails (personal correspondence, May 5, 2007) to remind firefighters that their training is a safety net and vitally important in today's culture of, "Everyone Goes Home." He ends with: "Stay safe. Train often." As the hazards of the job of firefighter cannot be overemphasized, each should do just as he recommends.

What are the applicable federal, state, and local requirements for a training program in CFD?

There were no major differences in comparison of literature review and results sections of this paper concerning federal training requirements. CFD must comply with hazardous material training, bloodborne pathogen training, SCBA fit testing, training and use requirements, and the fire brigade standard.

The state has adopted the fire brigade standard. This standard in actuality requires interior firefighters to simply participate in an education session or training quarterly. New York State, however, has offered an interpretation that current firefighters complete eight hours of refresher training from seven selected categories. This has become known, as a result as OSHA training.

Zigmont (2007) has described a general belief that there are many more training requirements than there actually are. The training requirements are not as onerous as many perceive them to be. The training required of firefighters is minimal and essential. The fire department has tools and equipment and protective clothing designed for the safe suppression of fire. However, none of it is of much use if firefighters have not been trained, drilled and become proficient in their use.

New York State career firefighters must participate in a required 229-hour initial training course and then complete 100 hours of training annually. Volunteer fire departments do not have these same requirements. Volunteers in New York have no initial basic training requirements whatsoever for recruit firefighters. The state allows the volunteer fire department to be familiar with its hazards (T. Labelle, personal communications, April 26, 2007), while career fire departments are held to a stringent standard. It seems as though the hazards can be predicted and training set forth as has been done with NFPA 1001, Firefighter I training program. While career firefighters are rigorously prepared for the hazards of firefighting, volunteers should also embrace that same training. Fires know no difference between career

and volunteer firefighters and the homeowners in each location have no less expectations of their fire department. Zigmont (2007) is in agreement by saying he does not believe volunteer firefighters should be held to a lesser standard than their paid counterparts.

There were numerous NFPA standards identified with relations to training. Each has applicability to the CFD. Many of these were identified during literature review. As demonstrated in literature review, most of these standards are competency based. They require a skills review to ensure that a member can perform adequately. CFD does not train in this manner. While NFPA standards are guidelines, they have also been recognized as the "standard of care for the industry" (Theil et al., 2003) and as such, in any legal situation, these recognized standards would be produced.

One of the most recognizable standards in the fire service, NFPA 1500, simply requires training to prevent skill degradation. It is interesting to find NFPA 1500 has changed from 1998 requiring 24 hours of annual training in 10 separate interior structural firefighting training sessions to their current requirement of completing a single annual skills check to verify minimum qualifications. CFD does not meet this standard. It has nearly met the 1998 standard; however, there has been no change to the current program in many years.

CFD training is far below expectations of ISO, however, much higher than required of government. The department drills meet local LOSAP requirements and those drills meet the requirements set forth by the agreement between NYSAFC and New York Department of Labor of eight hours of refresher training. Perhaps the best practice was set forth by Reeder (2006b), moving the fire service to be more in line with the EMS using a certification program to ensure continued proficiency and competency.

Summary

The members of CFD are content with the training they are currently being provided, although management has suggested that the current system is in place to meet the legal requirement rather than provide quality training for all. Their desire would be to implement more hands-on activity. Hands-on activity has been the direction that many NFPA standards have moved. This manipulative training is completed through competency training. It is the intent of competency training to ensure a member maintains minimum professional qualifications. Implementation of this type of training shows clear benefits to members, administrators, and NFPA standards.

Attempts to provide avenues of training outside the classroom, via internet training, have been applauded by the National Volunteer Fire Council. Based on the survey, New York fire departments have not yet embraced this method. Members of CFD, with the exception of company 2, do support the idea of such training. The ambulance is currently beginning an internet method of gaining continuing education credits to maintain medical certification. Implementation of this form of training will provide knowledge based learning to the member while freeing the student from the classroom for other methods of learning.

Fire departments surveyed have no clear method of measuring training. Some use number of drills, others use number of hours, and still others require a demonstration of abilities. The use of competencies shows numerous advantages over the other methods. However, the role of the training officer and the student still must be underscored. The instructor must be knowledgeable and present the material in a method that will allow learning and the firefighter must want to learn. This training should not cause firefighters to leave the fire service, but to protect them and the community. Their well-being depends on their training.

Recommendations

The following recommendations stem from data analysis and literature research conducted for this project. The adoption of the following may reduce the effects of the current CFD training problems:

1. The development of a computer based training system to fulfill some knowledge aspects of learning. This process may also allow more free time for volunteers, as they can complete this training on their own during the year. This system may also provide time to practice skills at the fire company that would otherwise be used in a classroom.
2. Create JPR's. Review the job of interior and exterior firefighters, develop a job analysis of each position and mandate training based on the required qualification needed.
3. CFD should consider a move toward competency based training and testing. This too will ease time constraints on members. Competency will discourage some of the problems found in the current system and offer the students a specific set of goals each must achieve through skills review. This system also provides the training officer with a valuable tool to gauge the training that may be required. A move toward competency training will also bring CFD more in line with numerous NFPA standards.

4. Use of scenario based drills will provide realism to firefighters with less experience while providing them structure to learn and give them manipulative skills upon completion of the training.
5. Completion of the national certification test for level I firefighter will ensure that the members returning from training have met minimum national standards.
6. CFD should provide instructor training to first lieutenants. These officers are charged with providing the training that serves as the foundation of the CFD mission statement and it is to chance that the person elected to the position has the ability to provide this training.
7. CFD should strive to find ways to maintain a quality level of training without adding time requirements. These requirements have hampered retention in the volunteer fire service. An effort at creative methods of training will be required to maintain volunteers and maintain their proficiency.
8. CFD should make every effort to evaluate training. Some form of training is constantly being performed, but are the students learning from the material? Is the material presented correctly? What are the thoughts of the students?

Training provides the framework for organizations to fulfill their mission. The effectiveness of the training and development of members will not only determine how effective a firefighter will be, but will determine how effective the organization will be in service to the community. In future studies a comparison between the company training and department training should be made. Any attempt to ensure training while decreasing the large blocks of training time may prove valuable. A balance needs to be created between ensuring proper trained personnel and the realization that our people are volunteers. While volunteers are serving at their own free will, the public has expectations concerning their fire department, the administration has responsibility to ensure safety and adequate response and the government addresses their desire to maintain training through mandates.

References

Bachtler, J. R. (1989). *Fire instructor's training guide* (2nd ed.). New York: Fire Engineering.

Bingham, R.C. (2004). *Street smart firefighting*. Vienna, VA: Valley Press.

Bizjak, G. (1999). Fire and emergency services instructor (6th ed.). Stillwater, OK 1999: International Fire Service Training Association.

Bloodborne Pathogens Standard, 29 C.F.R. § 1910.1030 (1991).

Brunacini, A. V. (1985). *Fire command*. Quincy, MA: National Fire Protection Association.

Buchanon, E. & Dale, S. (2000, September). Volunteer training: Another approach. *Fire Engineering, 153*, 8-14.

Buchanon, E.W. (2003). *Volunteers training officer's handbook.* Tulsa, OK: Penn Well Corporation.

Bush, R., Schaenman, P., & Thiel, K. (1998). *Recruitment and retention in the volunteer fire service: Problems and solutions.* Arlington, VA: TriData Corporation.

Chiaramonte, M. (2006, May). Learned Behavior. *Fire Chief, 50*, 44-45.

Chili Fire Department, Inc. (1995, June). *Standard operating guidelines* (Part I-fire). Rochester, NY: Author.

Chili Fire Department, Inc. (2002, June). *By-laws, revised*. Rochester, NY: Author.

Conners, T.D. (1995). *Volunteer management handbook.* NY: John Wiley and Son.

Cote, A. E. (2003). *Fire protection handbook* (19th ed.). Quincy MA: National Fire Protection Association.

Davis, L. & Colletti, D. (2002). *The rural firefighting handbook.* Royersford, PA: Lyon's Publishing.

Fleming, R.S. (2003, January). Training: the road to organizational excellence. *The Voice*, 21-22.

Fire Brigade Standard, 29 C.F.R. § 1910.156 (1980).

Gerardi, P. R. (2004, May). When does training turn to abuse? *Firehouse*, 42-44.

Goodson, C. & Sneed, M. (Eds.). (1998). *Fire department company officer* (3rd ed.). Stillwater, OK: International Fire Service Training Association.

Hazardous Waste Operations and Emergency Response Standard, 29 C.F.R. § 1910.120 (1990).

Hinton, J. (2006, August). Youth advisory. *FireRescue Magazine, 24*, 54-62.

Klinoff, R. (2003). *Introduction to fire protection* (2nd ed.). Clifton Park, NY: Delmar Learning.

Lindsey, J. (2006). *Fire service instructor*. Upper Saddle River, NJ: Pearson Education.

Linskey, A. (2007, April 28). Safety lapses in fire death [Electronic version]. *Baltimore Sun*. Retrieved May 2, 2007 from http://www.baltimoresun.com/news/local/baltimore_city/bal-te.md.ci.fire28apr28,0,112976.story?coll=bal-local-utility

McCormack, J. (August, 2003). Firefighter education is everyone's responsibility. Retrieved January 24, 2006 from http://firechief.com/training/firefighting_firefighter_education_everyones/

National Fire Academy. (2003, September). *Executive fire officer program operational policies and procedures applied research guidelines.* Emmitsburg, MD: author.

National Fire Protection Association. (1998). *Standard on Fire Department Occupational Safety and Health Programs* (NFPA 1500). Quincy, MA: Author.

National Fire Protection Association. (2002). *Standard for Fire Service Instructor Professional Qualifications.* (NFPA 1041). Quincy, MA: Author.

National Fire Protection Association. (2002). *Standard on Fire Department Occupational Safety and Health Programs* (NFPA 1500). Quincy, MA: Author.

National Fire Protection Association. (2004). *Standard on Professional Qualifications for Firefighters* (NFPA 1001). Quincy, MA: Author.

National Fire Protection Association. (2004). *Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by volunteer fire departments* (NFPA 1720). Quincy, MA: Author.

National Fire Protection Association. (2004). *Standard for Providing Emergency Services to the Public*. (NFPA 1201). Quincy, MA: Author.

National Fire Protection Association. (2004). *Standard on operations and training for technical rescue incidents* (NFPA 1670). Quincy, MA: Author.

National Fire Protection Association. (2005). *Standard on Training for Initial Emergency Operations* (NFPA 1410). Quincy, MA: Author.

National Volunteer Fire Council. (2001, May). *Report on the 2000 national volunteer fire summit* (FA-212). Emmitsburg, MD: U.S. Fire Administration.

Pinsky, B.M. (2005). *The fire department law and management resource manual* (New York State Ed.). Manlius, NY: Allison Publishing, Inc.

Public Employee Safety and Health (PESH) Act, New York Law § 729 (1980).

Reeder, F. (2006a, August). Basic instincts. *FireRescue Magazine, 24*, 100-102.

Reeder, F. (2006b, April). Training and leadership challenges for 2006 and beyond. *Fire Engineering, 159*, 139-144.

Respiratory Protection Standard, 29 C.F.R. § 1910.134 (g) (1998).

Shaw, W. J. (1998). *Benefits of a competency-based training program*. (Applied Research Project). Emmitsburg, MD: National Fire Academy, Executive Fire Officer Program.

Snook, J.W., Johnson, J.D., Olsen, D.C., & Buckman, J. (1998). *Recruiting, training, and maintaining volunteer firefighters* (3rd Ed). West Linn, OR: Emergency Service Consulting Group.

Sprenger, M. (2002, May). e-learning for volunteers. Retrieved January 24, 2006 from http://firechief.com/mag/firefighting_elearning_volunteers/

Steele, L. (2006, April). Will the status quo kill your department? *Fire Engineering, 159*, 18-24.

Theil, A., Stern, J., Kimball, J., Hankin, N. (2003). *Trends and hazards in firefighter training*. (USFA-TR-100) Arlington, VA: Varley-Campbell/Tri-Data Corporation.

United States Department of Homeland Security. (December, 2005). *Executive analysis of fire service operations in emergency management*. Emmitsburg, MD: author.

Vickson, T. (2001, February). Let the records show. *FireRescue Magazine, 19*, 59-62.

Walsh, D. (2006, April). Qualities that make a fire instructor memorable. *Fire Engineering, 159*, 121-126.

Ward, M. (2006). *Fire officer principles and practices*. Sudbury, MA: Jones & Bartlett Publishers and National Fire Protection Association.

Zigmont, J. J. (2007, January). Balancing requirements. Retrieved January 24, 2006 from http://www.firerescue1.com/Columnists/zigmont/articles/275518/