

REPORT TO THE
THREE PLATOON SUB-COMMITTEE
ON THE PSYCHOLOGICAL EFFECTS
OF FIRE FIGHTING
PREPARED BY
KENNETH A. FINLAY
FIRE CHIEF
CUMBERLAND, RI

Findings on the Psychological events of Fire Fighters.

Report from Chief Kenneth A. Finlay, Three- Platoon sub committee

September 15, 2015

Honorable Sub- Committee Chairman Frank Matta and fellow committee members:

The subcategory assigned to me was what psychological effects of a three platoon system would have on the members of the Cumberland Fire Department. While this issue is very complex and will be debated, the facts accompanying this report will construct the basis for my opinion.

The fact of a three platoon system has been discussed nationwide, and in some instances, is incorrectly reported. The hours are listed as 56, but investigations will find the department participates in a Kelley Day, (named after Edward Kelley, the Mayor of Chicago from 1933-1947 who lobbied for an additional day off to reduce the average hours to 48, Random Thoughts 8/1/2011.) The Fair Labor Standards Act was signed into law on June 25, 1938, by President Theodore Roosevelt (attached). Under the FLSA, fire fighters are allowed to work 212- hours a month before overtime compensation is mandated. A strict 56 hour week would place the employee available for 30 hours of overtime, immediately, without working an extra shift.*(Fair Labor Standards Act of 1938). The resulting archaic demand to increase the work schedule without compensation as well as violate federal law is intolerable.

So begins the analytical side of my research. The very existence in life is to feel fulfilled at the end of a project. The Cumberland Fire District is merely in its infancy of life, as a unit of protection for the residents of our Town. The members have endured a great deal of uncertainty, tumultuous comments and years worth of delays to finally arrive as a single entity. A collective bargaining agreement was established fairly through parameters set by RI State Law, (RI State Law 28.9.1) and concluded and ratified by the board. The advent of one person from town demanding a heinous change in work hours brinks on the ridiculous.

Shift work in itself is arduous on a relationship. In normal private sector 40 hour jobs, afternoon and night shifts have long been difficult to retain employees on. To add an additional 14 hours of work, of nonconventional hours will certainly have a detrimental effect on the

employee's home life, or to relate to the private sector, that would be working a seven- day week , eight hours a day, no day off(random thoughts attached). To add to the effect, sleep deprivation, which is a nightly occurrence in station life significantly increases the home life stress. Spouses should be educated in the work schedule, and the trauma that comes with the schedule, when involved in the relationship. The additional time away from home, the inability to share in special moments in a family activity, coupled with mischievous co-workers will add to the internal stress band. Like most bands, a breaking point comes, and when it does, multiple employees, families and leadership all become involved. (* From Leading the Team, Linda Willing, attached)

The stress factor of a firefighters job is concealed by our personalities. The five stress I will point out are:

1. The weight of responsibility that we bear is crushing. – There are a million things that can go wrong at any incident and we have to continue.
2. We are not born with the knowledge necessary to be good firefighters. –there is a word that creates knowledge – TRAINING
3. Fear of failure is the greatest unspoken fear that every firefighter carries with them. – a million scenarios play out before you and you question if you have what it takes to respond
4. We live with the knowledge that the risk of developing cancer is extremely high.- nobody wants to die
5. The things we see in this profession are worse than you could imagine.- Mentally preparing yourself to face death, disfigurement, madness, disease becomes the norm, and wears on your soul. (From 5 stresses firefighters deal with that non-firefighters should know, attached)

From the Journal of Social Change, 3, p38-56, we gather at various paragraphs the total effective studies of Dr. David Milen in the article The Ability of Firefighting Personnel to Cope With Stress

One hundred and fifteen firefighters participated in Dr. Milen study on “how to identify the effectiveness of coping strategies and resources that firefighters use to deal with personal and workplace stressors.” A report done by Clohessy & Ehlers in 1999, shows “ after involvement in a disaster or a traumatic incident, firefighting personnel may be at risk for acute stress

disorder leading to post traumatic stress disorder (PTSD). Firefighting personnel may experience increased rates of psychiatric symptoms, including depression, anxiety, loss of appetite, lack of sleep and constant worry or fear, after witnessing or experiencing a traumatic event. These symptoms can lead to a significant increase in psychiatric problems and may require personal intervention. Firefighting personnel are confronted with occupational and daily life stressors as they try to balance their work in life saving efforts with the needs and demands of family life. Even though they face stress every day, little is known how they cope.”

Currently, more than one million volunteer and 185,000 professional, full-time firefighters serve in more than 21,000 fire departments (Carter, 1998).

Naturally, fire departments are concerned about the effects of stress on the ability of firefighting personnel to function optimally. Firefighting personnel are impacted by mental exhaustion, a lack of medical attention during a fire, inappropriate driving at high rates of speed, interrupted sleep,

a lack of regular meals, and lengthy absences from home. As a result, firefighting personnel are at risk of experiencing psychological stress because of the demands of their profession. Firefighters do not have a uniform number of callouts throughout jurisdictions. Firefighting personnel in metropolitan areas may have a different workload from rural fire departments, which may experience significantly fewer emergency calls (Bowman, 1999). The amount of literature supporting the evidence of stress among firefighting personnel was obvious. Although much of the literature discussed environmental factors, physical fatigue, and other situations and conditions requiring assistance after a traumatic event, there was a lack of literature on the coping resources available to support firefighting personnel. The Coping Resources Inventory for Stress (CRIS) Scale was used to identify the coping strategies that firefighters and paramedics use to decrease stress. This measurement assesses firefighters’ coping strategies and identifies intrapersonal or interpersonal conditions within the environment that interfere with their health and well-being. The CRIS identifies the ability of firefighting personnel to deal with personal and workplace stressors.

Research Design and Approach

A quantitative, nonexperimental descriptive survey research design was used to investigate how firefighters use coping resources to deal with personal and workplace stressors. Descriptive research designs explore the

attributes of a group of participants and have the following limitations: (a) The findings are limited to the initial group being studied, (b) no generalizations can be made from the study, and (c) any similarities between the specific group being studied and another group cannot be assumed (Neutens & Robinson, 1997). Given the size of the sample (115 participants), time was a consideration. Personal interviews and focus groups, both of which are used in qualitative inquiry, are time-consuming and resource-intensive strategies. Moreover, the availability of an instrument that has been widely used and has an established validity and reliability was another reason that the researcher utilized a quantitative approach. The CRIS Scale, which is described in more detail later in the paper, has been used to assess stress in psychotherapy and training; it was adapted for use in this study (Matheny, Curlette, Aycock, Pugh, & Taylor, 1987).

Conclusion

The firefighting profession is a community service. Various political, social, and geographic factors have interfered with research opportunities, usually because researchers were not aware of any extant biases. The future challenge is to place prejudices aside, reduce the amount of bias in studies, and prevent distortion during the collection of data. Psychosocial research is more than studying traumatic events, personalities, and constricted instrumentation.

Studying stress can have cultural benefits and create correlations between past and present events in the lives of firefighting personnel. Understanding the culture prior to beginning new research on trauma and stress is important in making sense of one's surroundings. Firefighting personnel who may be experiencing a compromised physical health status and a lack of confidence to handle stress need to be respected and studied.

All referenced material is attached.

The Fire Department is not a normal 9-5 job, and punch out time is not the end of the day. The events of a work cycle can be comical and can be traumatic, increasing both by 34%, is a risk in the employees' health. (*Kirsti Marohn USA TODAY attached) The criticism, to date, that the employees have endured, is creating an environment that is cautiously being monitored by myself, Kenneth Finlay, as Fire Chief. The allegations and innuendos are certainly not creating an environment that is receptive to change, which has

to happen, in order for us to make strides into areas unexplored, and create successful new projects for the residents to participate.

The most recent study I could find was completed by Dr. Marianne Peso, "The Psychology of Firefighting" October 9, 2014. The first paragraph indicates the question "It is therefore not surprising that firefighters have been the subject of several lines of psychological investigation, especially as a model population for studies related to trauma and stress." The report goes on to state that between 33% and 41% of fire fighters report significant psychological stress. During a study of firefighters the cytokine levels were monitored, and it was discovered that a significant increase in the cytokine levels were produced after repeated work cycles. This increase is attributed to the body adapting to survive. Openness, conscientiousness, extraversion, agreeableness, neuroticism, known as the big 5 personality traits provide insight into a person becoming a firefighter. In addition it was found through survey that a desire to help others and a sense of community are prime motivators for becoming a firefighter.

In the book *Social Problems*, 2nd edition by Frank R. Scarpitti, numerous topics are addressed as related to the overall topic of public employees, and how the remonstrant's are attacking the well being of the response force. The first would be "Polling for problems" and is defined as "One perspective on identifying social problems is the consideration of individual perceptions of social conditions which are viewed as problematic"

Mr. Scarpitti's response to this allegation is found on page 4 of his book stating- *"Rarely is there universal consensus about the undesirability of any social condition, and the variation in individual attitudes return us to the arena of social controversies"*

The second would be "Correctable Conditions" and is defined as "A second approach defines social problems as conditions which decision makers view as undesirable and which they decide can be ameliorated by social action".

Mr. Scarpitti's response to this allegation is found on page 5 of his book stating " *Like the previous approach, this perspective largely ignores the fact that some opinions have greater weight than others. And, of course, it is largely these more influential opinions which determine whether ameliorative social action will be feasible*".

The third condition is Determining Negative Impact and is defined as "A broader perspective on social problems yields a more satisfactory definition.

Social problems are those which have a negative impact on individual and social well being, as demonstrated by sociological analysis of the organization and functioning in society”.

Mr. Scarpitti’s response to this allegation is found on page 6 of his book stating” *Does it have an undesirable impact on personal security, satisfaction, or happiness. Does it act to prevent individuals from achieving their potential? Does it restrict individual freedom or available opportunities to pursue certain goals? Does it impede the functioning of individuals in society or have a detrimental impact on the basic organization of the social system”?*

Mr. Scarpitti further states in his book “Because our society is stratified, and power, wealth and prestige are unevenly distributed, some groups are better able than others to shape institutions to serve their own interest.

This last statement has been applied against the Fire Districts and fire department members more prevalently and inappropriately than any other division in the Town. Researching of fact has been completed to refute the allegations, costing time for projects that could be more effective for the community. All public comments have a demoralizing effect on those associated with the unfounded allegations.

Does stress have a negative effect on a fire fighters mind? According to Boston .com Justine Hoferr, “Fire fighting ranked number one followed by enlisted military personnel, and military general. Last year it was third.” We are responsible for peoples lives, and must make street decisions (immediate decisions based on the situation encountered and make them correctly to mitigate the situation) that will create a life of memories. When does stress accumulate? When you know what has to be done, when the victim is yelling at you to do something, when you attempt to do something without the proper manpower, and when the outcome is not beneficial, and you are criticized for operating in the parameters the misinformed have dictated you work in. The current state of staffing is under target for departments operating in a progressive functioning manner. (attached). Of concern in relation to this proposal is the sleep depravation issue that will certainly have to be addressed. The general effects of longer work hours have been related specifically to stress and injury rate(Effects of sleep depravation IAFC) attached. Sleep depravation is one part of the scenario, for example-

get awoken by a horn, listen to the dispatch, think about the call while responding, administer necessary procedures, return to station , lay down and do it all over again. Try it .

The standard deployment practices outlined in National Fire Protection Association Standard 1710, calls for four man companies, if we did this with the three platoon system we would need 48 men on shift, same as what we have now. If you are maintaining the same number and paying each employee sixteen hours of overtime, where is the savings? We currently have a system that is effective, efficient and progressive, why ruin it , and risk having the same fate as Coventry with their insurance classification skyrocketing when a reduction to 36 members was implemented.

In closing, it is my opinion as the leader of the department and having invested forty two years of my life in the fire service, serving in all promoted ranks, contributing to three different departments, and achieving the Chief position in two departments, that the current schedule of a 42 hour four platoon system is the service that the residents of the Town deserve and best protects them. I have reviewed the presentation by others, and found some serious flaws in the documentation. The current four platoon system allows the members to participate in extra activities outside the response area, such as senior education, school based programs, assistance in sport programs, town wide involvement with activities for the residents to participate in enjoyably and safely, but most importantly it allows for the employees to feel respected for the service they provide. When the statements are concluded and the obvious is revealed, the overwhelming question will be – is the service that has been systematically built to be effective, that has grown with the town, and that meets the needs of the residents worth the minimum cost associated to provide for the needs of those in jeopardy? The response members have demonstrated an uncanny ability to adapt, overcome and provide, in many scenarios they are dispatched to, the one that is the most difficult is the assault on their character. Diminishing the work force will lead to adjustments in an employees life, that will not be beneficial to the residents of this great town.

5 Stresses Firefighters Deal With That Non-Firefighters Should Know About

Written by **Michael Morse**

Font Size **Print** **Email**

Rate this item

(49 votes)

Published in

Tags

OPINION

firefighter



BU Interactive News/Flickr

We love this job and thank the good fortune that was bestowed upon us that we ARE firefighters.

And what's not to love? We eat like kings, occasionally get paid to sleep and watch TV, have a home away from home and form friendships like no other. It's as good a life as anybody could expect.

We proudly display our union stickers on our cars, and most of us have a few fire department t-shirts in our wardrobe. The public respects us, and we have earned it. We know this, and believe in ourselves for the most part, but nothing in our lives is absolutely perfect. There is always the chance that something will happen that we have no control over. And it's those fears that keep us up at night.

Every firefighter holds a few secrets that they typically keep to themselves:

1) The weight of responsibility that we bear is crushing.



(NontrivialMatt/Flickr)

Maintaining the illusion of an aloof but invincible know-it-all, can-do firefighter is work. Believe it or not, we do it not for ourselves, but for those who depend on us. Firefighters are always on duty. There is no down time. The mind is never at rest. People depend on us to know what to do when they don't. There are a million things that could go wrong at any second, and firefighters are expected to perform. We keep this knowledge buried, for the most part, but it is always there.

2) We are not born with the knowledge necessary to be good firefighters.



(Zach Frailey - Uprooted Photographer/Flickr)

We have the aptitude for the job, but that's not enough. It needs to be nurtured and constantly challenged. There is a word for what needs to be done to ensure competence: **TRAINING!**

And training never ends. It is as constant as breathing. When a skill is learned, it needs to be re-learned at every available moment. There is always something new to perfect, and perfection is elusive. The training is the foundation that everything else depends upon.

Having the skills to perform embedded into you through repetition helps when the real deal comes your way. It is no guarantee that the lessons learned will magically appear when the opportunity presents itself. And when opportunity strikes, you will be expected to perform.

3) Fear of failure is the greatest unspoken fear that every firefighter carries with them.



(adewale_oshineye/Flickr)

We border on arrogance, saunter through town like we own the place, respond to emergencies with a “can-do” confidence and bask in the glow of public confidence. But in the middle of the night, when there is nobody but you and the thoughts that run through your mind, things are not so clear. A million scenarios play out before you; and you question whether or not you have what it takes to respond. The “what if” game knows no end:

- What if the train that usually rolls through town unnoticed de-rails, and a toxic cloud of chlorine gas and anhydrous ammonia escapes?
- What if the baby that normally sleeps through the night is found not breathing at three in the morning?
- What if a truck carrying scrap metal takes the Thurber’s Avenue Curve too quickly, and rolls onto a car full of college kids, trapping them, cutting them to shreds, and all you can do is

watch them bleed to death while the crane that will free them slowly creeps up Rt.95?

- What if the kid who decided to hang himself changed his mind at the last second, and you arrived a second too late?
- What if the fire is too hot, and a family of five burns to death three feet from where you stand, charged hoseline in hand, unable to get even one inch closer, and the echo of their screams is all that is left of them when you finally force the door?

Failure is not an option. There is no “nice try” in firefighting. There is success, and there is failure. Success is what makes firefighting great. Failure is soul-crushing, confidence stealing, character destroying misery — it's the greatest unspoken fear that every firefighter carries with them.

4) We live with the knowledge that the risk of developing cancer is extremely high.



(AMagill/Flickr)

Nobody wants to die. The myth that we will die so that others may live is just that, a myth. What we will do is take ridiculous chances at rescuing people — if, and only if, there is a chance we will come out alive. None of the firefighters that die in fires, collapses, accidents or explosions do so willingly. It is an insult to the integrity of life to think otherwise.

But die we do. Most often it isn't during a daring rescue, where images of a heroic firefighter are flashed across the screens of an adoring public. Most often we die alone, in bed, in agony, pain numbed by morphine, with a few people by our side, the ones that stayed with us during

the struggle, when the lights are gone, and the cameras no longer roll.

We die from cancer. The things that burn emit toxins that we breathe in long after the fire is out:

- The diesel fumes in the station that no Plymovent can capture.
- The million and one chemicals that are created when a car catches fire.
- The asbestos we breathe.
- The dust that settles in our lungs and on our skin.

5) The things we see in this profession are worse than you could imagine.



(Beacon Radio/Flickr)

Going to work knowing that there is a very good chance something will happen that will eat away at your soul becomes business as usual. Mentally preparing yourself to face death, disfigurement, madness and disease becomes the norm, while working or not. It eats away at your humanity, your compassion, and your ability to love freely and without guile. The feeling of impending doom will always be with you, consciously or subconsciously, it matters not; what does matter is how you handle it.

The toughest among us are actually not that tough at all, they are simply the healthiest. Those who joke about the dead, and make small of the mentally unstable are those of us who suffer the most, and disguise their hurt with bravado. The rest of us just cope, and get through each day the best we can.

Firefighting is more than a way to make a living. It's a way of life. But nothing in life is free. Even those who are fortunate enough to have the greatest job in the world know the price we pay, but for the benefit of those we love and those we protect and serve, **we keep it to**

ourselves.

And it's killing us, slowly but surely.

The Ability of Firefighting Personnel to Cope With Stress

David Milen¹

The purpose of this study was to identify the effectiveness of the coping strategies and resources that firefighters use to deal with personal and workplace stressors. One hundred and fifteen firefighting personnel from 4 fire departments in Illinois and Indiana participated. The Coping Resources Inventory for Stress (CRIS) Scale measured stress levels and coping strategies. The results showed that firefighters who were not physically fit, who lacked social support, and who were unable to control tension and structure daily activities experienced feelings of low confidence. The findings from this study can provide fire department administrators and company officers with ways to address stress in the ranks of the fire department. Future research should be conducted to identify the workplace and personal stressors of firefighting personnel and develop interventions to combat these stressors.

Key Words: Fire fighters, stress, coping, emergency personnel, paramedics, emergency medical technicians, coping strategies, tension, social support, black humor, internal stress, external stress.

Introduction

Firefighting personnel experience stress each day in their work settings. Their ability to cope with stress affects their capacity to function effectively in emergency situations. Society has a stake in the ability of firefighting personnel to carry out their responsibilities effectively. Given the threat of natural disasters, the threats from terrorist attacks, mass casualties, and major environmental incidents, society depends on the services of firefighting personnel who work long hours with little relief in these situations. Fire departments and the personnel working in those settings need to understand the stress involved and identify and develop effective coping strategies.

Since the attacks in Oklahoma City, the Twin Towers, and the Pentagon, fire departments have seen the extreme effects of stress on firefighting personnel. One study has now contributed to the understanding of life changes in response to the physical and psychological stress experienced by firefighting personnel after these attacks (North et al., 2002). Even before these infamous attacks, Galloucis, Silverman, and Francek (2000) recognized that stress has a negative impact on an individual's ability to function. Physical and psychological life stressors compound the occurrence of major illnesses, including cancer, diabetes, leukemia, and myocardial

¹ Dr. David Milen is a part-time faculty member in Walden University's School of Public Policy and Administration. He can be reached at david.milen@waldenu.edu

infarctions. In addition, psychological distress is prevalent among individuals who have experienced a traumatic life event (Rabkin & Struening, 1976).

A number of researchers (e.g., Baker & Williams, 2001; Regehr, Hill, & Glancy, 2000; Surratt, 2001) have examined the possible relationship between stress and cognitive functioning among emergency services personnel. Regehr et al. described the symptoms among emergency care workers ranging from depression and a lack of cognitive functioning to second-guessing judgment on an emergency scene. They also found that emergency personnel have recurring nightmares, flashbacks, and loss of appetite after responding to traumatic incidents.

Firefighting personnel also are exposed to stressful situations; traumatic incidents; and environmental extremes, such as heat, cold wind, and noise, all of which require adaptive measures (i.e., personal coping strategies; Lazarus & Folkman, 1984). Working under adverse conditions may increase the amount of stress that firefighting personnel experience while they are performing emergency work on scene. For example, the Cerritos air crash of 1986 was a mass casualty event that caused extreme stress and psychological distress among the firefighting personnel who responded to the scene (Hokanson & Wirth, 2000).

Theorists have studied stress for many years. Orner (1995) studied the effects of stressors and distressors on firefighters and ambulance personnel. Orner found that firefighting personnel experience negative thoughts, depression, and intrusive and adverse psychological reactions, depending on the duration of exposure to a traumatic incident. Other factors that affect firefighting personnel include the size of a fire being fought; the amount of time fighting a fire; and being witness to child abuse, murders, mass casualties, and infant deaths.

After involvement in a disaster or a traumatic incident, firefighting personnel may be at risk for acute stress disorder leading to posttraumatic stress disorder (PTSD). Firefighting personnel may experience increased rates of psychiatric symptoms, including depression, anxiety, loss of appetite, lack of sleep, and constant worry or fear, after witnessing or experiencing a traumatic event. These symptoms can lead to a significant increase in psychiatric problems and may require professional intervention (Clohessy & Ehlers, 1999). Firefighting personnel are confronted with occupational and daily life stressors as they try to balance their work in life-saving efforts with the needs and demands of family life. Even though they face stress every day, little is known about how they cope.

The data collected from firefighting personnel working in the very intense environments

of Oklahoma City and New York City have contributed to the knowledge related to their ability to cope with stress. Those two incidents, however, are not typical of the situations that firefighting personnel face daily. Society has a vested interest in understanding how most firefighting personnel cope with stress because these men and women protect communities, schools, businesses, and homes.

Currently, more than one million volunteer and 185,000 professional, full-time firefighters serve in more than 21,000 fire departments (Carter, 1998). Naturally, fire departments are concerned about the effects of stress on the ability of firefighting personnel to function optimally. Firefighting personnel are impacted by mental exhaustion, a lack of medical attention during a fire, inappropriate driving at high rates of speed, 24-hr shifts, interrupted sleep, a lack of regular meals, and lengthy absences from home. As a result, firefighting personnel are at risk of experiencing psychological stress because of the demands of their profession. Firefighters do not have a uniform number of callouts throughout jurisdictions. Firefighting personnel in metropolitan areas may have a different workload from rural fire departments, which may experience significantly fewer emergency calls (Bowman, 1999).

Theoretical Framework

The central themes expressed in Lazarus and Folkman's (1984) theory of stress and coping focused on stress transitions, social change, and the ways in which people cope with them effectively. Environmental stressors and ecological factors may increase the amount of stress that individuals experience (Lazarus & Folkman, 1984). Previous research has identified the relationship between stress and the environment. For example, Altman and Wohlwill (1977) theorized that levels of stress are dependent upon the combined impact of environmental, social, and physical stressors. Lazarus (1966) further emphasized that phenomena in the environment (e.g., extreme weather conditions) may lead to the development of stressors. For example, an environmental incident may cause a positive or a negative outcome for the person involved; however, stress may still be the outcome (Holmes & Masuda, 1974).

The theory of stress and coping stressors was first identified in the earlier work of Lazarus and Cohen (1977). They identified three types of stressors:

1. **Mass casualty stressors** (e.g., natural disasters, major catastrophes, incarceration, and other uncontrollable phenomena) affect a large number of people or victims.

2. **Major changes** affect a single person or a group of people. In this case, a disaster may impact one person or a group of people, but the event is not as disturbing.
3. **Daily hassles** are the small, day-to-day situations or events that irritate or distress people. Examples include a sick pet, too much responsibility, and loneliness.

Firefighting personnel may experience one or all of these stressors during an emergency or afterwards.

Firefighting personnel use diverse methods to combat stressors. Lazarus and Folkman (1984) defined coping as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Their theory conceptualizes that coping is a process that a person employs to handle stressors. An individual who is dealing with a stressor may cope through self-atomization, that is, the person adapts to the stressor and does not require psychological effort to do so. Another method of coping is to assume that a situation will turn out for the better, regardless of how bad the current conditions may be.

Coping styles may range from attempting to minimize the stressor, accepting presently stressful conditions, or trying to control the stressful environment around the situation (Lazarus & Folkman, 1984). Klinger (1977) echoed this model by suggesting that individuals experience increased concentration and effort while first responding to a stressor. However, anger and frustration may occur if the stressor persists, eventually leading to depression, feelings of hopelessness, and negative thoughts. Lazarus and Folkman’s theory of stress and coping identified ways in which individuals are affected in the environment by stressors, how they encounter life’s daily stressors, and how coping styles may be differentiated depending on the situational aspects of the stressors. These techniques, which can be manipulated into the environment of the firefighting profession, served as the foundation of this study.

Literature Review

The literature review included studies that focused on (a) the affect of internal and external sources on firefighters’ cognitive abilities, and (b) the ability of firefighters to cope with the stressors that they face while on the emergency scene and after the emergency has subsided. Classic and recent studies regarding cognitive ability and coping methods were compared and contrasted.

Strategy for Searching the Literature

Thirty-six literature citations on firefighters' ability to cope with stress were identified. Not all of the literature pertained to firefighters; some included emergency workers and isolated incidents. After an initial search of the databases, the researcher used firefighting, emergency medical technician, and paramedic as the primary keywords to find other related journal articles mentioning firefighters, coping abilities, and the ways in which coping abilities are related to stress. Other subtopics, such as humor, substance abuse, physical fitness, music, critical incident stress management (CISM), and critical incident stress debriefing (CISD) also were searched. Several of the subtopics yielded few results; however, the researcher did find several current and relevant articles on CISM and CISD. The same search identified lists of references and materials that the researcher subsequently used to support this study.

Work-Related Stress

Other work-related factors can lead to stress, distress, and burnout. The contributions of unrelenting ambient noise, role ambiguity, uncertainty of one's job performance, and hazardous work environments may contribute to intrapersonal conflict (Maslach, 1982). Firefighting personnel may experience physical and emotional problems after returning from an emergency call or returning home for 48 hours. For example, secondary trauma is a concept that describes the effects of stress experienced by public health workers involved with traumatized individuals (Figley, 1995). The workers will visualize, conceptualize, and revisit the scene of an accident through the details told by another person. Sleep disturbances, illusive imagery, a change in attitude toward the world, and arousal are signs and symptoms of secondary trauma (Chrestman, 1995).

Hume (1966) noted that firefighting personnel experience emotional empathy, the process of sharing the experiences and feelings of another. This finding was supported by Carlier, Lamberts, and Gersons (2000), who concluded that police personnel who have to deal with rape victims, cases of abuse, murders, and other traumatic incidents are more likely to experience a higher incidence of PTSD. In their qualitative study, Fullerton, McCarroll, Ursano, and Wright (1992) concluded that firefighters have an increased likelihood of experiencing psychological distress because they identify with the victims of traumatic incidents.

The amount of literature supporting the evidence of stress among firefighting personnel was obvious. Although much of the literature discussed environmental factors, physical fatigue,

and other situations and conditions requiring assistance after a traumatic event, there was a lack of literature on the coping resources available to support firefighting personnel. The Coping Resources Inventory for Stress (CRIS) Scale was used to identify the coping strategies that firefighters and paramedics use to decrease stress. This measurement assesses firefighters' coping strategies and identifies intrapersonal or interpersonal conditions within the environment that interfere with their health and well-being. The CRIS identifies the ability of firefighting personnel to deal with personal and workplace stressors.

Research Design and Approach

A quantitative, nonexperimental descriptive survey research design was used to investigate how firefighters use coping resources to deal with personal and workplace stressors. Descriptive research designs explore the attributes of a group of participants and have the following limitations: (a) The findings are limited to the initial group being studied, (b) no generalizations can be made from the study, and (c) any similarities between the specific group being studied and another group cannot be assumed (Neutens & Robinson, 1997).

Given the size of the sample (115 participants), time was a consideration. Personal interviews and focus groups, both of which are used in qualitative inquiry, are time-consuming and resource-intensive strategies. Moreover, the availability of an instrument that has been widely used and has an established validity and reliability was another reason that the researcher utilized a quantitative approach. The CRIS Scale, which is described in more detail later in the paper, has been used to assess stress in psychotherapy and training; it was adapted for use in this study (Matheny, Curlette, Aycock, Pugh, & Taylor, 1987).

Population, Setting, and Sample

The target population for this study included all firefighting personnel working in small or midsized fire departments in the Midwest. According to the definition of fire department size used in this study, the maximum number of firefighting personnel in small fire departments is 50; the maximum in midsized departments is 200 firefighting personnel. Four fire departments were selected as the setting for this study. Three were classified as small fire departments, and one was classified as midsized. The departments, all of which were urban and rural entities located in northern Illinois, northwestern Indiana, and southeastern Indiana, were representative of small

and mid-sized fire departments in the Midwest. The departments had between 40 and 200 firefighting personnel serving areas with populations of 50,000 to 100,000 people.

The convenience sample included all firefighting personnel employed by the four fire departments in this study. Each department employs males and females who are exposed regularly to tragedy, traumatic events, and daily life stressors. The firefighting personnel are stationed throughout their respective cities or towns and are required to remain at their assigned stations for 24-hr shifts. The firefighters perform all tasks and duties together because the departments function as autonomous units.

Instrumentation

The CRIS Scale measures six concepts to assess a person's coping resources. Form B comprises 120 questions that measure the concepts of physical health, tension control, structuring, social support, acceptance, and confidence (Matheny et al., 1987). Each concept is measured by 20 questions. The second part of the survey collects demographic data. For the purposes of this study, the researcher utilized this part to describe the characteristics of the sample. The objective was to develop a group profile for each fire department (Matheny et al., 1987). The resources can pinpoint areas of weakness and deficits within specific groups, thus allowing the firefighters to choose selected areas of training to strengthen areas that may be deficient.

The CRIS comprises yes/no responses. Each variable, which is dichotomous because it has only two categories, is nonorderable and discrete. Numeric values are assigned to each of the 120 questions (6 concepts x 20 questions per concept): zero for no response, 1 for a yes response, and 2 for a no response. The responses from each section indicate the strength of the respondent's coping resources.

Data Collection

CRIS booklets and scan forms were obtained from Matheny et al. (1987), the developers of the instrument. Once the materials were received, they were organized into individual packets: informed consent forms, directions for taking the CRIS, booklets, scan forms, and pencils. The packets, flyers, and a locked box were delivered to each of the four fire departments. The participants were able to pick up the packets, which were located on a table beneath the flyer,

and complete the survey at their convenience. The completed surveys were placed in the locked boxes, and only the researcher had keys to the boxes. The participants completed the survey individually, in a group in one location at the firehouse, or at home. The participants were informed of the reason for the study and the intended use of the results, and they were assured that the researcher would share the results with them upon completion of the study. The completed CRIS booklets were collected from the locked boxes over the course of 3 working days. Because the participants worked 24-hr shifts, this schedule facilitated the collection of the CRIS from three different groups of firefighting personnel while each group was working a 24-hr shift.

Analysis of the Results

The scores for the six concepts were calculated using mean scores, standard deviations (SD), Pearson Product Moment Correlations, and *t* tests. As mentioned previously, Form B of the CRIS Scale comprises 120 questions that measures six concepts: physical health, tension control, structuring, social support, acceptance, and confidence (Matheny et al., 1987). Each concept is measured by 20 questions. The Scale uses a 3-point Likert scale to measure the responses: 0 (*no response*), 1 (*yes*), and 2 (*no*). Fifty-four questions were yes responses, and 66 were no responses, giving a total of 186 points. The combination of correct yes and no responses in each section indicated the strength of the coping resources. A higher score indicated more positive coping strategies.

The survey also collected demographic data from the participants to develop group profiles for the four participating fire departments (Matheny et al., 1987). The demographic section included five items: gender, age, race and ethnic group, marital status, and occupational status. All of the firefighting personnel who completed the survey were males. Because of the small number of females who are professional firefighters, the researcher assumed that these male participants accurately represented the target population.

Scores on Six CRIS Concepts

The concept of **physical health**, which showed that daily life activities were not affected and disabilities were few, showed a mean score of 39.46 for the firefighters. This score fell below the mean score of 75.65 in Table 1. This score indicated a low level of physical activity

and healthy perceptions.

The concept of **tension control** in this research showed a mean score of 49.26 for the firefighters. The mean score of 56.15 indicated a lack of coping skills among the firefighting personnel and their ability to lower their stress levels.

The concept of **structuring**, or having the capabilities of time management, setting goals, planning, and using one's self energy to schedule daily tasks, showed a mean score of 51.91 for the firefighters. In this instance, the firefighting personnel had scored below the mean of 69.85, which revealed that planning, goal setting, and using self-motivated energy were low among the departments.

The concept of **social support**, or having a loving relationship with someone; the availability of family members, friends; and the ability to confide in someone, showed a mean score of 53.91 for the firefighters. The score fell below the average mean score of 75.65. Social support from friends, family, and coworkers fell far below the mean average.

The concept of **acceptance**, not expecting too much from oneself, measures how a participant views the world, environment, and surrounding circumstances. The mean score of 53.04 placed the firefighting personnel below the mean score of 54.60, indicating that the participants had difficulty accepting shortcomings in life, were perfectionists, and generally had a negative view on life.

The concept of **confidence**, or coping with situations better than most people and coping with daily life stressors, showed a mean score of 40.91 for the firefighters. In comparing this result with the mean score of 67.2, firefighting personnel scored significantly lower in coping with daily life stressors.

Firefighting personnel, in terms of the data collected here, use fewer resources when coping with stressors and putting problems and concerns into perspective. They had a negative outlook on succeeding.

Table 1

Means and Standard Deviations of Firefighting Personnel Versus CRIS Database

Concepts	Firefighting personnel*	CRIS database**	
	<i>M</i>	<i>M</i>	<i>SD</i>
Physical health	39.4	75.6	9.48
Tension control	49.2	56.1	11.82
Structuring	51.9	69.8	11.75
Social support	53.9	75.6	10.43
Acceptance	53.0	54.6	10.75
Confidence	40.9	67.2	10.93

Note. These concepts were adapted from the original CRIS manual developed by Matheny et al. (1987)

**N* = 115

**CRIS database = 814

Correlations

For the purposes of this study, the correlation represented a single number from each concept describing the degree of the relationship between variables. Table 2 shows the correlations and relationships between confidence and the other five concepts. The confidence concept was the strongest indicator of the coping resources in the CRIS concepts. Confidence was one of the most frequently used concepts identified by the firefighting personnel to combat stress. Comparing the other data against the confidence concept was an indication of how other coping resources were performed. The research calculated the correlations using the Pearson product moment correlation.

Even though Pearson's *r* coefficient showed, for example, confidence and acceptance at .390980, the coefficient did not show a strong linear association. However, there was a moderate linear association with the scores. In this study, the correlations that were closer to zero showed no significant relationship among the concepts. For example, Confidence and Social Support did not have a strong correlation. On the other hand, Confidence and Acceptance had a stronger positive correlation, but this correlation did not imply a significant relationship between them.

t Tests

For the purposes of this study, the *p* value was assumed to be .05. The number of participants (115) was used to calculate each value from the correlations and standard deviations. Table 2 shows the *t*-test scores in the six concepts, with *p* = .05.

Table 2

Pearson Correlations of CRIS Scores Among Firefighting Personnel

Concepts	Correlations	<i>t</i> -test scores
Confidence vs. acceptance	.32	3.5
Confidence vs. physical health	.39	4.4
Confidence vs. tension control	.14	1.5
Confidence vs. structuring	.17	1.8
Confidence vs. social support	.03	.38

Data Analysis

During the analysis process, data were obtained from a national sample of CRIS respondents. Comparative means and standard deviations were calculated for both the current study sample and the national sample. Further analysis was done using the unpaired *t* tests to compare the means of the two groups. There was statistical significance, but one might question whether it was significantly important. Table 3 shows the results of the unpaired *t* test.

Table 3 is divided into several parts. Using raw data obtained at two points in time from two sample groups, the researcher obtained means and standard deviations for the six concepts of the CRIS. The standard deviations of these concepts were compared in an unpaired two-tailed *t* test with $p < .05$ to determine whether there was a statistical significant difference

Table 3

Unpaired t-Test Results

	Firefighting personnel*	CRIS database**	Firefighting personnel	CRIS database	
Concepts	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i> value
PH	39.4	9.4	75.6	20.0	19.1
TC	49.2	11.8	6.1	26.0	2.8
Struct	51.9	11.7	69.8	22.9	8.2
SS	53.9	10.4	75.6	23.2	9.8
AC	53.0	10.7	54.6	23.8	0.71
CN	40.9	10.9	67.2	27.4	10.1

**N* = 115

**CRIS database = 814

 $p < .05$ **Summary of the Results**

Firefighting personnel scored below the mean CRIS Scale score in the national database categories nationwide. The demographic results indicated that the participants were professional, White, male fire firefighters with a mean age of 38. The results indicated that the firefighting personnel's strengths were lacking in all of the categories. The data also inferred that the

firefighting personnel's use of coping resources in tension control and acceptance were close to the national mean scores in each category. The firefighting personnel in this study scored below the means of the norm group on the six concepts.

Discussion of the Findings

The firefighting personnel in this study used six coping resources. As mentioned previously, their responses on the CRIS fell below the means in all of the concepts. The findings supported the literature, namely, that firefighting personnel are lacking in their use of coping resources to combat stress. In addition, exposure to various extreme weather conditions (e.g., heat, cold, humidity, wind) imposes adaptational measures that individuals may need to use (Lazarus & Folkman, 1984). Baker and Williams (2001) found negativity among firefighting personnel's attitudes in their desire to work, lack of camaraderie, and negative thoughts toward administration as the result of their exposure to stressful events.

The findings supported the literature that firefighting personnel are not physically fit enough to perform their work activities. The low mean score of 39.4 (physical health) indicated that the participants' daily life activities were affected by poor health and inactivity that may be a consequence of heart conditions, diabetes, disabilities, and other illnesses.

Lazarus and Folkman (1984) suggested that environmental stressors and ecological factors together may increase the amount of stress that an individual experiences. Previous research has identified a link between stress and the environment. For example, Altman and Wohlwill (1977) theorized that stress is dependent upon the combined impact of environmental, social, and physical stressors.

The findings supported the literature that firefighters have limitations in their tension control. The participants in this study did not feel confident in coping with stressors in their professional and daily lives. The score ($M = 49.2$, $SD = 11.8$) indicated that the firefighting personnel in this study had difficulty coping with tension. Stress levels interfered with their performance while they were responding to emergencies.

The findings derived from the concept of structuring supported the literature that firefighting personnel lack the coping resources to manage, organize, and set limits. The results suggested that firefighting personnel are limited in their ability to organize and time manage their schedules.

The findings supported the literature that a lack of social support from family members, peers, and coworkers is another lost coping resource for firefighting personnel. The lack of social support may be the result of stress, negativity, and the unwillingness of firefighting personnel to speak about incidents that happen at work and in daily life.

Coping styles may include attempts to minimize the stressors, accept stressful conditions, and then try to control the stressful environments around the situations (Lazarus & Folkman, 1984). The findings supported the literature that firefighting personnel, given their profession, have difficulty accepting others, accepting others with different personalities, and accepting frustrations in life. The firefighting personnel in this study had a negative outlook on succeeding professionally or life in general.

Cassidy and Dillon (1997) contended that problem-solving factors are directly related to frequency of illness, overall physical health, and psychological well-being. Baker and Williams (2001) concluded that some of the highest psychological distress scores are obtained by firefighting personnel, who have low self-appraisal, and those who have higher levels of occupational organizational stress. Their findings also suggested a lower level of distress among firefighting personnel who are able to cope with future problem situations. The firefighting personnel in this study lacked confidence in their coping resources. They were unable to put problems and concerns into perspective, cope with arising situations, and handle the outcomes.

Correlations and t-Test Results

According to Matheny et al. (1987), confidence is a major influence in an individual's ability to cope with stress and an important coping resource overall. The correlations and *t* tests indicated either no significant linear association or moderate linear association among the firefighting personnel's coping resources. Confidence, acceptance, and physical health showed moderate linear associations. The values indicated associations among the firefighting personnel's confidence, physical health, and acceptance. Thus, confidence indicated that physical health and acceptance were moderately associated. Confidence, tension control, structuring, and social support had no significant linear association in this study. The firefighting personnel's confidence did not affect the tension that they experienced professionally or privately. The findings supported the literature that firefighting personnel have limitations in tension control and that stress levels interfere with performance while responding to emergencies.

Implications for Social Change

The standard organizational structure of fire departments has been in place for more than 150 years, yet it has not addressed social change. The fire service continues to rely on tactical approaches to advancement and promotion within the field (i.e., hands-on experience only, limited or no education). A new philosophy in the selection of company officers who have a combination of experience and education is necessary to address social change. The impact of 9/11 set a precedent for fire departments and emergency service personnel to follow.

The complexity and demands of work, political influence, funding issues, and scheduling increase the pressure and stress on firefighting personnel in their professional and private lives. Better training, education, career counseling, and managerial duty updates will assist fire departments in their efforts to address social change. Firefighting personnel should have access to physical activity in fire stations, confidence-building social support from other firefighting personnel, and group cohesiveness from their own crews to help to reduce stress. Further training should include rapid intervention teams; intercollaboration with hospital administration, staff, and personnel training; attendance at training sessions for national incident management systems, and updated paramedic and emergency medical technician training in the field.

More training and increased fire department personnel involvement will lead to positive social change within fire departments, including group work, groupthink, and the ability to learn prior to firefighting and medical emergencies. Although their working environment may be extremely dangerous, adequately trained firefighting personnel will be able to provide a greater standard of care to the community, develop their skills, and assist in extreme emergencies. Life-saving skills and regular training sessions will promote positive changes in firefighting techniques and demonstrate the competence of firefighting personnel to the community and residents.

The findings from this study are important because they will help firefighting personnel to recognize stress and think about the strategies that they currently utilize to cope with stress. The more effective coping resources they have and use, the more they can reduce memory disturbances, amnesia, confusion, and poor abstract thinking while responding to emergencies. Increasing their use of effective coping resources will help to decrease their feelings of guilt, frustration, depression, irritability, and emotional instability. Officers within fire departments

may become more able to recognize the symptoms of distress and burnout experienced by firefighting personnel.

Firefighting personnel experience stress in their work settings every single day, so their ability to cope with stress affects their capacity to function effectively when they respond to emergencies. Society has a stake in the ability of firefighting personnel to carry out their responsibilities effectively. Given the threat of natural disasters, the ongoing threats of terrorism, mass casualties, and major environmental incidents, society depends on the services of firefighting personnel, who often work long hours with little relief. Fire departments and the personnel working in those settings need to understand the stress involved in their profession and identify effective coping strategies to deal with it.

Recommendations for Action

Although there are no simple solutions regarding the use of more effective coping resources for firefighting personnel, the researcher will attempt to offer several recommendations. A physical fitness program for firefighting personnel may stimulate interest in maintaining a healthy lifestyle. Participating fire departments may communicate with nearby health clubs to determine their willingness to offer discounted rates for firefighting personnel who want to participate in health programs. Such programs could be designed to meet the lifestyles of firefighters, including time, duration, and location in relation to the domicile.

Low-cost activities such as physical firefighter training; Firefighters' Challenge; or intradepartmental, physically challenging activities also may be considerations to stimulate physical activity and interest. External support could be solicited from health clubs, community organizations, or sports clubs as an incentive to maintain physical health. The fire department could promote healthy activities to address relevance concerning stress in activities relevant to the firefighting personnel's professional and private lives.

Identifying the factors leading to stress and solving these concerns through group interaction strategies may be beneficial to firefighting personnel. Group cohesiveness may assist all members of the group to achieve a sense of welfare, contribute to higher group attendance, and create a higher level of interaction. Sharing information within the group can stimulate insight into firefighting personnel's stress, address others who have similar feelings and have experienced similar situations, and assist in problem solving where needed.

Firefighting personnel who lack confidence or who feel that their professional efforts are not worthwhile may feel that this part of the group will help them to overcome their negative feelings. The ability of firefighting personnel to disclose their concerns may give them the strength and encouragement to address their stressors concerning lack of confidence.

Fire department personnel, administration, and public officials should consider establishing programs to benefit firefighting personnel physically and psychologically. The need for community input and interaction with fire departments is imperative to the success of these programs. The community must become aware of the dangerous working conditions that firefighting personnel experience, understand how stress is related to their professional and daily lives, and think about possible solutions to physical and psychological stressors. A firefighter fitness and wellness program designed either by administration or a medical facility may benefit firefighting personnel physically and psychologically. Discussions about healthy lifestyle, annual physicals, and voluntary immunization plans for specific communicable diseases would assist firefighting personnel in enhancing their daily activities as well as providing protection against occupational hazards. The community may participate in Fire Prevention Week activities to become familiar with firefighting personnel's daily duties and responses to sometimes dangerous emergencies.

Implications for Future Research

Using a dual instrument, for example, the Beck Depression Inventory (BDI), would be beneficial to compare against the CRIS instrument. The BDI, which emphasizes cognitive signs of depression through a 21-item Likert format of responses (0 to 3), may be compared to the coping resources used by firefighting personnel and the CRIS. Several research questions were generated from the findings:

1. Would this study render the same results in other geographical regions?
2. Are social problem-solving models beneficial to the fire service and the coping resources used by firefighting personnel?
3. Would a reduction in the average working hours of firefighting personnel decrease the number of stressors that they experience?

4. If the CRIS Scale were used in its entirety (280 questions and 15 categories), would the results be different between incident-related stressors and in-house-related stressors?

A study comparing the stressors from the CRIS and the BDI concerning firefighting personnel's psychosocial stress, self-esteem, self-worth, and perception of the working environment will contribute to the literature.

Conclusion

The firefighting profession is a community service. Various political, social, and geographic factors have interfered with research opportunities, usually because researchers were not aware of any extant biases. The future challenge is to place prejudices aside, reduce the amount of bias in studies, and prevent distortion during the collection of data. Psychosocial research is more than studying traumatic events, personalities, and constricted instrumentation. Studying stress can have cultural benefits and create correlations between past and present events in the lives of firefighting personnel. Understanding the culture prior to beginning new research on trauma and stress is important in making sense of one's surroundings. Firefighting personnel who may be experiencing a compromised physical health status and a lack of confidence to handle stress need to be respected and studied.

References

- Altman, I., & Wohlwill, J. G. (Eds.). (1977). *Human behavior and environment: Advances in theory and research*. New York: Plenum.
- Baker, S., & Williams, K. (2001). Short communication: Relation between social problem solving, appraisals, work stress, and psychological distress in male firefighters. *Stress and Health, 17*, 219-229.
- Bowman, M. (1999). Individual differences in posttraumatic distress: Problems with the *DSM-IV* model. *Canadian Journal of Psychiatry, 44*, 21-33.
- Carlier, I., Lamberts, R., & Gersons, B. (2000). The dimensionality of trauma: A multidimensional comparison of police officers with and without posttraumatic stress disorder. *Psychiatric Research, 97*, 29-39.
- Carter, H. (1998). *Fire fighting strategy and tactics*. Oklahoma City: Oklahoma State University.

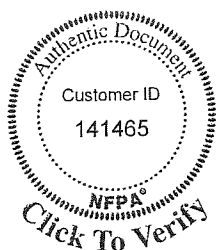
- Cassidy, T., & Dhillon, R. (1997). Type A behaviour, problem-solving and health in male and female managers. *British Journal of Health Psychology*, 2, 217-227.
- Chrestman, K. (1995). Secondary exposure to trauma and self-reported distress among therapists. In B. Stamm (Ed.), *Secondary traumatic stress: Self-care issues for clinicians, researchers, and educators* (pp. 29-36). Lutherville, MD: Sidran.
- Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, responsive to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, 38, 251-265.
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In C. R. Figley (Ed.), *Compassion fatigue* (pp. 1-20). New York: Brunner/Mazel.
- Fullerton, C., McCarroll, J., Ursano, R., & Wright, K. (1992). Psychological responses of rescue workers: Firefighters and trauma. *American Journal of Orthopsychiatry*, 62, 371-378.
- Galloucis, M., Silverman, M. S., & Francek, H. M. (2000). The impact of trauma exposure on the cognitive schemas of a sample of paramedics. *International Journal of Emergency Health*, 2, 5-18.
- Hokanson, M., & Wirth, B. (2000). The critical incident stress debriefing process for the Los Angeles County Fire Department: Automatic and effective. *International Journal of Emergency Mental Health*, 2, 249-257.
- Holmes, T. H., & Masuda, M. (1974). Life changes and illness susceptibility. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects* (n.p.). New York: Wiley.
- Hume, D. (1966). *Enquiries concerning the human understanding and concerning principles of morals* (2nd ed.). Oxford, England: Clarendon Press. (Original work published 1777)
- Klinger, E. (1977). *Meaning and void*. Minneapolis, MN: University of Minnesota Press.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Lazarus, R. S., & Cohen, J. B. (1977). Environmental stress. In L. Altman & J. F. Wohlwill (Eds.), *Human behavior and the environment: Current theory and research* (n.p.). New York: Plenum Press.
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Maslach, C. (1982). *Burnout: The cost of caring*. Englewood Cliffs, NJ: Prentice-Hall.
- Matheny, K., Curlette, W., Aycock, D., Pugh, J., & Taylor, H. (1987). *Coping resources inventory for stress manual*. Atlanta, GA: Health Prisms.

- Neutens, J., & Robinson, L. (1997). *Research techniques for the health sciences* (2nd ed.). Needham Heights, MA: Viacom.
- North, C. S., Tivis, L., McMillen, J., Pfefferbaum, B., Spitznagel, E., Cox, J., et al. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry*, 159, 857-860.
- Orner, R. (1995). Intervention strategies for emergency response groups: A new conceptual framework. In S. Hobfall, S. & M. de Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 499-521). Amsterdam: Kluwer Academic.
- Rabkin, J. G., & Struening, E. L. (1976). Life events, stress, and illness. *Science* 1976, 194, 1013-1020.
- Regehr, C., Hill, J., & Glancy, G. (2000). Individual predictors of traumatic reactions in firefighters. *Journal of Nervous and Mental Disorders*, 188, 333-339.
- Sirratt, D. (2001). The relationship of occupational stressors and burnout on PTSD symptoms of emergency personnel. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 62, 2965.

NFPA® 1710

Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments

2010 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA DOCUMENTS

NOTICE AND DISCLAIMER OF LIABILITY CONCERNING THE USE OF NFPA DOCUMENTS

NFPA[®] codes, standards, recommended practices, and guides, including the documents contained herein, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in its codes and standards.

The NFPA disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on these documents. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making these documents available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using these documents should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of these documents. Nor does the NFPA list, certify, test, or inspect products, designs, or installations for compliance with these documents. Any certification or other statement of compliance with the requirements of these documents shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

ADDITIONAL NOTICES AND DISCLAIMERS

Updating of NFPA Documents

Users of NFPA codes, standards, recommended practices, and guides should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of Tentative Interim Amendments. An official NFPA document at any point in time consists of the current edition of the document together with any Tentative Interim Amendments and any Errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of Tentative Interim Amendments or corrected through the issuance of Errata, consult appropriate NFPA publications such as the National Fire Codes® Subscription Service, visit the NFPA website at www.nfpa.org, or contact the NFPA at the address listed below.

Interpretations of NFPA Documents

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing Committee Projects shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

Patents

The NFPA does not take any position with respect to the validity of any patent rights asserted in connection with any items which are mentioned in or are the subject of NFPA codes, standards, recommended practices, and guides, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on these documents. Users of these documents are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

NFPA adheres to applicable policies of the American National Standards Institute with respect to patents. For further information contact the NFPA at the address listed below.

Law and Regulations

Users of these documents should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

The documents contained in this volume are copyrighted by the NFPA. They are made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making these documents available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to these documents.

Use of NFPA documents for regulatory purposes should be accomplished through adoption by reference. The term "adoption by reference" means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA documents, contact NFPA at the address below.

For Further Information

All questions or other communications relating to NFPA codes, standards, recommended practices, and guides and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA documents during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, Quincy, MA 02169-9101.

For more information about NFPA, visit the NFPA website at www.nfpa.org.

Copyright © 2009 National Fire Protection Association®. All Rights Reserved.

NFPA® 1710

Standard for the

**Organization and Deployment of Fire Suppression Operations,
Emergency Medical Operations, and Special Operations
to the Public by Career Fire Departments**

2010 Edition

This edition of NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, was prepared by the Technical Committee on Fire and Emergency Service Organization and Deployment—Career. It was issued by the Standards Council on May 26, 2009, with an effective date of June 15, 2009, and supersedes all previous editions.

This edition of NFPA 1710 was approved as an American National Standard on June 15, 2009.

Origin and Development of NFPA 1710

In 2001, the first edition of NFPA 1710 was issued. The development of that benchmark standard was the result of a considerable amount of hard work and tenacity by the Technical Committee members and the organizations they represented. That standard was the first organized approach to defining levels of service, deployment capabilities, and staffing levels for substantially career fire departments. Research work and empirical studies in North America were used by the Committee as a basis for developing response times and resource capabilities for those services, as identified by the fire department.

Following the issuance of the first edition, the NFPA Standards Council asked the Technical Committee to begin the revision process for a 2004 edition of the standard. The Committee formed several Task Groups to look at various aspects of the document. However, recognizing that the standard had not been fully field tested, the extent of the changes proposed were minimal with a cleanup of definitions, the addition of wording regarding equivalency in the annex, and clarification that the discussion on rate of fire propagation in the annex involved unsprinklered rooms.

This edition of NFPA 1710 standardizes and refines terminology and definitions used in the document. Particular attention was paid to terminology for time frames for the various events that occur from event initiation to the end of the fire department's involvement with the incident. This includes recognition that there is a time interval to initiate action or intervene at the end of travel time and before control and mitigation actually begins. The requirements for time frames for alarm handling have been revised to correspond to changes being made to NFPA 1221. The time allowance for turnout for fires and special operations was lengthened to 80 seconds but the time measurement was defined to start at the beginning of the transmission of response data to the emergency response units or emergency response facilities. All times shown as both minutes and seconds were changed to seconds only as that is the level of precision in which the committee intends time to be measured.

An application section was added in Chapter 1. The travel times for units responding on the first alarm were clarified to indicate the first unit must arrive within 4 minutes travel time and all units must arrive within 8 minutes travel time. The quadrennial report required to be provided to the AHJ in the previous edition has been changed to an annual report.

The annex material related to the requirement stated for an initial full alarm assignment capability has been moved to the body of the standard to clarify that the requirement applies to a structure fire in a typical 2000 ft² (186 m²), two-story single-family dwelling without basement and with no exposures. In addition, wording was added to require additional resources be deployed on fires in occupancies that present hazards greater than the two-story single-family dwelling.

The community-wide risk management model that has been in an annex to NFPA 1720 has been added as an annex to NFPA 1710.

The work done by the Committee provides the user with a template for developing an implementation plan on the standard. Most important, it provides the body politic and the citizens a true picture of the risks in their community and the fire department's capabilities to respond to and manage those risks.

Technical Committee on Fire and Emergency Service Organization and Deployment—Career

Alan V. Brunacini, *Chair*
Phoenix, AZ [SE]

Richard M. Duffy, *Secretary*
International Association of Fire Fighters, DC [L]
Rep. International Association of Fire Fighters

Terry Allen, City of Cambridge Fire Department,
Canada [E]
Rep. NFPA Fire Service Section
William L. Bingham, City of Boynton Beach, FL [U]
Rep. International Fire Marshals Association
Rick Black, Center for Public Safety Excellence, TX [SE]
Paul D. Brooks, City of Greensboro Fire Department,
NC [E]
Rep. International Association of Fire Chiefs
Michael R. Brown, Washington State Association of Fire
Chiefs, WA [E]
Rep. International Association of Fire Chiefs
Richard M. Brown, City of East Providence, RI [C]
Rep. International City/County Management
Association
Randy R. Bruegman, City of Fresno Fire Department,
CA [E]
Rep. International Association of Fire Chiefs
William W. Bryson, City of Miami Fire-Rescue
Department, FL [E]
Rep. Metropolitan Fire Chiefs
Ross Chadwick, City of Denton Fire Department, TX [E]
Philip A. Chovan, Georgia Tech Research Institute,
GA [M]
Rep. Fire Department Safety Officers Association
Welling S. Clark, ICARE, CO [SE]
James G. Featherstone, United Firefighters of Los
Angeles City, CA [L]

Thomas Hanify, The Professional Firefighters Union of
Indiana, IN [L]
Rep. International Association of Fire Fighters
Steve L. Kreis, City of Phoenix Fire Department, AZ [E]
Cortez Lawrence, U.S. Department of Homeland
Security, MD [SE]
Brian P. McBride, Philadelphia Firefighters' Union,
PA [L]
Rep. International Association of Fire Fighters
Christopher K. McKenzie, League of California Cities,
CA [C]
Rep. National League of Cities
Christopher E. Platten, Wylie, McBride, Jesinger, Sure
& Platten, CA [SE]
Franklin D. Pratt, Los Angeles County Fire Department,
CA [SE]
Gary Rainey, Florida Professional Firefighters, FL [L]
Kevin Ritchie, Juneau, AK [C]
Rep. National League of Cities
David L. Rohr, Fairfax County Fire & Rescue
Department, VA [E]
Mark A. Sanders, Ohio Professional Firefighters, OH [L]
Patrick N. Smith, U.S. Department of Energy, TN [U]
Steven J. Tufts, United Firefighters of Los Angeles City,
CA [L]
Rep. International Association of Fire Fighters

Alternates

John J. Caussin, Fairfax County Fire & Rescue
Department, VA [E]
(Alt. to D. L. Rohr)
Sallie Clark, ICARE, CO [SE]
(Alt. to W. S. Clark)
Gregory H. Grayson, City of Asheville Fire & Rescue,
NC [C]
(Alt. to C. K. McKenzie)
Todd A. Harms, Phoenix Fire Department, AZ [E]
(Alt. to S. L. Kreis)
Michael D. Masters, Oak Ridge National Laboratory
(USDOE), TN [U]
(Alt. to P. N. Smith)

John P. McCarthy, City of Ottawa, Canada [M]
(Alt. to P. A. Chovan)
Manuel Navarro, Colorado Springs Fire Department,
CO [E]
(Alt. to M. R. Brown)
Catherine L. Spain, National League of Cities, DC [C]
(Alt. to K. Ritchie)
Thomas J. Wiczorek, International City/County
Management Association, DC [C]
(Alt. to R. M. Brown)
Milt Wilson, Ontario Association of Fire Chiefs,
Canada [E]
(Alt. to T. Allen)

Carl E. Peterson, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the organization, operation, deployment, and evaluation of substantially all career public fire protection and emergency medical services.



CONTENTS

1710-3

Contents

Chapter 1 Administration	1710- 4	4.7 Wildland Fire Suppression Services	1710- 8
1.1 Scope	1710- 4	4.8 Intercommunity Organization	1710- 8
1.2 Purpose	1710- 4	Chapter 5 Fire Department Services	1710- 8
1.3 Application	1710- 4	5.1 Purpose	1710- 8
1.4 Equivalency	1710- 4	5.2 Fire Suppression Services	1710- 8
Chapter 2 Referenced Publications	1710- 4	5.3 Emergency Medical Services (EMS)	1710-10
2.1 General	1710- 4	5.4 Special Operations Response	1710-10
2.2 NFPA Publications	1710- 4	5.5 Airport Rescue and Fire-Fighting (ARFF) Services	1710-11
2.3 Other Publications	1710- 4	5.6 Marine Rescue and Fire-Fighting (MRFF) Services	1710-11
2.4 References for Extracts in Mandatory Sections	1710- 4	5.7 Wildland Fire Suppression Services	1710-12
Chapter 3 Definitions	1710- 5	Chapter 6 Systems	1710-13
3.1 General	1710- 5	6.1 Safety and Health System	1710-13
3.2 NFPA Official Definitions	1710- 5	6.2 Incident Management System	1710-13
3.3 General Definitions	1710- 5	6.3 Training Systems	1710-13
Chapter 4 Organization	1710- 7	6.4 Communications Systems	1710-13
4.1 Fire Department Organizational Statement	1710- 7	6.5 Pre-Incident Planning	1710-13
4.2 Fire Suppression Services	1710- 8	Annex A Explanatory Material	1710-13
4.3 Emergency Medical Services	1710- 8	Annex B Community Wide Risk Management Model	1710-18
4.4 Special Operations	1710- 8	Annex C Informational References	1710-20
4.5 Airport Rescue and Fire-Fighting Services	1710- 8	Index	1710-22
4.6 Marine Rescue and Fire-Fighting Services ...	1710- 8		

NFPA 1710

Standard for the

Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments

2010 Edition

IMPORTANT NOTE: This NFPA document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading "Important Notices and Disclaimers Concerning NFPA Documents." They can also be obtained on request from NFPA or viewed at www.nfpa.org/disclaimers.

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex C. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex C.

Chapter 1 Administration

1.1* Scope. This standard contains minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by substantially all career fire departments.

1.1.1 The requirements address functions and objectives of fire department emergency service delivery, response capabilities, and resources.

1.1.2 This standard also contains general requirements for managing resources and systems, such as health and safety, incident management, training, communications, and pre-incident planning.

1.1.3 This standard addresses the strategic and system issues involving the organization, operation, and deployment of a fire department and does not address tactical operations at a specific emergency incident.

1.2 Purpose.

1.2.1* The purpose of this standard is to specify the minimum criteria addressing the effectiveness and efficiency of the career public fire suppression operations, emergency medical service, and special operations delivery in protecting the citizens of the jurisdiction and the occupational safety and health of fire department employees.

1.2.2 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1.3 Application.

1.3.1 This standard applies to the deployment of resources by a fire department to emergency situations when operations can be implemented to save lives and property.

1.3.2 The standard is a benchmark for most common responses and a platform for developing the appropriate plan for deployment of resources for fires in higher hazard occupancies or more complex incidents.

1.4* Equivalency. Nothing in this standard is intended to prohibit the use of systems, methods, or approaches of equivalent or superior performance to those prescribed by this standard, provided technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 403, *Standard for Aircraft Rescue and Fire-Fighting Services at Airports*, 2009 edition.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2008 edition.

NFPA 1143, *Standard for Wildland Fire Management*, 2009 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2010 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2007 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2008 edition.

NFPA 1670, *Standard on Operations and Training for Technical Search and Rescue Incidents*, 2009 edition.

2.3 Other Publications.

2.3.1 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Part 1910.120, "Hazardous Waste Operations and Emergency Response."

Title 29, Code of Federal Regulations, Part 1910.146, "Permit-Required Confined Space."

2.3.2 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2008 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2009 edition.

NFPA 1081, *Standard for Industrial Fire Brigade Member Professional Qualifications*, 2007 edition.

NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, 2007 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2010 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2007 edition.



NFPA 1521, *Standard for Fire Department Safety Officer*, 2008 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2008 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 2009 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. A document, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 Advanced Life Support (ALS). See 3.3.36.1.

3.3.2 Aid.

3.3.2.1* Automatic Aid. A plan developed between two or more fire departments for immediate joint response on first alarms. [1142, 2007]

3.3.2.2 Mutual Aid. A written intergovernmental agreement between agencies and/or jurisdictions that they will assist one another on request by furnishing personnel, equipment, and/or expertise in a specified manner.

3.3.3 Aircraft Rescue and Fire Fighting. See 3.3.21.1.

3.3.4* Aircraft Rescue and Fire-Fighting (ARFF) Vehicle. A vehicle intended to carry rescue and fire-fighting equipment for rescuing occupants and combating fires in aircraft at, or in the vicinity of, an airport. [1002, 2009]

3.3.5* Alarm. A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency. [1221, 2010]

3.3.6 Alarm Answering Time. See 3.3.53.1.

3.3.7 Alarm Handling Time. See 3.3.53.2.

3.3.8 Alarm Processing Time. See 3.3.53.3.

3.3.9 Alarm Transfer Time. See 3.3.53.4.

3.3.10 Apparatus.

3.3.10.1 Fire Apparatus. A vehicle designed to be used under emergency conditions to transport personnel and equipment, and to support the suppression of fires and mitigation of other hazardous situations. [1901, 2009]

3.3.10.2 Quint Apparatus. A fire apparatus with a permanently mounted fire pump, a water tank, a hose storage area, an aerial device with a permanently mounted waterway, and a complement of ground ladders.

3.3.10.3 Specialized Apparatus. A fire apparatus or vehicle that is used for support or specialized equipment and services at emergency scenes for functions such as, but not limited to, command, technical rescue, hazardous materials mitigation, urban search and rescue, air supply, electrical generation and lighting, or transport of equipment and personnel.

3.3.11 Automatic Aid. See 3.3.2.1.

3.3.12 Basic Life Support (BLS). See 3.3.36.2.

3.3.13* Company. A group of members: (1) under the direct supervision of an officer; (2) trained and equipped to perform assigned tasks; (3) usually organized and identified as engine companies, ladder companies, rescue companies, squad companies, or multi-functional companies; (4) operating with one piece of fire apparatus (pumper, aerial fire apparatus, elevating platform, quint, rescue, squad, ambulance) except where multiple apparatus are assigned that are dispatched and arrive together, continuously operate together, and are managed by a single company officer; (5) arriving at the incident scene on fire apparatus. [1500, 2007]

3.3.14 Company Officer. See 3.3.40.1.

3.3.15 Crew. See 3.3.52, Team.

3.3.16 Emergency Incident. Any situation to which an emergency services organization responds to deliver emergency services, including rescue, fire suppression, emergency medical care, special operations, law enforcement, and other forms of hazard control and mitigation. [1561, 2008]

3.3.17 Emergency Medical Care. The treatment of patients using first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other medical procedures prior to arrival at a hospital or other health care facility.

3.3.18 Emergency Operations. See 3.3.41.1.

3.3.19 Fire Apparatus. See 3.3.10.1.

3.3.20 Fire Department Member. See 3.3.38, Member.

3.3.21 Fire Fighting.

3.3.21.1* Aircraft Rescue and Fire Fighting. The fire-fighting actions taken to rescue persons and to control or extinguish fire involving or adjacent to aircraft on the ground. [1500, 2007]

3.3.21.2* Marine Rescue and Fire Fighting. The fire-fighting action taken to prevent, control, or extinguish fire involved in or adjacent to a marine vessel and the rescue actions for occupants using normal and emergency routes for egress.

3.3.21.3 Structural Fire Fighting. The activities of rescue, fire suppression, and property conservation in buildings or other structures, vehicles, rail cars, marine vessels, aircraft, or like properties.

3.3.22 Fire Protection. Methods of providing fire detection, control, and extinguishment.

3.3.23* Fire Suppression. The activities involved in controlling and extinguishing fires. [1500, 2007]

3.3.24* First Responder (EMS). Functional provision of initial assessment (i.e., airway, breathing, and circulatory systems) and basic first-aid intervention, including CPR and automatic external defibrillator (AED) capability.

3.3.25 Forcible Entry. Techniques used by fire personnel to gain entry into buildings, vehicles, aircraft, or other areas of confinement when normal means of entry are locked or blocked.

3.3.26* Hazard. A condition that presents the potential for harm or damage to people, property, or the environment.

3.3.27 Hazardous Material. A substance that is capable of creating harm to people, the environment, or property due to its toxicity, chemical reactivity, decomposition, or corrosivity; is capable of explosion or detonation; or presents etiological hazards, whether used for its intended purpose or as a weapon of mass destruction (WMD) or for illicit labs purposes, environmental crimes, or industrial sabotage.

3.3.28* High-Hazard Occupancy. An occupancy that presents a high life hazard or large fire potential due to its construction, configuration, or the presence of specific materials, processes, or contents.

3.3.29 Incident Commander. The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. [472, 2008]

3.3.30* Incident Management System (IMS). An organized system that defines the roles and responsibilities to be assumed by responders and the standard operating procedures to be used in the management and direction of emergency incidents and other functions.

3.3.31 Incident Safety Officer. See 3.3.40.2.

3.3.32 Initial Full Alarm Assignment. Those personnel, equipment, and resources ordinarily dispatched upon notification of a structure fire.

3.3.33 Initial Rapid Intervention Crew (IRIC). See 3.3.44.1.

3.3.34 Initiating Action/Intervention Time. See 3.3.53.5.

3.3.35 Intergovernmental Agreement. A written formal authorization for services between two or more jurisdictions.

3.3.36 Life Support.

3.3.36.1 Advanced Life Support (ALS). Emergency medical treatment beyond basic life support that provides for advanced airway management including intubation, advanced cardiac monitoring, defibrillation, establishment and maintenance of intravenous access, and drug therapy.

3.3.36.2* Basic Life Support (BLS). A specific level of pre-hospital medical care provided by trained responders, focused on rapidly evaluating a patient's condition; maintaining a patient's airway, breathing, and circulation; controlling external bleeding; preventing shock; and preventing further injury or disability by immobilizing potential spinal or other bone fractures.

3.3.37 Marine Rescue and Fire Fighting. See 3.3.21.2.

3.3.38* Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. [1500, 2007]

3.3.39 Mutual Aid. See 3.3.2.2.

3.3.40 Officer.

3.3.40.1* Company Officer. A supervisor of a crew/company of personnel.

3.3.40.2 Incident Safety Officer. A member of the command staff responsible for monitoring and assessing safety hazards or unsafe situations and for developing measures for ensuring personnel safety.

3.3.40.3* Supervisory Chief Officer. A member whose responsibility is to assume command through a formalized transfer of command process and to allow company officers to directly supervise personnel assigned to them.

3.3.41 Operations.

3.3.41.1 Emergency Operations. Activities of the fire department relating to rescue, fire suppression, emergency medical care, and special operations, including response to the scene of the incident and all functions performed at the scene. [1500, 2007]

3.3.41.2* Special Operations. Those emergency incidents to which the fire department responds that require specific and advanced training and specialized tools and equipment. [1500, 2007]

3.3.42 Public Safety Answering Point (PSAP). A facility in which 9-1-1 calls are answered. [1221, 2010]

3.3.43 Quint Apparatus. See 3.3.10.2.

3.3.44* Rapid Intervention Crew (RIC). A dedicated crew of fire fighters who are assigned for rapid deployment to rescue lost or trapped members.

3.3.44.1 Initial Rapid Intervention Crew (IRIC). Two members of the initial attack crew who are assigned for rapid deployment to rescue lost or trapped members.

3.3.45 Rescue. Those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and providing for transport to an appropriate health care facility. [1500, 2007]

3.3.46 Special Operations. See 3.3.41.2.

3.3.47 Specialized Apparatus. See 3.3.10.3.

3.3.48* Staff Aide. A fire fighter or fire officer assigned to a supervisory chief officer to assist with the logistical, tactical, and accountability functions of incident, division, or sector command.

3.3.49 Standard Operating Procedure. A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions. [1521, 2008]

3.3.50 Structural Fire Fighting. See 3.3.21.3.

3.3.51 Supervisory Chief Officer. See 3.3.40.3.

3.3.52 Team. Two or more members who have been assigned a common task and are in communication with each other, coordinate their activities as a work group, and support the safety of one another. [1081, 2007]



3.3.53 Time.

3.3.53.1 Alarm Answering Time. The time interval that begins when the alarm is received at the communication center and ends when the alarm is acknowledged at the communication center.

3.3.53.2 Alarm Handling Time. The time interval from the receipt of the alarm at the primary PSAP until the beginning of the transmittal of the response information via voice or electronic means to emergency response facilities (ERFs) or the emergency response units (ERUs) in the field.

3.3.53.3 Alarm Processing Time. The time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).

3.3.53.4 Alarm Transfer Time. The time interval from the receipt of the emergency alarm at the PSAP until the alarm is first received at the communication center.

3.3.53.5* Initiating Action/Intervention Time. The time interval from when a unit arrives on the scene to the initiation of emergency mitigation.

3.3.53.6* Total Response Time. The time interval from the receipt of the alarm at the primary PSAP to when the first emergency response unit is initiating action or intervening to control the incident.

3.3.53.7 Travel Time. The time interval that begins when a unit is en route to the emergency incident and ends when the unit arrives at the scene.

3.3.53.8 Turnout Time. The time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible alarm or visual annunciation or both and ends at the beginning point of travel time.

3.3.54 Total Response Time. See 3.3.53.6.

3.3.55 Travel Time. See 3.3.53.7.

3.3.56 Turnout Time. See 3.3.53.8.

Chapter 4 Organization

4.1 Fire Department Organizational Statement.

4.1.1* The authority having jurisdiction (AHJ) shall maintain a written statement or policy that establishes the following:

- (1) Existence of the fire department
- (2) Services that the fire department is required to provide
- (3) Basic organizational structure
- (4) Expected number of fire department members
- (5) Functions that fire department members are expected to perform

4.1.2* The fire department organizational statement shall provide service delivery objectives, including specific time objectives for each major service component [i.e., fire suppression, emergency medical services (EMS), special operations, aircraft rescue and fire fighting, marine rescue and fire fighting, and/or wildland fire fighting] and objectives for the percentage of responses that meet the time objectives.

4.1.2.1 The fire department shall establish the following objectives:

- (1) Alarm handling time to be completed in accordance with 4.1.2.3.
- (2) 80 seconds for turnout time for fire and special operations response and 60 seconds turnout time for EMS response
- (3)*240 seconds or less travel time for the arrival of the first arriving engine company at a fire suppression incident and 480 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
- (4) 240 seconds or less travel time for the arrival of a unit with first responder with automatic external defibrillator (AED) or higher level capability at an emergency medical incident
- (5) 480 seconds or less travel time for the arrival of an advanced life support (ALS) unit at an emergency medical incident, where this service is provided by the fire department provided a first responder with AED or basic life support (BLS) unit arrived in 240 seconds or less travel time

4.1.2.2 The fire department shall document the initiating action/intervention time.

4.1.2.3 Alarm Handling.

4.1.2.3.1 The fire department shall establish a performance objective of having an alarm answering time of not more than 15 seconds for at least 95 percent of the alarms received and not more than 40 seconds for at least 99 percent of the alarms received, as specified by NFPA 1221.

4.1.2.3.2 When the alarm is received at a public safety answering point (PSAP) and transferred to a secondary answering point or communication center, the agency responsible for the PSAP shall establish a performance objective of having an alarm transfer time of not more than 30 seconds for at least 95 percent of all alarms processed, as specified by NFPA 1221.

4.1.2.3.3 The fire department shall establish a performance objective of having an alarm processing time of not more than 60 seconds for at least 90 percent of the alarms and not more than 90 seconds for at least 99 percent of the alarms, as specified by NFPA 1221.

4.1.2.4 The fire department shall establish a performance objective of not less than 90 percent for the achievement of each turnout time and travel time objective specified in 4.1.2.1.

4.1.2.5 Evaluations.

4.1.2.5.1* The fire department shall evaluate its level of service and deployment delivery and alarm handling time, turnout time, and travel time objectives on an annual basis.

4.1.2.5.2* The evaluations shall be based on emergency incident data relating to level of service, deployment, and the achievement of each time objective in each geographic area within the jurisdiction of the fire department.

4.1.2.6 The fire department shall provide the AHJ with a written report annually.

4.1.2.6.1 The annual report shall define the geographic areas and/or circumstances in which the requirements of this standard are not being met.

4.1.2.6.2 The annual report shall explain the predictable consequences of these deficiencies and address the steps that are necessary to achieve compliance.

4.2 Fire Suppression Services. The fire department organizational statement shall set forth the criteria for the various types of fire suppression incidents to which the fire department is required to respond.

4.3 Emergency Medical Services.

4.3.1 The fire department organizational statement shall set forth the criteria for the various types of emergency medical incidents to which the fire department is required and/or expected to respond.

4.3.2 The fire department organizational statement shall ensure that the fire department's emergency medical response capability includes personnel, equipment, and resources to deploy at the first responder level with AED or higher treatment level.

4.3.3 Where emergency medical services beyond the first responder with AED level are provided by another agency or private organization, the AHJ, based on recommendations from the fire department, shall include the minimum staffing, deployment, and response criteria as required in Section 5.3 in the following:

- (1) The fire department organizational statement
- (2) Any contract, service agreement, governmental agreement, or memorandum of understanding between the AHJ and the other agency or private organization

4.4 Special Operations.

4.4.1 The fire department organizational statement shall set forth the criteria for the various types of special operations response and mitigation activities to which the fire department is required and/or expected to respond.

4.4.2* The fire department organizational statement shall ensure that the fire department's hazardous materials response capability includes personnel, equipment, and resources to deploy at the first responder operational level as required by 29 CFR 1910.120.

4.4.3 The fire department organizational statement shall ensure that the fire department's confined space response capability includes personnel, equipment, and resources to deploy at the confined space operational level as required by 29 CFR 1910.146.

4.4.4 The fire department organizational statement shall set forth the criteria for the various types of fire department response during natural disasters or terrorism incidents, weapons of mass destruction incidents, or large-scale or mass casualty events.

4.5 Airport Rescue and Fire-Fighting Services. The fire department organizational statement shall set forth the criteria for the various types of airport rescue and fire-fighting incidents to which the fire department is required and/or expected to respond.

4.6 Marine Rescue and Fire-Fighting Services. The fire department organizational statement shall set forth the criteria for the various types of marine rescue and fire-fighting incidents to which the fire department is required and/or expected to respond.

4.7 Wildland Fire Suppression Services. The fire department organizational statement shall set forth the criteria for the various types of wildland fire suppression incidents to which the fire department is required and/or expected to respond.

4.8 Intercommunity Organization.

4.8.1* Mutual aid, automatic aid, and fire protection agreements shall be through a written intergovernmental agreement and shall address issues such as liability for injuries and deaths, disability retirements, cost of service, authorization to respond, staffing, and equipment, including the resources to be made available, availability of interoperable communications, and the designation of the incident commander.

4.8.2 Procedures and training of personnel for all fire departments in mutual aid, automatic aid, and fire protection agreement plans shall be comprehensive to produce an effective fire force and to ensure uniform operations.

Chapter 5 Fire Department Services

5.1 Purpose.

5.1.1 The services provided by the fire department shall include those activities identified by the organizational statement developed as required by Chapter 4.

5.1.2 The procedures involved in providing these services, including operations and deployment, shall be established through written administrative regulations, standard operating procedures (SOPs), and departmental orders.

5.2* Fire Suppression Services.

5.2.1 Fire Suppression Capability.

5.2.1.1 Fire suppression operations shall be organized to ensure that the fire department's fire suppression capability encompasses deployment of personnel, equipment, and resources for an initial arriving company, the initial full alarm assignment, and additional alarm assignments.

5.2.1.2 The fire department shall be permitted to use established automatic aid and mutual aid agreements to comply with the requirements of Section 5.2.

5.2.2* Staffing. The number of on-duty fire suppression personnel shall be sufficient to perform the necessary fire-fighting operations given the expected fire-fighting conditions.

5.2.2.1 These numbers shall be determined through task analyses that take the following factors into consideration:

- (1) Life hazard to the populace protected
- (2) Provisions of safe and effective fire-fighting performance conditions for the fire fighters
- (3) Potential property loss
- (4) Nature, configuration, hazards, and internal protection of the properties involved
- (5) Types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene

5.2.2.2* On-duty personnel assigned to fire suppression shall be organized into company units and shall have appropriate apparatus and equipment assigned to such companies.

5.2.2.2.1* The fire department shall identify minimum company staffing levels as necessary to meet the deployment criteria required in 5.2.4 to ensure that a sufficient number of members are assigned, on duty, and available to safely and effectively respond with each company.

5.2.2.2.2 Each company shall be led by an officer who shall be considered a part of the company.

5.2.2.2.3* Supervisory chief officers shall be dispatched or notified to respond to all full alarm assignments.

5.2.2.2.4 The supervisory chief officer shall ensure that the incident management system is established as required in Section 6.2.

5.2.2.2.5* Supervisory chief officers shall have staff aides deployed to them for purposes of incident management and accountability at emergency incidents.

5.2.3 Operating Units. Fire company staffing requirements shall be based on minimum levels necessary for safe, effective, and efficient emergency operations.

5.2.3.1 Fire companies whose primary functions are to pump and deliver water and perform basic fire fighting at fires, including search and rescue, shall be known as engine companies.

5.2.3.1.1 These companies shall be staffed with a minimum of four on-duty personnel.

5.2.3.1.2 In jurisdictions with tactical hazards, high-hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors as identified by the AHJ, these companies shall be staffed with a minimum of five or six on-duty members.

5.2.3.2 Fire companies whose primary functions are to perform the variety of services associated with truck work, such as forcible entry, ventilation, search and rescue, aerial operations for water delivery and rescue, utility control, illumination, overhaul, and salvage work, shall be known as ladder or truck companies.

5.2.3.2.1 These companies shall be staffed with a minimum of four on-duty personnel.

5.2.3.2.2 In jurisdictions with tactical hazards, high-hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors as identified by the AHJ, these companies shall be staffed with a minimum of five or six on-duty personnel.

5.2.3.3 Other Types of Companies.

5.2.3.3.1 Other types of companies equipped with specialized apparatus and equipment shall be provided to assist engine and ladder companies where necessary to support the fire departments' SOPs.

5.2.3.3.2 These companies shall be staffed with the minimum number of on-duty personnel required to deal with the tactical hazards, high-hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors as identified by the AHJ.

5.2.3.4 Fire Companies with Quint Apparatus.

5.2.3.4.1 A fire company that deploys with quint apparatus, designed to operate as either an engine company or a ladder company, shall be staffed as specified in 5.2.3.

5.2.3.4.2 If the company is expected to perform multiple roles simultaneously, additional staffing, above the levels specified in 5.2.3, shall be provided to ensure that those operations can be performed as required.

5.2.4 Deployment.

5.2.4.1 Initial Arriving Company.

5.2.4.1.1 The fire department's fire suppression resources shall be deployed to provide for the arrival of an engine company within a 240-second travel time to 90 percent of the incidents as established in Chapter 4.

5.2.4.1.2* Personnel assigned to the initial arriving company shall have the capability to implement an initial rapid intervention crew (IRIC).

5.2.4.2 Initial Full Alarm Assignment Capability.

5.2.4.2.1 The fire department shall have the capability to deploy an initial full alarm assignment within a 480-second travel time to 90 percent of the incidents as established in Chapter 4.

5.2.4.2.2* The initial full alarm assignment to a structure fire in a typical 2000 ft² (186 m²), two-story single-family dwelling without basement and with no exposures shall provide for the following:

- (1) Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment with a minimum of one individual dedicated to this task
- (2) Establishment of an uninterrupted water supply of a minimum of 400 gpm (1520 L/min) for 30 minutes with supply line(s) maintained by an operator
- (3) Establishment of an effective water flow application rate of 300 gpm (1140 L/min) from two handlines, each of which has a minimum flow rate of 100 gpm (380 L/min) with each handline operated by a minimum of two individuals to effectively and safely maintain the line
- (4) Provision of one support person for each attack and backup line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry
- (5) Provision of at least one victim search and rescue team with each such team consisting of a minimum of two individuals
- (6) Provision of at least one team, consisting of a minimum of two individuals, to raise ground ladders and perform ventilation
- (7) If an aerial device is used in operations, one person to function as an aerial operator and maintain primary control of the aerial device at all times
- (8) Establishment of an IRIC consisting of a minimum of two properly equipped and trained individuals

5.2.4.2.3* Fire departments that respond to fires in high-, medium-, or low-hazard occupancies that present hazards greater than those found in the low-hazard occupancy described in 5.2.4.2.2 shall deploy additional resources on the initial alarm.

5.2.4.3 Additional Alarm Assignments.

5.2.4.3.1* The fire department shall have the capability to deploy additional alarm assignments that can provide for additional command staff, personnel, and additional services, including the application of water to the fire; engagement in search and rescue, forcible entry, ventilation, and preservation of property; safety and accountability for personnel; and provision of support activities for those situations that are beyond the capability of the initial full alarm assignment.

5.2.4.3.2 When an incident escalates beyond an initial full alarm assignment or when significant risk is present to the fire fighters due to the magnitude of the incident, the incident commander shall upgrade the IRIC to a full rapid intervention

1710-10 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

crew(s) (RIC) that consists of an officer and at least three fire-fighters who are fully equipped and trained in RIC operations.

5.2.4.3.3 An incident safety officer shall be deployed to all incidents that escalate beyond an initial full alarm assignment or when significant risk is present to fire fighters.

5.2.4.3.4 The incident safety officer shall ensure that the safety and health system is established as required in Section 6.1.

5.3* Emergency Medical Services (EMS). The purpose of this section shall be to provide standards for the delivery of EMS by fire departments.

5.3.1 The fire department shall clearly document its role, responsibilities, functions, and objectives for the delivery of EMS.

5.3.1.1 EMS operations shall be organized to ensure that the fire department's emergency medical capability includes personnel, equipment, and resources to deploy the initial arriving company and additional alarm assignments.

5.3.1.2 The fire department shall be permitted to use established automatic aid or mutual aid agreements to comply with the requirements of Section 5.3.

5.3.2* System Components.

5.3.2.1 Treatment Levels.

5.3.2.1.1 The basic treatment levels within an EMS system, for the purposes of this standard, shall be categorized as first responder, basic life support (BLS), and advanced life support (ALS).

5.3.2.1.2 The specific patient treatment capabilities associated with each level shall be determined by the AHJ based on the requirements for approval and licensing of EMS providers within each state or province.

5.3.2.2 Training Levels.

5.3.2.2.1 The minimal level of training for all fire fighters that respond to emergency incidents shall be to the first responder/AED level.

5.3.2.2.2 The AHJ shall determine if further training is required.

5.3.3 EMS System Functions.

5.3.3.1 The AHJ shall determine which of the following components of an EMS system the fire department shall be responsible for providing:

- (1) Initial response to provide medical treatment at the location of the emergency (first responder with AED capability or higher)
- (2) BLS response
- (3) ALS response
- (4) Patient transport in an ambulance or alternative vehicle designed to provide for uninterrupted patient care at the ALS or BLS level while en route to a medical facility
- (5) Assurance of response and medical care through a quality management program

5.3.3.2 Staffing.

5.3.3.2.1 On-duty EMS units shall be staffed with the minimum personnel necessary for emergency medical care relative to the level of EMS provided by the fire department.

5.3.3.2.2 EMS staffing requirements shall be based on the minimum levels needed to provide patient care and member safety.

5.3.3.2.2.1 Units that provide emergency medical care shall be staffed at a minimum with personnel trained to the first responder/AED level.

5.3.3.2.2.2 Units that provide BLS transport shall be staffed and trained at the level prescribed by the state or provincial agency responsible for providing EMS licensing.

5.3.3.2.2.3 Units that provide ALS transport shall be staffed and trained at the level prescribed by the state or provincial agency responsible for providing EMS licensing.

5.3.3.3 Service Delivery Deployment.

5.3.3.3.1 The fire department shall adopt service delivery objectives based on time standards for the deployment of each service component for which it is responsible.

5.3.3.3.2 The fire department's EMS for providing a first responder with AED shall be deployed to provide for the arrival of a first responder with AED company within a 240-second travel time to 90 percent of the incidents as established in Chapter 4.

5.3.3.3.3* When provided, the fire department's EMS for providing ALS shall be deployed to provide for the arrival of an ALS company within a 480-second travel time to 90 percent of the incidents provided a first responder with AED or BLS unit arrived in 240 seconds or less travel time as established in Chapter 4.

5.3.3.3.4 Personnel deployed to ALS emergency responses shall include a minimum of two members trained at the emergency medical technician-paramedic level and two members trained at the emergency medical technician-basic level arriving on scene within the established travel time.

5.3.4 Quality Management.

5.3.4.1 The fire department shall institute a quality management program to ensure that the service has met time objectives as required in 4.1.2 for all medical responses.

5.3.4.2 Fire Department Medical Personnel Review.

5.3.4.2.1 All first responder and BLS medical care provided by the fire department shall be reviewed by the fire department medical personnel.

5.3.4.2.2 This review process shall be documented.

5.3.4.3 Medical Director Review.

5.3.4.3.1 All fire departments with ALS services shall have a named medical director with the responsibility to oversee and ensure quality medical care in accordance with state or provincial laws or regulations.

5.3.4.3.2 This review process shall be documented.

5.3.4.4 Fire departments providing ALS services shall provide a mechanism for immediate communications with EMS supervision and medical oversight.

5.4 Special Operations Response. Special operations shall be organized to ensure that the fire department's special operations capability includes personnel, equipment, and resources to deploy the initial arriving company and additional alarm assignments providing such services.

5.4.1 The fire department shall be permitted to use established automatic aid or mutual aid agreements to comply with the requirements of Section 5.4.

5.4.2 The fire department shall adopt a special operations response plan and SOPs that specify the roles and responsibilities of the fire department and the authorized functions of members responding to hazardous materials emergency incidents.

5.4.3 All fire department members expected to respond to emergency incidents beyond the first responder operations level for hazardous materials response shall be trained to the applicable requirements of NFPA 472.

5.4.4 All fire department members expected to respond to emergency incidents beyond the confined space operations level for confined space operations shall be trained to the applicable requirements of NFPA 1670.

5.4.5 The fire department shall have the capacity to implement an RIC during all special operations incidents that would subject fire fighters to immediate danger or injury in the event of equipment failure or other sudden events, as required by NFPA 1500.

5.4.6 If a higher level of emergency response is needed beyond the capability of the fire department for special operations, the fire department shall determine the availability of outside resources that deploy these capabilities and the procedures for initiating their response.

5.4.7 The fire department shall limit its activities to only those specific special operations functions for which its personnel have been trained and are correctly equipped.

5.5 Airport Rescue and Fire-Fighting (ARFF) Services.

5.5.1 Airport fire departments shall adopt operations response plans and SOPs that specify the roles and responsibilities for nonaircraft incidents as required by 5.1.2.

5.5.2 ARFF operations shall be organized to ensure that the fire department's capability includes personnel, equipment, and resources to deploy the initial arriving company, the initial full alarm assignment, and additional alarm assignments as required in 5.2.4.

5.5.3 Airport fire departments shall have access to special tools, equipment, supplies, personal protective equipment (PPE), and other airport resources that are required to perform operations in their assigned roles and responsibilities.

5.5.4 Deployment.

5.5.4.1 The airport fire department shall deploy the required number of ARFF vehicles required for the airport's assigned category as established by NFPA 403.

5.5.4.2 Airport fire department companies equipped with specialized apparatus and equipment shall be provided to assist ARFF companies where deemed necessary as identified in 5.5.1.

5.5.4.3 Airport fire department companies that deploy to structure fire incidents on airport property shall meet the time objective requirements of 4.1.2.

5.5.4.4 Airport fire department companies that deploy to emergency medical incidents on airport property shall meet the time objective requirements of 5.3.3.3.

5.5.4.5 The airport fire department shall be permitted to use established automatic aid or mutual aid agreements to comply with the requirements of Section 5.5.

5.5.5 Staffing.

5.5.5.1 Airport fire department ARFF companies shall be staffed as required by NFPA 403.

5.5.5.2 Airport fire department companies that deploy to structure fire incidents on airport property shall meet the staffing requirements of 5.2.2.

5.5.5.3 Airport fire department companies that deploy to emergency medical incidents on airport property shall meet the staffing requirements of 5.3.3.3.

5.5.6 Emergency Operations.

5.5.6.1 At all emergency scene operations, an incident management system shall be used that meets the requirements of Section 6.2.

5.5.6.2* Incident command shall be established outside of the hazard area for the overall coordination and direction of the initial full alarm assignment.

5.5.6.3 An individual shall be dedicated to the task of incident commander.

5.5.6.4 Incident Safety Officer.

5.5.6.4.1 An incident safety officer shall be deployed to all incidents that escalate beyond a full alarm assignment or when fire fighters face significant risk.

5.5.6.4.2 The incident safety officer shall ensure that the safety and health system is established as required in Section 6.1.

5.6* Marine Rescue and Fire-Fighting (MRFF) Services.

5.6.1 MRFF operations shall be organized to ensure that the fire department's marine capability includes personnel, equipment, and resources to deploy to the alarm assignments associated with a marine emergency incident.

5.6.2 Response Plan.

5.6.2.1 The fire department shall adopt a marine operations response plan and SOPs that specify the roles and responsibilities of the fire department and the authorized functions of members responding to marine emergencies.

5.6.2.2 Fire department marine operations response plans and SOPs shall be coordinated with the applicable agencies, such as the port or harbor authority and supporting agencies.

5.6.3 Marine fire departments shall have access to special tools, equipment, supplies, PPE, and other marine resources that are required to perform operations in their assigned roles and responsibilities.

5.6.4 Staffing.

5.6.4.1 Numbers of On-Duty Marine Personnel.

5.6.4.1.1 On-duty marine personnel shall consist of the number necessary for fire-fighting performance relative to the expected MRFF conditions.

5.6.4.1.2 On-duty marine personnel numbers shall be determined through task analyses as required for types of marine vessels and through additional task analyses that take the following factors into consideration:

- (1) Life hazard to the populace protected
- (2) Provisions of safe and effective fire-fighting performance conditions for the fire fighters
- (3) Potential property loss

1710-12 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

- (4) Nature, configuration, hazards, and internal protection of the properties involved
- (5) Types of tactics and evolutions employed as standard procedure, type of marine vessel used, and results expected to be obtained at the fire scene
- (6) Requirements of the regulatory AHJs over navigable waters, ports, and harbors

5.6.4.2 Organization of On-Duty Personnel.

5.6.4.2.1 On-duty personnel assigned to marine fire fighting shall be organized into company units and shall have required vessels and equipment assigned to such companies.

5.6.4.2.2 Each marine company shall be led by an officer who shall be considered a part of the company.

5.6.5 Operating Units.

5.6.5.1* Fire companies whose primary function is to deliver and pump water and extinguishing agents at the scene of a marine incident shall be known as marine companies.

5.6.5.2 These companies shall be staffed with a minimum number of on-duty personnel as required by the tactical and occupancy hazards to which the marine vessel responds and by the regulatory AHJs over navigable waters, ports, and harbors.

5.7 Wildland Fire Suppression Services.

5.7.1 Wildland fire suppression operations shall be organized to ensure that the fire department's wildland fire suppression capability includes personnel, equipment, and resources to deploy wildland direct operations that can address marginal situations before they get out of control and wildland indirect fire-fighting operations that can be assembled and placed into operation against major wildland fires.

5.7.2 Organization.

5.7.2.1 Fire departments performing wildland operations shall adopt a wildland fire-fighting operations response plan and SOPs that specify the roles and responsibilities of the fire department and the authorized functions of members responding to wildland fire emergencies.

5.7.2.2 All wildland fire suppression operations shall be organized to ensure compliance with NFPA 1143.

5.7.3 Fire departments performing wildland operations shall have access to special tools, equipment, supplies, PPE, and other wildland resources that are required to perform operations in their assigned roles and responsibilities.

5.7.4 Staffing. The number of on-duty wildland fire-fighting personnel shall be sufficient to perform the necessary fire-fighting operations given the expected wildland fire-fighting conditions.

5.7.4.1 On-duty wildland fire-fighting personnel numbers shall be determined through task analyses that take the following factors into consideration:

- (1) Life hazard to the populace protected
- (2) Provisions of safe and effective fire-fighting performance conditions for the fire fighters
- (3) The number of trained response personnel available to the department, including mutual aid resources
- (4) Potential property loss
- (5) Nature, configuration, hazards, and internal protection of the properties involved

- (6) Types of wildland tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene
- (7) Topography, vegetation, and terrain in the response area(s)

5.7.4.2 On-duty personnel assigned to wildland operations shall be organized into company units and shall have required apparatus and equipment assigned to such companies.

5.7.4.2.1 The fire department shall identify minimum company staffing levels necessary to meet the deployment criteria to ensure that a sufficient number of members are assigned, on duty, and available to respond with each company.

5.7.4.2.2 Each company shall be led by an officer who shall be considered a part of the company.

5.7.4.2.3 Supervisory chief officers shall be dispatched or notified to respond to all full alarm assignments.

5.7.4.2.4 The supervisory chief officer shall ensure that the incident management system is established as required in Section 6.2.

5.7.5 Operating Units. Fire companies whose primary function is to deliver and pump water and extinguishing agents at the scene of a wildland fire shall be known as wildland companies.

5.7.5.1 These companies shall be staffed with a minimum of four on-duty personnel.

5.7.5.2 Engine and ladder (truck) companies that respond to wildland fire fighting and/or urban interface wildland fire fighting incidents shall be staffed as required by 5.2.3.

5.7.5.3 Other Types of Companies.

5.7.5.3.1 Other types of companies equipped with specialized apparatus and equipment for wildland fire fighting, including aircraft, heavy equipment, mini pumpers, and fast attack vehicles, shall be provided to assist wildland engine and ladder companies where deemed necessary as part of established practice.

5.7.5.3.2 These companies shall be staffed with a minimum number of on-duty personnel as required by the tactical, topographical, environmental, fuel (vegetation), and occupancy hazards.

5.7.6 Deployment.

5.7.6.1 Required Number of Vehicles.

5.7.6.1.1 The fire department shall deploy from its wildland resources the number of vehicles required for a direct and/or indirect attack.

5.7.6.1.2* Prior to the initiation of any wildland fire attack, the fire department shall have the capacity to establish a lookout(s), communications with all crew members, escape route(s), and safety zone(s) for vehicles and personnel.

5.7.6.2 Direct Attack.

5.7.6.2.1 The fire department shall have the capability to initiate a direct wildland attack within 10 minutes after arrival of the initial company or crew at the fire scene.

5.7.6.2.2 One individual in the first arriving company or crew shall be assigned as the incident commander for the overall coordination and direction of the direct attack activities.

5.7.6.2.3 The direct wildland attack shall include the establishment of an effective water flow application rate of 30 gpm (114 L/min) from at least two 500 ft (150 m) 1½ in. (38 mm) diameter attack handlines from two engines.

5.7.6.2.4 Each attack handline shall be operated by a minimum of two individuals to deploy and maintain the line.

5.7.6.2.5 One operator shall remain with each fire apparatus supplying water flow to ensure uninterrupted water flow application.

5.7.6.2.6 A wildland crew leader or company officer shall be provided with each crew to be responsible for overall supervision of each of the crew and for maintaining personnel accountability and crew safety.

5.7.6.3 Indirect Attack.

5.7.6.3.1 The fire department providing wildland fire suppression operations shall have the capability to deploy an indirect attack, including application of water to the fire, engagement in search and rescue and preservation of property, accountability for personnel, and provision of support activities for those situations that are beyond the capability of the direct attack.

5.7.6.3.2 An incident safety officer shall be deployed to all incidents that escalate beyond a direct attack alarm assignment or when fire fighters face significant risk.

5.7.7 Non-Wildland Emergencies.

5.7.7.1 Wildland companies that deploy to structure fire incidents shall meet the time objective requirements of 4.1.2.

5.7.7.2 Wildland companies that deploy to emergency medical incidents shall meet the time objective requirements of 4.1.2.

Chapter 6 Systems

6.1 Safety and Health System. A fire-fighter occupational safety and health program shall be provided in accordance with NFPA 1500.

6.2* Incident Management System.

6.2.1 An incident management system shall be provided in accordance with NFPA 1561 to form the basic structure of all emergency operations of the fire department, regardless of the scale of the department or the emergency.

6.2.2* An incident management system shall be designed to manage incidents of different types, including structure fires, wildland fires, hazardous materials incidents, emergency medical operations, and other types of emergencies that could be encountered by the department.

6.3 Training Systems. The fire department shall have a training program and policy that ensures that personnel are trained and competency is maintained to execute all responsibilities consistent with the department's organization and deployment as addressed in Chapters 4 and 5.

6.4 Communications Systems.

6.4.1 The fire department shall have a reliable communications system to facilitate prompt delivery of public fire suppression, EMS, and special operations.

6.4.2 All communications facilities, equipment, staffing, operating procedures, performance objectives, and reporting shall comply with NFPA 1221.

6.4.3 Operating procedures for radio communications shall provide for the use of standard protocols and terminology at all types of incidents.

6.4.4 Standard terminology, in compliance with NFPA 1561, shall be established to transmit information, including strategic modes of operation, situation reports, and emergency notifications of imminent hazards.

6.5* Pre-Incident Planning.

6.5.1 The fire department shall set forth operational requirements to conduct pre-incident planning.

6.5.2 Particular attention shall be provided to all target hazards.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1 The standard includes minimum requirements that are intended to provide effective, efficient, and safe protective services that operate on a sound basis to prevent fires, reduce risk to lives and property, deal with incidents that occur, and prepare for anticipated incidents. It sets minimum standards considered necessary for the provision of public fire protection by career fire departments. It addresses the structure and operation of organizations providing such services, including fire suppression and other assigned emergency response responsibilities, which include EMS and special operations.

A.1.2.1 A fundamental concept of fire risk is associated with modern society. Public fire service organizations are expected to reduce the risk within their areas of jurisdiction by taking measures to prevent the outbreak of fires, limit the extent and severity of fires, provide for the removal or rescue of endangered persons, control and extinguish fires that occur within the jurisdiction, and perform other emergency response operations and delivery of EMS.

The cumulative effects of preventive efforts, risk reduction and control, and fire suppression capabilities result in variable levels of risk to the jurisdictions and their residents.

The risk remaining after deducting the cumulative effect of the public fire service organization's efforts is the responsibility of each individual, including owners, operators, occupants, and casual visitors to properties. It should be noted that fire risk cannot be completely avoided or eliminated.

A.1.4 The authority having jurisdiction (AHJ) determines what systems, methods, or approaches are equivalent or superior in performance. An AHJ should approach the assessment by reviewing the overall public fire protection and EMS system performance.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance

1710-14 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.3.2.1 Automatic Aid. Automatic aid is established through a written intergovernmental agreement that provides for the simultaneous dispatch of a predetermined response of personnel and equipment to a neighboring jurisdiction upon receipt of an alarm and is included as part of a communication center's dispatch protocols.

A.3.3.4 Aircraft Rescue and Fire-Fighting (ARFF) Vehicle. The apparatus is typically equipped with a large water tank [commencing at 1000 gal (3800 L) and extending to over 6000 gal (22,800 L)]; a supply of fire-fighting extinguishing agents; remote-controlled large roof turret(s), extendable turret nozzle(s), and bumper turret(s) (ground sweep nozzles) that are used for the discharge of extinguishing agent; and pre-connected handlines.

A.3.3.5 Alarm. In some jurisdictions, an alarm is referred to as an incident or call for service.

A.3.3.13 Company. For fire suppression and other emergency operations, in some jurisdictions, the response capability of the initial arriving company is configured with two apparatus operating together. This can be a result of apparatus not being configured with seated and belted positions for four personnel, therefore requiring a second vehicle to carry additional personnel. It can also be the result of the fire department's SOPs, which require two apparatus operating together to complete the operational procedures. The objective is to ensure that a minimum of four personnel are assigned to and deployed as a company. The two (or more) pieces of apparatus would always be dispatched and respond together as a single company. Some examples of this include the following:

- (1) A pumper and tanker/tender that would be responding together outside a municipal water district
- (2) A multiple-piece company, specified as such in a fire department's SOPs, such as an engine or ladder company that responds with a rescue unit, water tender, or other type of apparatus
- (3) A company that consists of a pumper with an additional vehicle as a personnel carrier
- (4) A pumper and an ambulance or rescue unit that always respond together

A.3.3.21.1 Aircraft Rescue and Fire Fighting. Such rescue and fire-fighting actions are performed both inside and outside of the aircraft.

A.3.3.21.2 Marine Rescue and Fire Fighting. Marine companies can be utilized for special operations, including a platform for dive and scuba operations and for providing a secure water supply for land-based operations.

A.3.3.23 Fire Suppression. Fire suppression includes all activities performed at the scene of a fire incident or training exercise that expose fire department members to the dangers of heat, flame, smoke, and other products of combustion, explosion, or structural collapse. [1500, 2007]

A.3.3.24 First Responder (EMS). A first responder also assists higher level EMS providers.

A.3.3.26 Hazard. Hazards include the characteristics of facilities, equipment systems, property, hardware, or other objects; and the actions and inactions of people that create such hazards.

A.3.3.28 High-Hazard Occupancy. These occupancies include schools, hospitals, and other special medical facilities, nursing homes, high-risk residential occupancies, neighborhoods with structures in close proximity to one another, high-rise buildings, explosives plants, refineries, and hazardous materials occupancies.

A.3.3.30 Incident Management System (IMS). The system should be consistent with NIMS and the National Response Framework. The system is also referred to as an incident command system (ICS).

A.3.3.36.2 Basic Life Support (BLS). Basic life support could also include expediting the safe and timely transport of the patient to a hospital emergency department for definitive medical care.

A.3.3.38 Member. A fire department member can be a full-time or part-time employee or a paid or unpaid volunteer, can occupy any position or rank within the fire department, and can engage in emergency operations. [1500, 2007]

A.3.3.40.1 Company Officer. This person can be someone appointed in an acting capacity. The rank structure could be either sergeant, lieutenant, or captain.

A.3.3.40.3 Supervisory Chief Officer. The position of supervisory chief officer is above that of a company officer, who responds automatically and/or is dispatched to an alarm beyond the initial alarm capabilities, or other special calls. In some jurisdictions, this is the rank of battalion chief, district chief, deputy chief, assistant chief, or senior divisional officer (U.K. fire service).

A.3.3.41.2 Special Operations. Special operations include water rescue, extrication, hazardous materials, confined space entry, high-angle rescue, aircraft rescue and fire fighting, and other operations requiring specialized training. [1500, 2007]

A.3.3.44 Rapid Intervention Crew (RIC). The RIC reports directly to the incident commander or operations chief. This dedicated crew is not to be confused with the IRIC.

A.3.3.48 Staff Aide. This member is assigned to a supervisory chief officer who assists at incident scene operations, which can include personnel accountability, communications, and other logistical and administrative support. In addition, this member can assist in coordinating training activities, respond to citizen inquiries, coordinate staffing issues and sick leave

follow-up, and assign resource allocations for facilities and apparatus under the supervisory chief officer's jurisdiction. Staff aides can be known as field incident technician, staff assistant, battalion fire fighter, or battalion adjutant.

A.3.3.53.5 Initiating Action/Intervention Time. A benchmark time frame isn't set to initiate a mitigating action or take other steps to intervene in resolving the issue that created the incident. Fire departments should track these times based on their SOPs and evaluate the data based on the nature of the incident.

A.3.3.53.6 Total Response Time. A "cascade of events" chart, shown as Figure A.3.3.53.6, is provided to assist understanding the relationship between NFPA 1221, NFPA 1710, and Initiating Time/Intervention Time (currently not addressed by a single NFPA standard). Three phases are included in total response time. They are as follows:

- (1) Phase One — Alarm Handling Time, which includes alarm transfer time, alarm answering time, and alarm processing time (addressed by NFPA 1221)
- (2) Phase Two — Turnout Time and Travel Time (addressed by NFPA 1710)
- (3) Phase Three — Initiating Action/Intervention Time

A.4.1.1 The AHJ generally has the responsibility to determine the following:

- (1) Scope and level of service provided by the fire department
- (2) Necessary level of funding
- (3) Necessary level of personnel and resources, including facilities

To provide service, the AHJ should have the power to levy taxes or solicit funding, to own property and equipment, and to cover personnel costs. The authority necessary is conveyed by law to a local jurisdiction.

In addition, the governing body also should monitor the achievement of the management goals of the department, such as fire prevention, community life safety education, fire suppression, employee training, communications, maintenance, and department administration.

The organizational statement is a very important basis for many of the provisions of this standard. The statement sets forth the legal basis for operating a fire department, the organizational structure of the fire department, number of members, training requirements, expected functions, and authorities and responsibilities of various members or defined positions.

A key point is to clearly set out the specific services the fire department is authorized and expected to perform. Most fire departments are responsible to a governing body. The governing body has the right and should assert its authority to set the specific services and the limits of the services the fire department will provide. It also has the responsibility to furnish the necessary resources for delivery of the designated services. The fire department should provide its governing body with a specific description of each service, with options or alternatives and an accurate analysis of the costs and resources needed for each service.

Such services could include structural fire fighting, wildland fire fighting, airport/aircraft fire fighting, emergency medical services, hazardous materials response, high-angle rescue, heavy rescue, and others.

Spelling out the specific parameters of services to be provided allows the fire department to plan, staff, equip, train, and deploy members to perform these duties. It also gives the governing body an accounting of the costs of services and allows it to select those services it can afford to provide. Likewise, the governing body should identify services it cannot afford to provide and cannot authorize the fire department to deliver, or it should assign those services to another agency.

The factors that should be included in the AHJ's risk assessment process include adopted building codes, required fire/life safety related engineering controls, accepted service delivery performance objectives, complexity of facilities, and occupancy hazards (low, medium, and high) within the jurisdiction.

The fire department should be no different than any other government agency that has the parameters of its authority and services clearly defined by the governing body.

Legal counsel should be used to ensure that any statutory services and responsibilities are being met.

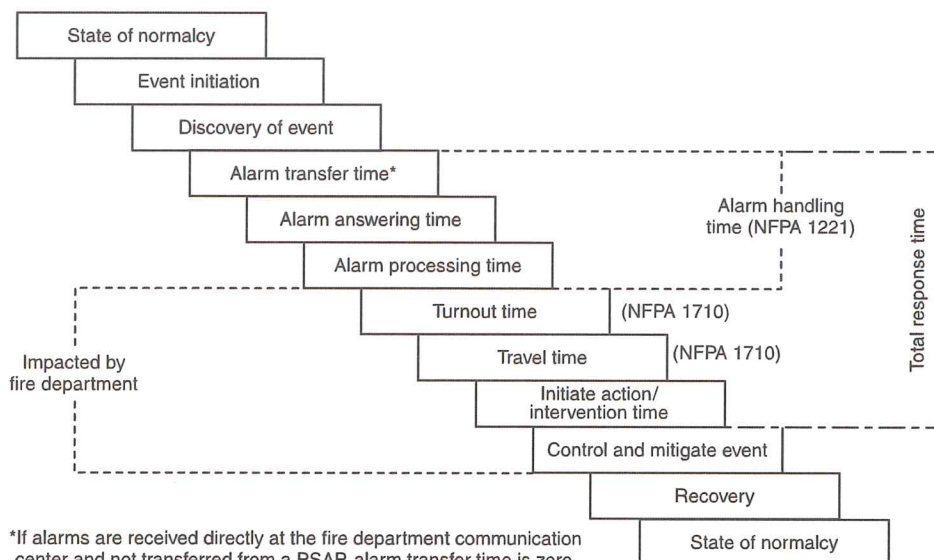


FIGURE A.3.3.53.6 Cascade of Events Chart.

The majority of public fire departments are established under the charter provisions of their governing body or through the adoption of statutes. These acts define the legal basis for operating a fire department, the mission of the organization, the duties that are authorized and expected to be performed, and the authority and responsibilities that are assigned to certain individuals to direct the operations of the fire department.

The documents that officially establish the fire department as an identifiable organization are necessary to determine specific responsibilities and to determine the parties responsible for compliance with the provisions of this standard.

In many cases, these documents can be part of state laws, a municipal charter, or an annual budget. In such cases, it would be appropriate to make these existing documents part of the organizational statement, if applicable.

A.4.1.2 There can be incidents or areas where the response criteria are affected by circumstances such as response personnel who are not on duty, unstaffed fire station facilities, natural barriers, traffic congestion, insufficient water supply, and density of population or property. The reduced level of service should be documented in the written organizational statement by the percentage of incidents and geographical areas for which the total response time criteria are achieved.

Additional service delivery performance objectives should be established by the AHJ for occupancies other than those identified within the standard for benchmark single-family dwellings. Factors to be considered include specific response areas (i.e., suburban, rural, and wilderness) and occupancy hazards.

A.4.1.2.1(3) This service delivery requirement is intended to have a fire department plan and situate its resources to consistently meet a 240-second travel time for the initial company fire suppression response and a 480-second travel time for the full alarm fire response assignment.

A.4.1.2.5.1 The evaluation of the fire department's provided level of service needs to be performed against the AHJ's established service delivery performance objectives. These objectives should be based on a jurisdictional risk assessment. The objectives established within this standard are based on a 2000 ft² (186 m²), two-story, single-family home without a basement and having no exposures. The AHJ's response objectives should be established based on numerous factors such as the circumstances affecting response personnel, adopted building codes, required fire/life safety-related engineering controls, accepted turnout/travel times, complexity of facilities, and occupancy hazards within the jurisdiction.

A.4.1.2.5.2 The collection of data is required to determine the organization's ability to meet its locally determined objectives and the performance objectives contained in the standard with regard to emergency incidences (warning lights and sirens). Organizations respond to numerous types of emergency and nonemergency incidents. While the collection and analysis of all of the response data is important, attainment of the 90 percent objective is only to be evaluated against emergency incident responses.

A.4.4.2 Occupational Safety and Health Administration (OSHA) regulations require that all fire departments be trained to respond to hazardous materials incidents at the first responder operations level.

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), known as the Emergency Planning and Community Right-to-Know Act, established requirements for federal, state, and local governments and industrial facilities

regarding emergency planning for spills or other releases, community right-to-know, and reporting of hazardous and toxic chemicals.

The Emergency Planning and Community Right-to-Know Act covers the following four major areas that provide the fire service and communities with a broad perspective on the chemical hazards within the local area and those at individual facilities:

- (1) Sections 301 through 303 — emergency planning
- (2) Section 304 — emergency release notification
- (3) Sections 311 and 312 — community right-to-know reporting requirements
- (4) Section 313 — toxic chemical release inventory

A.4.8.1 Where appropriate, the mutual aid agreement should include automatic responses on first alarms (automatic aid). This concept contemplates joint response of designated apparatus and personnel on a predetermined running assignment basis.

Mutual aid concepts should be considered on a regional basis. In an effective mutual aid arrangement, each fire department should retain reserves of personnel and apparatus. Traditionally and legally, overall command of the incident is vested with the senior officer of the jurisdiction experiencing the emergency.

Some areas use consolidated dispatching to coordinate the response of fire companies to assist an outside fire department. The management of responses can be made easier by utilizing computerization, "running cards," and other advance planning.

A.5.2 Suppression capability is an expression of how much fire-fighting power can be put into action when there is a fire. It includes the amount of apparatus, equipment, and personnel available; the time needed to respond and place equipment in action; the water supply; the application of strategy and tactics; the level of training; and all of the components that add up to effective fireground operations.

A.5.2.2 For more information, see NFPA 1250; FEMA, National Fire Academy, "Fire Risk Analysis: A Systems Approach"; and Phoenix, AZ, Fire Department, "Fire Department Evaluation System (FIREDAPE)."

A.5.2.2.2 For further information on companies, see 3.3.13 and A.3.3.13.

A.5.2.2.2.1 An early, aggressive, and offensive primary interior attack on a working fire, where feasible, is usually the most effective strategy to reduce loss of lives and property damage. In Figure A.5.2.2.2.1, the line represents a rate of fire propagation in an unsprinklered room, which combines temperature rise and time. It roughly corresponds to the percentage of property destruction. At approximately 10 minutes into the fire sequence, the hypothetical room of origin flashes over. Extension outside the room begins at this point.

Consequently, given that the progression of a structure fire to the point of flashover (i.e., the very rapid spreading of the fire due to superheating of room contents and other combustibles) generally occurs in less than 10 minutes, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible. For more information, refer to *Fire Service Today*, "Reduced Staffing: At What Cost," and NIST, "Hazard I Fire Hazard Assessment Method." Also, refer to National Fire Academy, "Fire Risk Analysis: A Systems Approach," and Office of the Ontario Fire Marshal, *Shaping the Future of Fire Ground Staffing and Delivery Systems within a Comprehensive Fire Safety Effectiveness Model*.

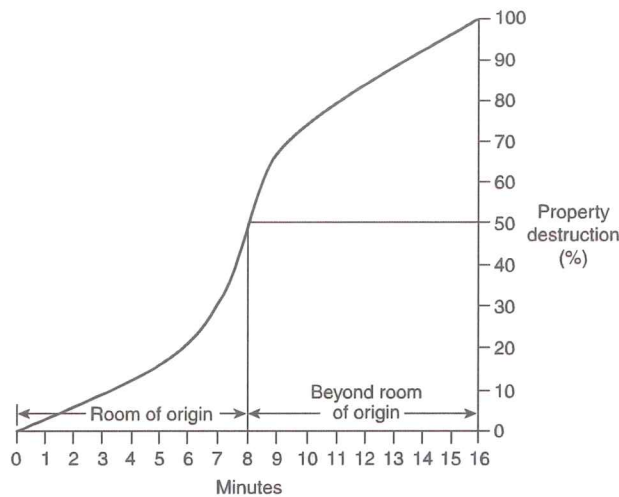


FIGURE A.5.2.2.2.1 Fire Propagation Curve.

The ability of adequate fire suppression forces to greatly influence the outcome of a structure fire is undeniable and predictable. Data generated by NFPA and used by the committee in developing this standard provide empirical data that rapid and aggressive interior attack can substantially reduce the human and property losses associated with structure fires [see Table A.5.2.2.2.1(a) and Table A.5.2.2.2.1(b)].

The NFPA Fire Analysis and Research Division provided the data in Table A.5.2.2.2.1(b) as an update of Table A.5.2.2.2.1(a).

A.5.2.2.2.3 The assignment of specific response districts to command officers should be based on the number of companies, workload, and response distances. Department administrative procedures should indicate clearly the jurisdiction of command officers.

A.5.2.2.2.5 For further information on staff aides, see 3.3.48 and A.3.3.48.

A.5.2.4.1.2 NFPA 1500, 29 CFR 1910.134, and *Memorandum for Regional Administrators; Response to IDLH or Potential IDLH Atmo-*

Table A.5.2.2.2.1(a) Fire Extension in Residential Structures, 1994-1998

Extension	Rate per 1000 Fires		
	Civilian Deaths	Civilian Injuries	Average Dollar Loss per Fire
Confined to room of origin	2.32	35.19	3,185
Beyond the room, but confined to floor of origin	19.68	96.86	22,720
Beyond floor of origin	26.54	63.48	31,912

Note: Residential structures include dwellings, duplexes, manufactured homes (also called mobile homes), apartments, row houses, townhouses, hotels and motels, dormitories, and barracks.

Source: NFPA Annual Fire Experience Survey and National Fire Incident Reporting System (NFIRS).

Table A.5.2.2.2.1(b) Fire Extension in Residential Structures, 2002-2005

Extension	Rate per 1000 Fires		
	Civilian Deaths	Civilian Injuries	Average Dollar Loss per Fire
Confined fires (identified by incident type)	0.08	9.25	313
Confined to room of origin	4.99	47.00	8,948
Confined to room of origin, including confined fires by incident type*	2.15	25.18	3,958
Beyond the room, but confined to floor of origin	17.62	80.45	34,011
Beyond floor of origin	27.48	59.38	58,820

Note: Residential occupancies include homes, hotels and motels, dormitories, and residential board and care facilities. These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Property damage has not been adjusted for inflation.

*NFIRS 5.0 has six categories of confined structure fires, including cooking fires confined to the cooking vessel, confined chimney or flue fire, confined incinerator fire, confined fuel burner or boiler fire or delayed ignition, confined commercial compactor fire, and trash or rubbish fire in a structure with no flame damage to the structure or its contents. Although causal information is not required for these incidents, it is provided in some cases. In this analysis, all confined fires were assumed to be confined to the room of origin.

Source: NFIRS 5.0 and NFPA survey.

spheres provide further information. The IRIC and the rapid intervention crew (RIC) members are equipped with the fire fighters' protective ensemble, including protective clothing and equipment as required by NFPA 1500.

A.5.2.4.2.2 The hazards presented by this scenario are not unusual, as all communities respond to fire incidents in this type of structure on a regular basis.

A.5.2.4.2.3 Other occupancies and structures in the community that present greater hazards should be addressed by additional fire fighter functions and additional responding personnel on the initial full alarm assignment. The NFPA *Fire Protection Handbook* categorizes occupancies in three broad groups:

- (1) High-hazard occupancies: schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies
- (2) Medium-hazard occupancies: apartments, offices, mercantile, and industrial occupancies not normally requiring extensive rescue or fire-fighting forces
- (3) Low-hazard occupancies: one-, two- or three-family dwellings and scattered small businesses and industrial occupancies. The NFPA 1710 benchmark occupancy fits into this low-hazard category.

1710-18 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

In determining the initial responding force to these occupancies, AHJs must consider the additional potential of fire spread, types of combustibles, increased life hazard, and various tasks that must be accomplished to achieve their mission.

A.5.2.4.3.1 Once units arrive, or a determination is made that other resources are required, additional alarms should be called for and dispatched. Departments should have predetermined procedures for additional alarms. Many departments send the same number and type of units on the second alarm as on the first alarm. Incident commanders can always request unique resources when required. Many departments will only be able to handle additional alarms through automatic or mutual aid agreements that have been previously established.

A.5.3 An EMS system is defined as a comprehensive, coordinated arrangement of resources and functions that are organized to respond in a timely, staged manner to medical emergencies, regardless of their cause. The term *system* can be applied locally or at the state, provincial, or national level. The fundamental functions of an EMS system are the following:

- (1) System organization and management
- (2) Medical direction
- (3) Human resources and training
- (4) Communications
- (5) Emergency response
- (6) Transportation
- (7) Care facilities
- (8) Quality assurance
- (9) Public information and education
- (10) Disaster medical services
- (11) Research
- (12) Special populations

A.5.3.2 The following four functions do not necessarily exist as separate elements in a particular system:

- (1) The first responding unit can be an advanced life support (ALS) ambulance that can provide ALS treatment and ambulance transportation.
- (2) The first responding unit can be a fire suppression unit that can provide both initial and advanced-level medical care.
- (3) ALS can be provided by the ambulance or by an additional fire suppression unit or a unit that is dedicated to ALS response only.
- (4) The system might not have ALS treatment capability — only a fire apparatus with fire fighters trained as first responder AED can respond.

A.5.3.3.3.3 The American Heart Association recommends the minimum required personnel for an emergency cardiac care response. In those systems that have attained survival rates higher than 20 percent for patients with ventricular fibrillation, response teams include, as a minimum, two ALS providers and two BLS providers. See “Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiac Care,” “Basic Trauma Life Support for Paramedics and Other Providers,” “Pre-Hospital Trauma Life Support,” “Pediatric Advanced Life Support,” and “Emergency Care and Transportation of the Sick and Injured.”

A.5.5.6.2 The U.S. Air Force has defined the areas involved in the emergency within 75 ft (23 m) of the aircraft as immediately dangerous to life and health (IDLH).

A.5.6 For additional information on marine fire fighting, see NFPA 1405.

A.5.6.5.1 For additional information on marine rescue and fire-fighting vessels, see NFPA 1925.

A.5.7.6.1.2 A system developed by Chief Paul Gleason of the United States Forest Service addresses specific mandatory fire orders in a system termed *LCES*, which stands for lookout(s), communication(s), escape route(s), and safety zone(s). These four items are to be implemented as an integrated system by a single resource unit, a strike team, or a full assignment. The implementation of LCES is a minimum safety requirement prior to the initiation of any wildland fire-fighting operations.

A.6.2 Emergency incidents can involve operations that vary considerably in their complexity and scale. The control of these incidents depends on the planned, systematic implementation of an effective fireground organization to accomplish identified objectives. Every fire department, regardless of size, needs a proper system to regulate and direct emergency forces and equipment at both routine and major incidents. The incident management system forms the basic structure of operations, regardless of scale. An effective system is designed to manage incidents of different types, including structure fires, wildland fires, hazardous materials incidents, and medical and other emergencies.

A.6.2.2 Unlike fire incidents where command is normally predicated by rank structure, EMS patient care is based on statutory recognition of the individual with the highest level of medical certification. The recommendation is that departments adopt protocols that define the degree of both member and nonmember involvement in direct patient care based on local standards, medical control, and statutory requirements.

A.6.5 For additional information, see NFPA 1620.

Annex B Community Wide Risk Management Model

This annex is not a part of the requirements of this NFPA document but is included for information purposes only.

B.1 This model is used as an example of how a community wide risk management plan can be utilized to protect both citizens and property. While NFPA 1710 is scoped strictly to focus on deployment, staffing, and service levels, the realization is that this is one component of a total community fire protection planning process. An AHJ can determine that other components could reduce the risks of fire and therefore adopt stronger building and fire prevention codes, enforce those more vigorously, and enhance their public life safety education components. These models are included for that purpose. Figure B.1 illustrates a fire department process map.

B.1.1 This annex addresses the need for fire departments to develop an overall “defense-in-depth” strategy for the delivery of fire services. The development of such a strategy should include an assessment of the tools available to the fire service for accomplishing the goals of fire safety.

B.1.2 Fire safety objectives can be defined as those ideas that a department aspires to deliver. For example, fire department objectives could include such statements as “Maintain injuries and life/property losses as low as reasonably achievable (community and department).” The accomplishment of this objective should not be left to fire-fighting operations alone. See Figure B.1.2 for fire safety concepts.

B.1.3 Fire prevention is not simply preventing fire. It is the systematic application of codes, standard, engineering principles, and an understanding of human behavior to achieve the objective of limiting the loss of life and property.



FIGURE B.1 Fire Department Process Map.

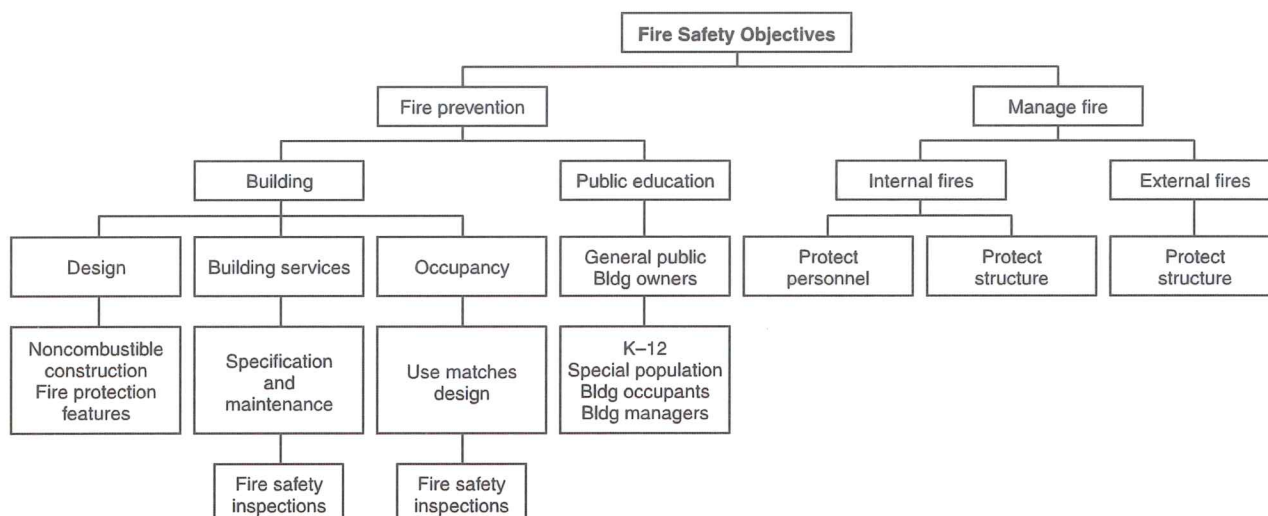


FIGURE B.1.2 Fire Safety Concepts for Fire Department Operations.

B.1.3.1 As outlined in NFPA 1, *Fire Code*, fire prevention includes egress, construction design, building services, fire protection, and occupancy. All of these elements work together to provide the occupants and fire department personnel with a level of fire safety not otherwise available.

B.1.3.2 By ensuring that each of these elements is balanced, the fire department can maintain a reasonable level of risk for the community and the department.

B.1.3.3 To provide risk management, the fire department must utilize all of the tools available. In order of preference, those tools are as follows:

- (1) Fire-safe design and construction
- (2) Suppression systems
- (3) Detection systems

- (4) Occupant fire prevention practices
- (5) Fire department-conducted fire-safety inspections
- (6) Fire rescue response

B.1.3.4 A structure designed and constructed to withstand the effects of fire is the most important asset in achieving fire risk management. A structure relying solely on fire rescue response offers the greatest challenge to the occupants and fire department personnel.

B.1.4 Fire impact management is the ability to manage the impact of a fire on occupants and structures. The participation of the fire department in the design, construction, maintenance, and use of a structure provides defense-in-depth against fire losses.

B.1.4.1 Structures that are designed with noncombustible construction, are protected with fire protection systems, and are routinely inspected to ensure appropriate occupant use are most likely to provide the lowest risk levels and therefore are the least difficult to manage.

B.1.4.2 Fire-fighting operations on fully compliant structures for which the fire fighters know the occupancy conditions can be conducted with a plan that commits resources only as necessary to accomplish the pre-established goals.

B.1.4.3 Pre-established goals for each structure define the commitment of resources in order to limit risk to occupants, the structure, and fire department personnel.

Annex C Informational References

C.1 Referenced Publications. The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

C.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1, *Fire Code*, 2009 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 2010 edition.

NFPA 1250, *Recommended Practice in Emergency Service Organization Risk Management*, 2004 edition.

NFPA 1405, *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires*, 2006 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2007 edition.

NFPA 1620, *Recommended Practice for Pre-Incident Planning*, 2003 edition.

NFPA 1925, *Standard on Marine Fire-Fighting Vessels*, 2008 edition.

Fire Protection Handbook, 20th edition, 2008.

Fire Service Today, Gerard, J.C. and A.T. Jacobsen, "Reduced Staffing: At What Cost," September 1981.

C.1.2 Other Publications.

C.1.2.1 AMA Publications. American Medical Association, 515 North State Street, Chicago, IL 60610.

"Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiac Care." 1992. *Journal of the American Medical Association*, 268(16) (October 28).

C.1.2.2 FEMA Publications. Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472.

"Fire Risk Analysis: A Systems Approach," NFA-SM-FRAS, National Emergency Training Center, National Fire Academy, July 20, 1984.

C.1.2.3 NIST Publications. National Institute of Standards and Technology, 100 Bureau Drive, Bldg. 820, Rm. 164, Gaithersburg, MD 20899.

"Hazard I Fire Hazard Assessment Method," U.S. Department of Commerce, June 1991.

C.1.2.4 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Memorandum for Regional Administrators; Response to IDLH or Potential IDLH Atmospheres, Department of Labor, Occupational

Safety and Health Administration, May 1, 1995 corrected to November 30, 2006.

Title 29, Code of Federal Regulations, Part 1910.134, "Respiratory protection," 2006.

Title 42, U.S. Code, Chapter 116, Emergency Planning and Community Right-to-Know Act, 1986.

C.1.2.5 Other Publications. "Basic Trauma Life Support for Paramedics and Other Providers," American College of Emergency Physicians, John Campbell (ed), 1997.

Office of the Ontario Fire Marshal, *Shaping the Future of Fire Ground Staffing and Delivery Systems within a Comprehensive Fire Safety Effectiveness Model*, 1993.

"Pre-Hospital Trauma Life Support," American College of Surgeons, Paturaas, Wertz and McSwain (eds), 1999.

"Pediatric Advanced Life Support," American Heart Association, Besson (ed), 1997.

Phoenix, AZ, Fire Department, "Fire Department Evaluation System (FIREDAPE)," December 1991.

"Emergency Care and Transportation of the Sick and Injured," American Association of Orthopedic Surgeons, Browner (ed), 1999.

C.2 Informational References. The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

C.2.1 CPSE Publications. Center for Public Safety Excellence, 4501 Singer Court, Suite 180, Chantilly, VA 20151.

Commission on Fire Accreditation International *Fire and Emergency Service Self-Assessment Manuals, National Fire Service Accreditation Program*. 7th Edition, 2007.

Commission on Fire Accreditation International *Standard of Cover*, 5th Edition, 2008.

C.2.2 Government Accounting Standards Board. Government Accounting Standards Board, 401 Merritt 7, P.O. Box 5116, Norwalk, CT 06856-5116.

C.2.3 IAFC/IAFF Publications. International Association of Fire Chiefs/International Association of Fire Fighters. International Association of Fire Chiefs, 4025 Fair Ridge Drive, Suite 300, Fairfax, VA 22033-2868. International Association of Fire Fighters, 1750 New York Avenue, NW, Washington, DC 20006.

"NFPA 1710 IMPLEMENTATION GUIDE," August 2002.

C.2.4 IAFF Publications. International Association of Fire Fighters, 1750 New York Avenue, NW, Washington, DC 20006.

Department of Research and Labor Issues, "Effectiveness of Fire-Based EMS," 1995.

Department of Research and Labor Issues, "Safe Fire Fighting Staffing," 1993.

Department of Emergency Medical Services, "Emergency Medical Services Performance Objectives," 2002.

C.2.5 IFSTA/FPP Publications. IFSTA/FPP, 930 N. Willis, Stillwater, OK 74078.

"Systems Approach to Managing Fire and Life Safety Services," Dennis Compton.

C.2.6 Insurance Services Office Publications. ISO Customer Service Division, 545 Washington Blvd., Jersey City, NJ 07310-1686.

"Public Protection Classification Service"; Fire Suppression Rating Schedule.

C.2.7 International City/County Management Association Publications. 777 N. Capitol Street, Washington, DC 20022.

“Managing Fire and Rescue Services,” June 2002.

“Interim Report of the Tricom Consortium.”

C.2.8 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Part 1910.120, “Hazardous waste operations and emergency response,” 1986.

Title 29, Code of Federal Regulations, Part 1910.156, “Fire brigades,” 1998.

C.2.9 Other Publications. “Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiac Care,” *JAMA*, August 2000.

Office of the Ontario Fire Marshal, “Performance Measurement and Benchmarking Project,” 2003.

C.3 References for Extracts in Informational Sections. NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2007 edition.

1710-22 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

Index

Copyright © 2009 National Fire Protection Association. All Rights Reserved.

The copyright in this index is separate and distinct from the copyright in the document that it indexes. The licensing provisions set forth for the document are not applicable to this index. This index may not be reproduced in whole or in part by any means without the express written permission of NFPA.

-A-	-E-
Administration..... Chap. 1	Emergency Incident..... 3.3.16
Application..... 1.3	Definition..... 3.3.16
Equivalency..... 1.4, A.1.4	Emergency Medical Care..... 3.3.17
Purpose..... 1.2	Definition..... 3.3.17
Scope..... 1.1, A.1.1	Emergency Operations..... 3.3.18
Advanced Life Support (ALS)	Definition..... 4.1.2.5
Definition..... 3.3.1	Evaluations..... 4.1.2.5
Aid	Explanatory Material..... Annex A
Automatic Aid	
Definition..... 3.3.2.1, A.3.3.2.1	-F-
Definition..... 3.3.2	Fire Apparatus..... 3.3.19
Mutual Aid	Definition..... 3.3.19
Definition..... 3.3.2.2	Fire Department Member..... 3.3.20
Aircraft Rescue and Fire Fighting	Definition..... 3.3.20
Definition..... 3.3.3	Fire Department Services..... Chap. 5
Aircraft Rescue and Fire-Fighting (ARFF) Vehicle	Airport Rescue and Fire-Fighting (ARFF) Services..... 5.5
Definition..... 3.3.4, A.3.3.4	Deployment..... 5.5.4
Alarm	Emergency Operations..... 5.5.6
Definition..... 3.3.5, A.3.3.5	Incident Safety Officer..... 5.5.6.4
Alarm Answering Time	Staffing..... 5.5.5
Definition..... 3.3.6	Emergency Medical Services (EMS)..... 5.3, A.5.3
Alarm Handling..... 4.1.2.3	EMS System Functions..... 5.3.3
Alarm Handling Time	Service Delivery Deployment..... 5.3.3.3
Definition..... 3.3.7	Staffing..... 5.3.3.2
Alarm Processing Time	Quality Management..... 5.3.4
Definition..... 3.3.8	Fire Department Medical Personnel Review..... 5.3.4.2
Alarm Transfer Time	Medical Director Review..... 5.3.4.3
Definition..... 3.3.9	System Components..... 5.3.2, A.5.3.2
Apparatus	Training Levels..... 5.3.2.2
Definition..... 3.3.10	Treatment Levels..... 5.3.2.1
Fire Apparatus	Fire Suppression Services..... 5.2, A.5.2
Definition..... 3.3.10.1	Deployment..... 5.2.4
Quint Apparatus	Additional Alarm Assignments..... 5.2.4.3
Definition..... 3.3.10.2	Initial Arriving Company..... 5.2.4.1
Specialized Apparatus	Initial Full Alarm Assignment Capability..... 5.2.4.2
Definition..... 3.3.10.3	Fire Suppression Capability..... 5.2.1
Approved	Operating Units..... 5.2.3
Definition..... 3.2.1, A.3.2.1	Fire Companies with Quint Apparatus..... 5.2.3.4
Authority Having Jurisdiction (AHJ)	Other Types of Companies..... 5.2.3.3
Definition..... 3.2.2, A.3.2.2	Staffing..... 5.2.2, A.5.2.2
Automatic Aid	Marine Rescue and Fire-Fighting (MRFF) Services..... 5.6, A.5.6
Definition..... 3.3.11	Operating Units..... 5.6.5
-B-	Response Plan..... 5.6.2
Basic Life Support (BLS)	Staffing..... 5.6.4
Definition..... 3.3.12	Numbers of On-Duty Marine Personnel..... 5.6.4.1
-C-	Organization of On-Duty Personnel..... 5.6.4.2
Community Wide Risk Management Model..... Annex B	Purpose..... 5.1
Company	Special Operations Response..... 5.4
Definition..... 3.3.13, A.3.3.13	Wildland Fire Suppression Services..... 5.7
Company Officer	Deployment..... 5.7.6
Definition..... 3.3.14	Direct Attack..... 5.7.6.2
Crew	Indirect Attack..... 5.7.6.3
Definition..... 3.3.15	Required Number of Vehicles..... 5.7.6.1
-D-	Non-Wildland Emergencies..... 5.7.7
Definitions..... Chap. 3	Operating Units..... 5.7.5
	Other Types of Companies..... 5.7.5.3
	Organization..... 5.7.2
	Staffing..... 5.7.4

Fire Fighting

Aircraft Rescue and Fire Fighting
Definition 3.3.21.1, A.3.3.21.1
3.3.21

Marine Rescue and Fire Fighting
Definition 3.3.21.2, A.3.3.21.2

Structural Fire Fighting
Definition 3.3.21.3

Fire Protection

Definition 3.3.22

Fire Suppression

Definition 3.3.23, A.3.3.23

First Responder (EMS)

Definition 3.3.24, A.3.3.24

Forcible Entry

Definition 3.3.25

-H-

Hazard

Definition 3.3.26, A.3.3.26

Hazardous Material

Definition 3.3.27

High-Hazard Occupancy

Definition 3.3.28, A.3.3.28

-I-

Incident Commander

Definition 3.3.29

Incident Management System (IMS)

Definition 3.3.30, A.3.3.30

Incident Safety Officer

Definition 3.3.31

Informational References

Annex C

Initial Full Alarm Assignment

Definition 3.3.32

Initial Rapid Intervention Crew (IRIC)

Definition 3.3.33

Initiating Action/Intervention Time

Definition 3.3.34

Intergovernmental Agreement

Definition 3.3.35

-L-

Life Support

Advanced Life Support (ALS)

Definition 3.3.36.1

Basic Life Support (BLS)

Definition 3.3.36.2, A.3.3.36.2

Definition 3.3.36

-M-

Marine Rescue and Fire Fighting

Definition 3.3.37

Member

Definition 3.3.38, A.3.3.38

Mutual Aid

Definition 3.3.39

-O-

Officer

Company Officer

Definition 3.3.40.1, A.3.3.40.1

Definition 3.3.40

Incident Safety Officer

Definition 3.3.40.2

Supervisory Chief Officer

Definition 3.3.40.3, A.3.3.40.3

Operations

Definition 3.3.41

Emergency Operations

Definition 3.3.41.1

Special Operations

Definition 3.3.41.2, A.3.3.41.2

Organization Chap. 4

Airport Rescue and Fire-Fighting Services 4.5

Emergency Medical Services 4.3

Fire Department Organizational Statement 4.1

Fire Suppression Services 4.2

Intercommunity Organization 4.8

Marine Rescue and Fire-Fighting Services 4.6

Special Operations 4.4

Wildland Fire Suppression Services 4.7

-P-

Public Safety Answering Point (PSAP)

Definition 3.3.42

-Q-

Quint Apparatus

Definition 3.3.43

-R-

Rapid Intervention Crew (RIC)

Definition 3.3.44, A.3.3.44

Initial Rapid Intervention Crew (IRIC)

Definition 3.3.44.1

Referenced Publications Chap. 2

General 2.1

NFPA Publications 2.2

Other Publications 2.3

References for Extracts in Mandatory Sections 2.4

Rescue

Definition 3.3.45

-S-

Shall

Definition 3.2.3

Should

Definition 3.2.4

Special Operations

Definition 3.3.46

Specialized Apparatus

Definition 3.3.47

Staff Aide

Definition 3.3.48, A.3.3.48

Standard

Definition 3.2.5

Standard Operating Procedure

Definition 3.3.49

Structural Fire Fighting

Definition 3.3.50

Supervisory Chief Officer

Definition 3.3.51

Systems Chap. 6

Communications Systems 6.4

Incident Management System 6.2, A.6.2

Pre-Incident Planning 6.5, A.6.5

Safety and Health System 6.1

Training Systems 6.3

Sequence of Events Leading to Issuance of an NFPA Committee Document

Step 1: Call for Proposals

- Proposed new Document or new edition of an existing Document is entered into one of two yearly revision cycles, and a Call for Proposals is published.

Step 2: Report on Proposals (ROP)

- Committee meets to act on Proposals, to develop its own Proposals, and to prepare its Report.
- Committee votes by written ballot on Proposals. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.
- Report on Proposals (ROP) is published for public review and comment.

Step 3: Report on Comments (ROC)

- Committee meets to act on Public Comments to develop its own Comments, and to prepare its report.
- Committee votes by written ballot on Comments. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.
- Report on Comments (ROC) is published for public review.

Step 4: Technical Report Session

- “*Notices of intent to make a motion*” are filed, are reviewed, and valid motions are certified for presentation at the Technical Report Session. (“Consent Documents” that have no certified motions bypass the Technical Report Session and proceed to the Standards Council for issuance.)
- NFPA membership meets each June at the Annual Meeting Technical Report Session and acts on Technical Committee Reports (ROP and ROC) for Documents with “certified amending motions.”
- Committee(s) vote on any amendments to Report approved at NFPA Annual Membership Meeting.

Step 5: Standards Council Issuance

- Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the NFPA Annual Membership Meeting.
- Standards Council decides, based on all evidence, whether or not to issue Document or to take other action, including hearing any appeals.

Committee Membership Classifications

The following classifications apply to Technical Committee members and represent their principal interest in the activity of the committee.

- M *Manufacturer*: A representative of a maker or marketer of a product, assembly, or system, or portion thereof, that is affected by the standard.
- U *User*: A representative of an entity that is subject to the provisions of the standard or that voluntarily uses the standard.
- I/M *Installer/Maintainer*: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the standard.
- L *Labor*: A labor representative or employee concerned with safety in the workplace.
- R/T *Applied Research/Testing Laboratory*: A representative of an independent testing laboratory or independent applied research organization that promulgates and/or enforces standards.
- E *Enforcing Authority*: A representative of an agency or an organization that promulgates and/or enforces standards.
- I *Insurance*: A representative of an insurance company, broker, agent, bureau, or inspection agency.
- C *Consumer*: A person who is, or represents, the ultimate purchaser of a product, system, or service affected by the standard, but who is not included in the *User* classification.
- SE *Special Expert*: A person not representing any of the previous classifications, but who has a special expertise in the scope of the standard or portion thereof.

NOTES;

1. “Standard” connotes code, standard, recommended practice, or guide.
2. A representative includes an employee.
3. While these classifications will be used by the Standards Council to achieve a balance for Technical Committees, the Standards Council may determine that new classifications of members or unique interests need representation in order to foster the best possible committee deliberations on any project. In this connection, the Standards Council may make appointments as it deems appropriate in the public interest, such as the classification of “Utilities” in the National Electrical Code Committee.
4. Representatives of subsidiaries of any group are generally considered to have the same classification as the parent organization.

1710-24 ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS

-T-		Initiating Action/Intervention Time
Team		Definition 3.3.53.5, A.3.3.53.5
Definition	3.3.52	Total Response Time
Time		Definition 3.3.53.6, A.3.3.53.6
Alarm Answering Time		Travel Time
Definition	3.3.53.1	Definition 3.3.53.7
Alarm Handling Time		Turnout Time
Definition	3.3.53.2	Definition 3.3.53.8
Alarm Processing Time		Total Response Time
Definition	3.3.53.3	Definition 3.3.54
Alarm Transfer Time		Travel Time
Definition	3.3.53.4	Definition 3.3.55
Definition	3.3.53	Turnout Time
		Definition 3.3.56

EFFECT OF WORK RELATED STRESS ON FIREFIGHTER/PARAMEDIC

**EASTERN MICHIGAN UNIVERSITY
SCHOOL OF FIRE STAFF AND COMMAND**

Mark C. Shantz
Eastern Michigan University Ypsilanti Mi.
School of Fire Staff and Command
Fourth Class

An applied research project submitted to the Department of Interdisciplinary Technology
as part of the School of Fire Staff and Command Program. William Dangler

August, 2002

ABSTRACT

This research attempted to identify the aspects of psychological on the job stress, its causation, its effect on job performance, and any effects stress might have on wellness and general well being. Also this research will explore stress reduction techniques and their effectiveness. Unmanaged firefighter stress is the problem, or more specifically recognizing the signs and symptoms and taking appropriate action. “ Wellness in the fire service will, in great measure, involve the control, defusing, and management of firefighter stress reactions. Stress management technology is based upon an understanding of the stress response.” (Lawrence N. Blum, PhD., Stress and survival in the fire service, pg3)

The purpose of this research was to investigate how stress affects psychological fitness and physical well-being of firefighters/ paramedics and to make recommendations for a positive stress reduction program. Psychological stress a complex phenomenon. Therefore to identify all the potential sources was problematic. Information regarding firefighter/paramedic on the job stress was found to be very scarce. Similar trade journals were utilized where it was germane to the fire service.

The research method used for this project relied exclusively on trade journals, professional papers, articles from magazines and newspapers, books and other applied research projects. Research questions asked were; (1) Does on the job stressors affect firefighter performance and off duty activities and behavior? (2) Are there effective techniques to reduce or eliminate on the job stressors and detrimental effects of stress?

The procedures involved taking the most current data available from books, magazine and newspaper articles, professional trade journals, and related applied projects. This research included literature that was germane to the fire service. Studies and data pertaining to firefighter/paramedic on the job stress were scarce. Information on job related stress in related fields was also used.

Some research results were surprising. Firefighter are stressed by their own station living environment, their protective gear, their officers and leaders, current management styles, coworkers, and the stress of leaving their families and loved ones during natural and man made disasters. Research also provided results that were not surprising. Certain personality types did not cope well with psychological stress. However they did cope better with proper indoctrination, education and training. From this we concluded that education and support must come early because fire personnel will be called upon to meet many challenges. The better understood the symptoms created by traumatic scenes they will be exposed to, the better they will be able to perform at work with a greater degree of proficiency and enjoy a higher level of well being.

Recommendations; This research indicated when firefighters/paramedics were educated to recognize the effects of stress, how traumatic events can effect personnel, and management of traumatic stress through stress reduction techniques, individuals were more likely to enjoy a higher level of physical and psychology wellness. Which also translates into less absenteeism and higher morale.

TABLE OF CONTENTS

Abstract.....	2
Table of contents.....	4
Introduction.....	5
Background and Significance.....	6
Literature Review.....	8
Procedures.....	12
Table 1: Most Common Major Life Events Experienced by EMT's.....	15
Table 2: Most Common Daily Stressors Experienced by EMT's.....	16
Results.....	17
Table 3: Signs and Symptoms of Stress Reactions.....	21
Table 4: ICISF Recommendations.....	23
Table 5: Tips for Family Members.....	24
Table 6: Stress Reduction Techniques.....	25
Discussion.....	28
Table 7: Results from Las Vegas Fire Department Health & Wellness Plan.....	30
Recommendations.....	30
References.....	32

INTRODUCTION

Does work related stress affect the job performance and wellness of the firefighter/paramedic? The purpose of this research was to help identify work related stress symptoms both to the individual and the supervisor.

“ They see the good, the bad, and the very ugly. They watch children die and families grieve. They’re called to the aftermath of gun battles, car accidents and domestic rage. They’re cursed at, vomited and bled on, yet patients seldom ask their names. To say the least the professional life of a paramedic can be harsh and demanding. Their workday can last 24 to 48 hours. Some survive the stress, some don’t. The national average for a paramedic to stay on the job is just eight years.” (Deborah Belgium, Los Angeles Business Journal, issue Nov. 8, 1999, Stress, horror of job mean a high level of burn outs.)

“According to a survey conducted by the National Labor Organization, stress and its accompanying depression in the workplace is now the second most disabling illness hitting workers after heart disease. Recognizing that you’re reacting to this stress, and learning how to cope with it, will help you feel better, make your body healthier, and enable you to work more effectively.” (Peter Athol, Electronic Design, Dec 18, 2000).

“ A survey conducted by T.R. Cutler Inc. and reported in purchasing last year found that 23% of purchasing people indicated that they would like to leave the profession. The overwhelming reason, given by 62% of those people, was job stress. Tied for second were poor benefits and being underpaid.” (William Atkinson, Purchasing, Issue Oct 18, 2001)

“Besides making a person feel bad, stress can actually kill, albeit slowly. A recent study conducted by Ohio State University found that even mild stress can increase the risk of developing cardiovascular disease by leading to above normal levels of homocysteine, an amino acid that damages arterial walls.” In the book, *Your Miracle Brain* (Harper Collins, 2000) author Jean Collins reports on studies showing that long term chronic stress can alter the structure and functioning of brain cells, leading to gradual brain damage and atrophy via creation of free radicals. In another study chronic stress was found to cause death to nerve cells that are responsible for memory, with the loss looking like the death of neurons after strokes or seizures. (William Atkinson, *Purchasing*, Issue 18, 2001)

The research method used was a comprehensive literature search. Relevant information came from Abstracts, newspaper and magazine articles, medical journals, trade journals, and personal conversations.

BACKGROUND AND SIGNIFICANCE

Olin L.Green, U.S. Fire Administrator, expressed this in his forward to *Stress Management, Model Program for maintaining firefighter well-being*, (United States Fire Administration { USFA } 1991). “Stress is one of the most serious occupational hazards facing the modern fire service. It is important to recognize exactly how stress can adversely affect our health, job performance, career decision making, morale, and family life.” It has been long known that stress can cause a variety of conditions and symptoms, most of which are detrimental to health and well-being. “ Job stress, whether in the corporate world or on an assembly line, can damage employee performance,” warns John Herman, Associate Professor of Psychiatry, University of Texas Southwestern Medical

Center at Dallas. “ Moderate stress in many cases increases productivity and can be pleasant for some people. But higher levels of stress can interfere with your ability to do your job, is rarely pleasurable, and lead to emotional and physical problems. Some of these may be decreased job satisfaction, abrasiveness, making constant excuses, unpredictable behavior, moodiness, decreases communication, tardiness, or an increase in sick time.”(John Herman, USA Today Magazine, Issue August 2000).

“ Stress related absenteeism is a serious and growing problem. According to the 1999 CCH Unscheduled Absence Survey of 800,000 workers in more than 300 companies, the number of employee’s who called in sick due to stress had tripled over the previous four years. More than half of the 550 million working days lost each year in the United States due to absenteeism are stress related. Stress currently accounts for one out of five of all last minute no shows. And that’s just the tip of the iceberg. Job stress is estimated to cost American industry in excess of 300 billion a year.” (Donald T. DeCarlo, Risk and Insurance, More on Workplace Stress, Issue oct.1, 2001)

“ Time Magazine referred to stress as ‘ America’s number 1 health problem,’ and there in little doubt that things have gone steadily downhill. Numerous surveys show that job stress is far and away the leading source of stress in American adults. They also confirm that workplace pressures have progressively increased over the past few decades.” (Donald T. DeCarlo, Risk Management, More on Workplace Stress, Issue Oct. 1, 2001)

“ Over the years, one of our firefighters, killed his wife and then himself. Another firefighter transferred from a larger department, worked several years, resigned and committed suicide. Others have been involved in a variety of altercations, domestic problems, and stress related episodes and illnesses. One employee who appears to have become a recluse, retired and left the country. His problems followed him overseas.”
(Clifford F. Carlisle, MPA, Mountain Brook Fire Department, ARP submitted for Executive Fire Officer Program, Sept. 1999)

LITERATURE REVIEW

A review of fire service and psychological literature, relating to firefighter/paramedic and similar emergency responders, reveals the critical importance of psychological wellness for combating the occupational stress inherent in this career. No time in the history of the American fire service has this been more apparent. Incidents such as the Nimitz Freeway Collapse, the World Trade Center Bombing, Oklahoma City Bombing, Kansas City Skywalk Collapse, the Olympic Park Bombing in Atlanta Georgia, and recently the New York Trade Towers, are requiring our people to endure more than ever before. Fire Personnel are being asked to withstand horrendous physical and psychological assaults as they perform their duty.

“Stress was first studied in 1896 by Walter B Cannon (1871-1945). Cannon used an x-ray instrument called a fluoroscope to study the digestive system of dogs. He noticed that the digestive process stopped when the dogs were under stress. Stress triggers adrenal hormones in the body and the hormones become unbalanced. Based on these findings Cannon continued his experimentation and came up with the term