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Identifying Key Components to Improve the Pre-Incident Plan Program in the San Gabriel Fire Department

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Certification Statement

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Abstract

The San Gabriel Fire Department was unable to develop, maintain and access pre-incident plans that are useful or easily accessible to first due company captains. This significantly reduces the information that is available to that officer upon arrival at the scene of an incident. Lack of information increases the risk to fire personnel at the scene, as decisions made by first arriving officers are based solely on a visual assessment of the conditions observed from outside the location, rather than known information presented to the officer in the apparatus while en route to the incident.

Using descriptive research methodology, this paper identified the key components of a pre-incident planning program that improves the basic and inconsistent system that has been sporadically used by the San Gabriel Fire Department for at least the last 15 years. Five research questions examined industry standards, problems end users experience using pre-incident plans, critical elements of a pre-incident plan, differing needs of company officers and incident commanders, and accessibility of critical information to the company officers en route to an incident.

The research included a review of literature related to the subject, a questionnaire and interviews. The questionnaire was distributed to company officers and incident commanders across the United States, as well as to the officers of the San Gabriel Fire Department. Interviews of two San Gabriel Chief Officers, the Deputy Fire Marshall, and a Fire Captain were conducted. The results of the research were compared to the literature reviewed, and a series of recommendations were developed to re-establish and enhance the pre-incident planning program, with an emphasis on the creation of useful, well maintained, and easily retrievable data, that can

be used to enhance the decision-making ability of first due company officers, therefore reducing the risk to firefighting personnel.

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Identifying Key Components to Improve Pre-Incident Planning for the San Gabriel Fire Department

Introduction

The American fire service performs its most hazardous work in a world of rapidly increasing hazards to human life. While the risk to firefighters can never be eliminated, research and after-action reports looking into firefighter injuries and line of duty deaths have shown that steps can be taken to reduce these inherent risks. One proven method is the pre-incident (or pre-fire) planning process. The National Fire Protection Association (NFPA) has developed what is known as the industry standard for fire service operations. *NFPA Standard 1620, Recommended Practice for Pre-Incident Planning*, was developed following a large loss fire in Ohio in 1987. In the wake of this fire, the NFPA implemented one of the recommendations contained in the after-incident report and, at the same time, addressed the need for adequate pre-incident planning in similar occupancies. After the adoption of *NFPA 1420, Recommended Practice for Pre-Incident Planning for Warehouse Occupancies* in 1993, the Subcommittee of the Training Committee credited with the development of NFPA 1420 urged the expansion of the standard to include all occupancies. In 1998, *NFPA 1620* was adopted and re-titled with its current name (NFPA, 2003).

While pre-incident planning is commonly accepted in the fire service as a whole, many departments struggle to utilize such plans to their full extent. The San Gabriel Fire Department, in the Southern California City of San Gabriel, is one such department. The problem is that the San Gabriel Fire Department's current Pre-Incident Planning process does not result in plans that are useful or easily accessible to first due company captains. This significantly reduces the information available to that officer, upon which he or she will base critical initial decisions with

regard to the tactics and strategy used upon arrival. This lack of information subsequently increases the risk to firefighting personnel and to the public occupants of such structures, and decreases the effectiveness and efficiency of the first arriving company.

The purpose of this research is to identify the key components of a pre-incident planning program that improves the very basic and inconsistent system currently used by the San Gabriel Fire Department. The intent is to utilize technology currently owned by the department, as well as technology currently available, to provide critical, decision-making information to the first arriving company officers in a format that is easily accessible while en route to an incident. Descriptive research will be used to answer the following research questions: What are the recognized industry standards and best practices for information collection and retrieval for pre-incident (or pre-fire) plans? What are the most common problems utilizing pre-incident plans amongst company officers and incident commanders in the fire service? What elements contained in a pre-incident plan are most critical in the initial decision-making process of a first due company officer? How do the needs of the first in company officer differ from those of the on scene incident commander? How should this critical information be made available to the company officer so that it is easily retrievable and useful?

Background and Significance

Each year, roughly 100 firefighters are killed in the line of duty in the United States. Since 1977, 3,706 on-duty firefighter fatalities have occurred, and between 1998 and 2007, fire departments across the United States lost firefighters at an average rate of 3.44 fatalities per 100,000 fire incidents. While the leading cause of on-duty firefighter deaths remains heart attack, a substantial number of deaths continue to be attributed to on-scene activities (U.S. Fire

Administration, 2009). Often, circumstances leading to a firefighter's death are beyond human control, yet research into the causes of firefighter fatalities has shown that it is possible to significantly reduce the number of firefighters killed in the line of duty.

Numerous studies have shown that pre-incident, or pre-fire, planning can reduce the risk of injury and death to responding firefighters. In theory, the pre-incident plan provides information that familiarizes the responding companies with the involved property so that the well-informed company officer can make sound and effective tactical and strategic decisions upon arrival at the scene. In theory, this information is easily retrieved by the first due engine company prior to arrival, and it is a significant factor in the decision making process. In theory, pre-incident plans reduce the lack of knowledge of an unfamiliar building and improve the situational awareness of arriving personnel, reducing the risk, and subsequently the number of injuries and deaths to firefighters at the scene. Unfortunately, the theoretical application of pre-incident planning fails to address the impractical aspects of such plans, and any benefit to be gained by such programs are often left in the binder notebook in the cab of the apparatus, untouched, and gathering dust.

The National Fire Protection Administration has dedicated an entire standard, *NFPA 1620*, to pre-incident planning. Hundreds of articles have discussed the importance of pre-incident plans, detailing incidents where lack of a pre-incident plan resulted in an unfavorable outcome, as well as situations where effective pre-incident planning potentially saved lives of firefighters and civilians, and reduced property loss. Tragically, numerous after-action reports of firefighter injuries and fatalities stress the importance of a comprehensive pre-incident plan in providing for firefighter safety.

A United States Fire Administration report of firefighter fatalities that occurred during 2005 refers to a study prepared by Captain William Mora (San Antonio Fire Department) that looks into 23 firefighter deaths which were found to have occurred due to disorientation while inside structures. Each of those deaths, which occurred in 17 separate incidents, had similar factors: light smoke visible on arrival, an aggressive initial attack initiated by the first arriving engine company, interior conditions that deteriorated, and firefighters who became separated from a hose line. As a result of this study, the report recommends that fire departments initiate procedural changes and mandate training that focuses on "a cautious initial assessment and a managed initial attack" (US Fire Administration, 2006, p. 14). This recommendation supports the theory that pre-incident preparation, including pre-incident plans, provides critical information that should be utilized by the initial arriving company officers in taking such steps to protect their respective personnel.

The tragic facts presented in the previous paragraphs underscore the need for effective pre-incident plans that are practical for use by company officers in the few, precious moments before their arrival at the scene of an incident. In order to understand the urgency of the situation within the San Gabriel Fire Department, it is necessary to understand the basic history of the city and the organization. The City of San Gabriel is a densely populated, urban city located 10 miles east of downtown Los Angeles. Home of La Misión del Santo Príncipe El Arcángel, San Gabriel de Los Temblores, which was founded in 1771 by the Spaniards, San Gabriel is also known as "The Birthplace of Los Angeles." The City of San Gabriel was incorporated in 1913, is home to roughly 41,000 people, and covers 4.2 square miles. There are 12,909 housing units (U.S. Census Bureau, 2007), making the community largely residential, with a mix of light industry

and two major commercial corridors which largely serve the rapidly growing Asian American population.

The San Gabriel (CA) Fire Department, which serves this diverse community, employs 36 personnel, 35 of whom are sworn, uniformed firefighters, including four administrators. These personnel operate out of two fire stations, and provide a full range of emergency services including fire suppression and emergency mitigation, paramedic transport, and fire prevention/public education.

The current age of the structures within the jurisdiction range greatly with many new structures mixed amongst a number of buildings built prior to 1970. Nearly 70% of the structures in the city were built between 1930 and the late 1970's, and most of these are of conventional wood construction. According to building officials at San Gabriel City Hall, several common problems exist in buildings of this vintage: (a) zero clearance lot lines in buildings with multiple units that have no two hour fire separations required by present day fire and building codes; (b) inadequate structure to support modern heating, ventilation and air conditioning (HVAC) units, particularly under fire conditions (Teresa Tena, personal communication, August 13, 2009).

Despite the rather small size of the jurisdiction, many company officers are unfamiliar with the hazards presented by these structures for several reasons: lack of a formal, consistent pre-incident planning system; failure to rotate company inspection districts amongst crews; constant changes in occupants and occupancy types within these structures; and, the lack of a reliable communication process by which changes to such buildings are shared with all company and chief officers as they occur, or as they are discovered. This paper will attempt to address most of these issues while focusing on the pre-incident planning process.

The San Gabriel Fire Department has recently reinstated its pre-incident plan program after it had fallen to the wayside roughly 12 to 15 years ago. While pre-fire plans, as they were known at the time, still exist in an extremely crude and outdated form on some of the Department's apparatus, the information contained within these plans is seldom, if ever, utilized. Mobile data computers (MDC) are now at the fingertips of company officers, and property (premise) information is available through the Computer Aided Dispatch (CAD) information, but it is rarely useful due to its inconsistent format and content. Many addresses do not have premise information available through the CAD, as the department lacks the manpower to enter it into the system.

At the current time, no written policy or procedure on developing, completing, retaining, modifying, retrieving or utilizing pre-incident plans exists. The Deputy Fire Marshal has been tasked with creating and re-establishing the pre-incident plan program, and he has elected to utilize a software application developed by First Look Pro. The contents of the current pre-fire plan have not been based upon the current *NFPA 1620* standard; in fact, the department did not have a copy of the standard until the initiation of this research project. Neither the City of San Gabriel, nor the San Gabriel Fire Department, has adopted any of the standards developed by NFPA.

Without a written policy or procedure on pre-incident planning, the program was initiated through a series of informal meetings in which verbal direction was given to each of six captains as to how the pre-incident plan forms were to be completed. Each captain was directed to complete a pre-incident plan for every occupancy within the commercial inspection district, and has been provided with a copy of the First Look Pro Inspection Form (Appendix A) in paper form. (The initial direction to the officers was subsequently clarified that a pre-incident plan was

required for each building within the inspection district, reducing the number of plans required, as multi-occupancy buildings such as strip malls require only one pre-plan be completed.) Little clarification has been given as to the format, content, and planned use of the pre-incident plans, resulting in major inconsistencies in the resulting product. Lack of written standards and lack of enforcement of the unclear verbal standards have furthered the inconsistency issue. Data submitted has ranged from estimated building dimensions to detailed scale drawings of buildings, as the final product is left to individual discretion. There is an understated misunderstanding amongst all officers, at the engine company level and chief officer level, as to the intended use of the information once compiled. This has further hampered the drive to obtain consistent intelligence amongst the six crews tasked with completing the forms, as the end product has yet to be presented.

Upon submission of the First Look Pro Inspection Forms to the Fire Prevention Bureau, the information contained within the forms is input into the computerized version of the program by the department's administrative assistant. At this time, the software is only available on several computers located in the fire station, and the information contained within the plans is not available in the field in any form. The Deputy Fire Marshal has explained that he intends to load the software onto the MDCs located on each apparatus in the future. The San Gabriel Fire Department is also in the process of trying to obtain funding to purchase tablet computers so that pre-incident information can be entered as it is collected, in the field.

Retrieval of information presents another problem to the company officer. Currently there is no method by which a company officer can retrieve the pre-incident information when in the field en route to, or at the scene of an emergency. No determination has been made as to whether the information available, once the First Look Pro software is loaded on to the MDCs, can be

tailored so that the company officer is not overwhelmed with any more than the critical information needed upon arrival. It is also yet to be determined whether the program can be customized so that the incident commander can access additional information above and beyond that deemed critical to the first arriving officer, once the incident command system has been established. This research will attempt to make these determinations.

Though inconsistent, information that has been gathered by engine companies under the new program can be imported into an improved system, as determined by the results of this research. At this time, the information regarding a building in one officer's inspection district remains solely in the memory of that officer. Should an incident occur and that officer be off duty, the first arriving engine company officer will not have the benefit of knowing the critical information related to that structure, which could potentially jeopardize the safety of his crew. The San Gabriel Fire Department has six inspection districts, spread amongst the six company officers. The potential exists that on any given day there is a one in six chance that a fire within the jurisdiction will occur within a district inspected, and pre-planned, by the first arriving engine company. A pre-incident planning program that shares this information amongst all company officers is essential to reduce the risk to San Gabriel Firefighters.

The results and recommendations of this research paper will also consider the potential future impact on the department. At this point in time, the San Gabriel Fire Department has been fortunate to have escaped without injury or death to any of its firefighters, nor to members of the community which it serves. This luck does not excuse the department, however, from taking steps to reduce the risks to its employees and the citizenry. Renowned fire service lecturer Gordon Graham has delivered countless presentations discussing firefighter injuries, deaths and close-calls. Graham's mantra, "Predictable is preventable" (Graham, 2002) emphasizes his belief

that risks which can be indentified can be managed. Pre-incident plans identify risks so that company and chief officers can manage them, but only if the information is applicable and easily accessible, and the company officer is trained to use it. Improving the pre-incident planning process in the San Gabriel Fire Department can fulfill this objective.

The topic of pre-incident planning was selected by the author not only because of its importance to the organization, but also because it is directly relevant to the National Fire Academy Executive Fire Officer Program desired course outcomes for Strategies for Leading Community Risk Reduction (SCRR). The desired outcomes include reducing the line-of-duty deaths (LODD) among firefighters, which is what this research is intended to do.

The SCRR course bases these desired outcomes on the U.S. Fire Administration's (USFA) 5 year objectives. This research is related to four of the five stated objectives, including: "Reduce the loss of life from fire in the age group 14 years old and below," "reduce the loss of life from fire in the age group 65 years old and above," "reduce the loss of life from fire of firefighters," "and to respond appropriately in a timely manner to emerging issues' USFA, 2008, p. II-2).

Literature Review

A review of literature related to the subject was initiated and involved a wide range of technical manuals, technical guides, fire department policies and procedures, applied research papers, periodicals, manuals, standards, books, the internet, and personal communications. The literature addresses each of the five research questions; however the author's search for literature addressed several of the questions in much more detail than others.

A number of fire service organizations, as well as state and federal agencies, have addressed the issue of pre-incident or pre-fire planning. The National Fire Protection Association (NFPA) defines a pre-incident plan as, “a document developed by gathering general and detailed data used by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies at a specific facility” (NFPA, p. 1620-7). Carter and Rausch (1999) describe a pre-fire plan as a survey, and plan that includes key factors which influence the means by which a fire is attacked, should a fire occur at a particular occupancy. Keith (2008) is more specific in his definition, calling a pre-incident plan a collection of general and detailed information about a facility, gathered by the emergency response agency in anticipation of an emergency.

Regardless of the exact definition or term used to describe “pre-planning,” every fire service author who writes on the subject agrees on the importance of such planning activities, and the impact that the planning has on firefighter safety on the fireground. A pre-incident plan provides critical information about a structure’s construction, occupants, and fire protection systems before a fire occurs, and is one of the most valuable tools available to the responding fire department (Keith, 2008). Angle, Gala, Harlow, Lombardo and Maciuba (2001) state that, “Preincident planning is also an essential element in coordination and control. It provides the firefighter with valuable information that can be obtained prior to the incident and then used if an incident occurs” (p. 126). Most important are the ties between the risk to firefighters and pre-incident planning.

Firefighters face a level of risk with nearly every task that they undertake. This risk must be dealt with through a process called risk management, which seeks to minimize negative effects through informed decision-making. The first step in risk management is to identify the

exposure, and the second step is to develop alternatives to manage the exposure (Jenaway, 2006). One way that firefighters, particularly company officers, manage exposure at a structure fire is through their selection of tactics based upon the conditions present upon their arrival at the scene. Quite often, the urgency of the situation forces these decisions to be made rapidly, and with little information beyond their observation upon arrival (Salka, 2006). Size-up is the term the fire service uses for the evaluation of conditions upon arrival at the scene of any incident, and thus begins the risk management process. Avillo (2002) states that, "Size-up begins with pre-fire planning. In fact, pre-fire planning can be thought of as the size-up before the fire" (p. 2). Pre-incident planning, if used as intended, can provide information that can change the way tactical decisions are made by the Incident Commander, and those fighting the fire (Avillo, 2002).

Pre-incident plans can provide a significant increase in support during an operation, reducing the risk and improving overall firefighter safety (Naum, 2009). Mora (2009) states that many firefighter fatalities could be prevented if firefighters were aware of the problems facing them. The NFPA fire investigation reports "…are replete with firefighter fatalities in which factors firefighters could've known about before the fire—but didn't—play a role" (Klaene and Sanders, 2000, ¶ 6). Firefighter lives can be saved by relaying building information to responding units while they are en route to an incident. Current, correct and accessible pre-incident planning provides protection for firefighters, and allows them to better serve to the community (Klaene and Sanders, 2000).

Industry standards and best practices.

Pre-incident planning has become a core competency for fire officers, as the NFPA has defined the professional qualifications for fire officers in *Standard 1021*. In this standard, the

NFPA describes the requisite skills of a Fire Officer I (supervisory level officer) as being able to identify numerous building construction and protection features the affect the spread of a fire so that a pre-incident plan can be developed (NFPA, 2009). The NFPA developed *NFPA Standard 1620, Recommended Practice for Pre-Incident Planning*, in 2003. Within this standard, the NFPA outlines the content, and the process for creating a pre-incident plan. Factors to be evaluated include: construction, occupant characteristics, fire protection systems, capabilities of responding agencies, mutual aid availability, water supply, and exposures. In addition to these categories, "The pre-incident plan should help responding personnel identify critical factors that will affect the ultimate outcome of the incident, including personnel safety" (NFPA, 2003, p. 1620-8).

The US Department of Labor – Occupational Safety and Health Administration (OSHA) describes their role as the federal entity that assures that employees enjoy safe and healthy working conditions through the development and enforcement of safety standards in the workplace. On the issue of pre-fire planning, OSHA suggests the pre-fire plan be conducted by local fire agencies so that they may be familiar with the workplace and its hazards (OSHA, n.d.). OSHA does not have a standard nor any regulations specific to the development or use of pre-incident plans.

Pre-fire planning is a significant factor in the Insurance Service Office (ISO) classification system for fire departments. ISO bases a maximum score credited for training if an agency creates and/or reviews a pre-fire plan for each commercial, industrial, institutional and similar structures twice each year. While the ISO does not specify the elements that make up the prefire plan or how it is used by the department, records of the inspections and updated notes and sketches must be submitted for their inspection (ISO, n.d.).

The National Institute for Occupational Safety and Health (NIOSH) published *Alert – Preventing Injuries and Deaths of Fire fighters Due to Structural Collapse* in 1999. In this document, NIOSH recommends a number of steps to minimize the risk of death and injury to firefighters, including conducting pre-fire planning and inspections of a building's construction materials and components (NIOSH, 1999). In the report *Identifying Leadership and Management Best Practices for Reducing Firefighter Deaths and Injuries*, Granito, Trench, England, and Neal (2006) identify numerous factors that improve firefighter safety, including establishing pre-planning activities and reviews.

Numerous other fire service experts expand upon the baseline standards previously discussed. In lessons learned from the Worcester, Massachusetts abandoned cold storage fire, in which six firefighters lost their lives, firefighters inside the structure failed to recognize a number of critical and deadly factors that faced them during their attempts to quickly extinguish the fire. The report indicates that there were no barriers to prevent the spread of the fire, which was accelerated by the combustible interior finishes of the building. Access was limited for fire suppression and rescue efforts, and there were unusually long travel distances inside the building. These factors led the US Fire Administration investigators (USFA) to present the following two lessons learned, both of which are specific to pre-incident planning: "2. Firefighters must make a concerted effort to know the buildings in their response district, and 4. Fire departments should continue to grown their file information on buildings in their communities" (USFA, 1999, p. 14). The report claims that firefighters must be familiar with buildings, particularly large commercial structures, to lower the increased danger to firefighters posed by such occupancies. It also states that the use of mobile computers, which can forward

critical information on a structure to firefighters en route, can aid in reducing the instances of firefighter injury and death (USFA, 1999).

Recent articles, like Lacey and Valentine in *Firehouse.com*, have moved the emphasis of pre-incident planning toward those potential hazards to firefighters' safety, rather than issues more suited for an incident commander (2009). Johnson (2008) points out that Chapter 5 of the *International Fire Code* includes provisions addressing hazards to firefighters, indicating a further move toward emphasizing such hazards during the design of new structures. The design and construction phase are ideal times to develop pre-incident plans (Johnson, 2008).

Common problems using pre-incident plans in the field.

The most common problem related to the use of pre-incident plans in the field discovered in the literature review was related to the cumbersome nature of the plan itself. End users in agencies using paper based, binder-kept plans struggle to use them effectively, as the retrieval of information takes too long while en route to an incident (St. John, 2007). Keeping such records up to date further exacerbates the problems, making the binders themselves more of a burden than of any use to first due engine company officers. In many agencies, the pre-incident plan itself is stored in a location that is completely inaccessible to responding companies (Lohner, 2003). Information that is included in a plan is often inconsistent, unreadable, or offers too little, or too much information to be meaningful for department-wide use (Lohner, 2003).

Elements most useful to first due company officers.

Mora has conducted studies of firefighter line of duty deaths and found that of 176 firefighter fatalities between 1990 and 2006, 77 percent occurred in an enclosed structure fire. He has determined that a critical step in preventing firefighter deaths in similar structures is knowing

that an unprotected enclosed structure is involved. This can be accomplished by conducting a pre-incident plan and making that information available to responding companies (Mora, 2009).

The International Association of Fire Chiefs' (IAFC) National Fire Fighter Near-Miss Task Force publishes an annual report on firefighter near-miss incidents that found that the three leading contributing factors of line-of-duty deaths attributed to injury are situational awareness, decision making, and human error (2008). Bachman (2003) agrees that the failure to identify occupancy hazards is a key pre-incident intelligence principle on which the fire service fails to focus its efforts. Bachman continues, stating that identification of potential hazards to firefighters will serve to safeguard firefighters.

In addition to special hazards of an occupancy, Bachman stresses that knowing the orientation of the building allows personnel responding to an incident to be familiar with a facility or building and its layout (2003). Occupancy type can provide insight into the life hazards, the fire load, and the presence of hazardous materials, as well as other factors that may impact the tactics and strategy employed to mitigate the incident (Avillo, 2002). Building construction is a significant factor that must be considered by the first in company officer when making initial decisions and determining a tactical course of action (IAFC, 2006). NIOSH (1999) concludes that firefighters must be made aware of the potential for structural collapse and take steps to ensure that responders are safe.

Tuscon Fire Department has developed a pre-incident planning system called Critical Observations from Building Risk Analysis (COBRA). COBRA's developers include five areas of information in each plan template that will assist on scene personnel in making decisions. These five areas include: (a) geographical orientation, (b) fire service features, (c) building

construction, (d) specific hazards, and (e) systems and salvage. Geographical orientation includes general information about the property and the response, as well as a 360 degree photographical view of the building. Fire service features include water supply and access issues, as well as rescue, exposure, and suppression information. The building construction information identifies construction type and size of the building, and floor plans, including all exterior doors, as well as other exterior openings and roof structure notes. Specific hazards describe all facets of the occupancy that could threaten the lives of initial responders such as concealed and confined spaces, overhead hazardous and open areas, and photographs of each hazard are available to the end user through the mobile data computer (MDC). Items critical to the firefighting operation—alarms, utility shutoff, ventilation systems, and extinguishing systems—are found in the systems and salvage section (Ruetz and Bailer, 2005).

Bryan Frieders, a Battalion Chief with the San Gabriel Fire Department, believes that a pre-incident plan can assist both the arriving company officers as well as the incident commander with decision-making by providing critical information that pertains to the unique needs of both parties. He states that the pre-incident plan "…will enhance the tactical decision making process by allowing it to begin en route rather than waiting to arrive on scene…" and that basic structural information, particularly those that create hazards to firefighters working within the occupancy "…puts firefighters in a precarious position…" (B. Frieders, personal communication, January 29, 2010). OSHA (2006) summarizes the sentiments of the aforementioned authors and subject matter experts by stating that "even simplifying the firefighters' job in small ways will increase the level of safety for them….Any feature that provides additional information regarding the fire, the building, or the occupants, as well as any method to speed the delivery of this information also helps" (OSHA, p. 6).

Differing needs of the incident commander, and the first-due company officer.

In the course of this literature review, nearly 60 literary sources were analyzed to determine whether or not fire service experts have differentiated between the specific needs of the on-scene incident commander and the first due company officer, as they relate to the information found within a pre-incident plan. Of these, only two specifically mention the need to reach different audiences when developing pre-incident plans. Ruetz and Bailer (2005) describe Tucson Fire Department's COBRA system, stating that the goal is to reach three audiences: station based firefighters, on scene incident commanders, and first arriving company officers. Developers of the COBRA system specifically target company commanders en route to the incident.

Expanding on this premise, the IAFC's Analysis section in the *2008 Near Miss Annual Report* (2008) describes situational awareness as one of five principles of effective crew resource management. The report states that situational awareness is "the level of understanding and attentiveness one has regarding the reality of a set of conditions" (p.12). It goes on to describe how the level of situational awareness can decrease surprises when high, or increase the chances that the unexpected will occur when low. Three divisions of conditions affecting the level of situational awareness are listed: a lack of information, a lack of knowledge, and a lack of cognition. The report concludes this section by providing a case study which exemplifies this point by describing the factors first in officers unfamiliar with a structure may be unaware of: how long the fire has been burning, and the structural composition within which it burns. While the time the fire has burned may remain unknown, having knowledge of the building's construction can provide information and knowledge that will increase the officer's situational awareness. In this case study, the fire described consumed a single-family home of masonry and

light-weight trusses. With the unknown burn time and no smoke conditions upon arrival, the first arriving company entered the structure and made an interior attack, only to have the roof collapse six to eight minutes later, nearly trapping the crew inside (IAFC, 2008).

Access to pre-incident plans.

"The preincident plan should provide the incident commander with the need-to-know information in a form that allows for quick recognition." (Angle, et. al., 2001, p. 211). Information must be prioritized following the data collection phase of planning so that the most critical and useful information is presented in the pre-incident plan (IAFC, 2006). "Considerable effort is needed to gather and manage this type of information; fire departments should [try] to take advantage of grant programs to enhance their technological capabilities, including information management systems" (National Fallen Firefighters Foundation, 2005, n.p.).

Carter and Rausch (1999) describe a need to prioritize the occupancies that a fire department should attempt to pre-plan due to time constraints and the time required to develop a quality product. According to these authors, occupancies with increased potential for loss of life or property should be the primary focus in the initial planning effort. Pre-incident planning creates a large volume of data, which can create logistical challenges to gathering, sorting and storage of the data, as well as difficulties in rapid recovery of the information for use at an emergency, particularly prior to the use of in vehicle computers. Mobile data terminals provide a means to deliver critical information to responders prior to arrival at the scene (Carter and Rausch, 1999). "When departments have on-board computers in the fire command vehicles, incident commanders and subordinate officers are able to conduct more informed fire-fighting operations through ongoing reference to prefire plans in the system…Computers and fax

machines can pay off in enhanced operations, especially fire fighter safety" (Carter and Rausch, 1999, p. 235).

Pre-incident plans kept in a centralized database allow data to be easily accessible for use during an incident (Lohner, 2003). St. John (2007) agrees, stating that "time is of the essence" (¶ 8) and readily available plans can reduce decision time by providing the information en route so that it can be absorbed and processed before arriving at the scene. Klaene and Sanders (2000) comment on notations provided on department dispatch or "run cards," claiming that such information should not serve as a substitute for a pre-incident plan, which describes features and pre-fire conditions that are not generally available on such notations.

Johnson (2008) describes the vast improvements in computer based pre-incident plans as enabling responders to have access to "…the most current, relevant information and plans [which] is critical to effective response and incident management" (¶ 2). Furey (2008) adds that though computerized information is intended primarily for use at the incident scene, some configurations can allow the same information to be shared with the dispatch center, allowing the dispatcher to visualize the emergency scene.

The IAFC (2006) provides the following recommendations on putting collected data to use in a pre-incident plan:

1. The plan should provide critical information in a format that is easily retrievable and useful during emergency conditions.
2. Electronic files should be used when possible to provide data that can be viewed en route to an incident.
3. Data systems that allow the automatic population of information into mobile data computers enable en route access, including plot plans of the incident location.

4. Plot plans should contain relevant facts to allow users to quickly identify pertinent facts about the occupancy and property, and floor plans can quickly familiarize officers with a layout of the building.
5. Information must be in a standardized format so that it can be rapidly and easily retrieved by the responding officer.

Bachman (2003) believes that pre-incident plan information must go through a systematic process of collection, review and preparation, so that it illustrates the specific hazards of a particular facility. The data collected cannot simply be placed into a binder or scanned into a computer, but must appear in an organized format that can be applied quickly to an incident. Other aspects to consider when determining the method of plan retrieval include its use by mutual or automatic aid departments, and as intelligence information to aid rapid intervention teams (RIT).

One of the benefits of having a pre-incident planning process is the development of the plan itself. To ensure that the end process is not undertaken in vain, the product must fulfill a need of those using it. Lacey and Valentine (2009) believe that "they need to be developed by the user (operations) and used by the developer (operations)" (¶ 4). *NFPA 1620* (2003) states:

> The format of the information is the culmination of the data collection and reduction process and results in the final product that will be used by the emergency responder. It cannot be understated that the pre-incident plan user should have the final say in the format. (p. 1620-36)

NFPA 1620 also clearly states that the presentation of the plan information must "be relevant, clear, concise, and complete. It is unlikely that emergency responders will have the time to read extensive text. Information should be presented graphically…whenever possible….Information

that will not be of use…should not be allowed to clutter the pre-incident plan" (NFPA, 2003, p. 1620-36).

Summary Statement

While a great deal of time was invested in reviewing literature, limited research has been published on the specific needs of the first in company officer when attempting to more effectively utilize pre-incident plans upon arrival at an incident. The author maintains the belief that a pre-incident plan that is developed for use specifically by a first arriving company officer to provide information critical to the initial decision-making process will reduce injuries and deaths to firefighters. The author used the concepts, standards, and research of the authors cited in this literature review as a foundation for his own research, which focused on the specific differences in the needs of the incident commander, and the unique needs of the first arriving company officer. Further, the author seeks to determine how to display the most critical information in a way that it can be easily retrieved and used en route to an incident by company officers.

Procedures

The focus of this research is to determine the components of a pre-incident plan system that are critical to the first arriving company officer's tactical decision-making process, and indentifying a means by which such information can be easily retrieved and presented in the most user-friendly format possible. Dozens of pieces of data can be gathered during the pre-incident plan walk-through conducted by engine companies, but a human reviewing the information can process a limited amount, particularly in a few brief moments. In order to determine what information is to be considered critical and useful upon arrival, how the data

should be accessed and utilized, and what processes are currently being used across the nation, a questionnaire of company and chief officers was distributed to fire officers throughout the United States.

In an effort to tie the data gathered from other agencies with data gathered from San Gabriel Fire Officers, who also completed a questionnaire, interviews of several San Gabriel company officers, chief officers, and the deputy fire marshal were conducted.

Questionnaire

The literature review was used to develop a questionnaire on pre-incident planning that focuses on the last four research questions in particular. For the purpose of this research, questionnaires were sent on August 20, 2009, via email, to 31 Los Angeles Area Fire Chiefs, 721 current and former Executive Fire Officer (EFO) participants, and all nine officers of the San Gabriel Fire Department, which includes three battalion chiefs and six captains. The questionnaire was titled the *NFA-EFOP ARP: Dev Useful Pre-fire Plans* (Appendix B). The survey group was electronically contacted through an email contact list obtained from three sources: (a) a published list of Los Angeles Area Fire Chiefs contact information; (b) a contact list of EFO participants obtained through the National Fire Academy administration; and (c) a list of emails in the San Gabriel Fire Department email contact list. Of the 761 emails that were sent out, 90 were returned ‘undeliverable’ for a variety of reasons, therefore it is assumed that 671 recipients actually received the initial email request. The participants were given fifteen (15) days to complete the survey; 300 questionnaires, or 44.7% of the total disseminated, were completed at the end of this period.

Three separate letters (Appendices C, D, and E) were drafted and sent to the participants in an effort to reach the greatest number of company officers and chief officers who serve as incident commanders as possible. Each letter provides a brief summary of the research project, instructions for completion, and a link to Survey Monkey, the website hosting the online questionnaire. The Los Angeles Area Fire Chiefs are fire chiefs who do not regularly serve as incident commanders on incidents that would utilize a pre-incident plan. For this reason, the author requested that the survey be electronically forwarded to each battalion chief and company officer for their respective departments (Appendix C). The EFO participants are of a wide variety of fire department ranks, and the letter accompanying the questionnaire (Appendix D) asked the recipient to complete it if rank appropriate, and to forward the instrument to as many company officers and incident commanders as possible. San Gabriel officers received a letter (Appendix E) describing the project and asking that each complete the online questionnaire. All recipients were asked to complete the questionnaire by September 4th, 2009.

While the request to forward the questionnaire to company officers and officers serving as incident commanders made accounting for the actual number of questionnaires distributed impossible to document, the nature of the instrument itself and the basis of the research does not place limitations on the number of questionnaires distributed. The author's intent in developing the questionnaire was not to attempt to represent a scientifically valid extrapolation of the entire population; rather it was intended to garner general descriptions of the issues related to the effectiveness of current pre-incident plans by both first arriving company officers and incident commanders, and obtain opinions pertaining to the concept of making such plans more useful in the field.

Each of the questions within the instrument was developed based upon information discussed in the literature review, or upon one or more of the research questions. The lack of literature related to end-user problems and the unique informational needs of the first due company officer makes the questionnaire extremely necessary to obtain the goal of this applied research paper. The purpose of the questionnaire is to collect data related to the variety of pre-incident planning systems in the fire service and included questions related to four specific areas. The specific areas included:

1. Basic Information section includes the name of the department, participant name and rank, the population served by the participant's agency and the number of personnel. The final question in this section asks if the participant's agency utilizes pre-fire plans in any form.

2. General Pre-plan Information section seeks information regarding written policy, procedure, or guideline documents, pre-planning software, and the parties responsible for developing pre-fire plans. Participants are also asked to provide their opinion with regards to the consistency, ease of use, storage and retrieval, and problems or complaints associated with their current pre-fire plan system.

3. Company Officer Specific Questions follow a general question that asks the capacity to which the participant most often serves at the scene of an incident. The participant has the option of Incident Commander or Company Officer. Based upon the option selected, the participant is directed to questions specific to the appropriate position. Company officers are asked whether or not a pre-fire plan could provide important information that would aid in determining initial strategy and tactics, if it were available en route to an incident. To follow up, each participant

is asked to select information from a list that would be most useful to a company officer while en route to an incident.

4. Chief Officer/Incident Commander Specific Questions are identical to the company officer questions except that they specify that the information is used by the incident commander to make strategically based decisions upon arrival at the scene of an incident.

Though the questionnaire may provide a broad perspective on pre-incident plans, the author finds it necessary to delve further into the specific issues of pre-incident planning as it relates to the San Gabriel Fire Department and its' officers.

Interviews

Interviews were conducted with San Gabriel Fire Department Battalion Chief Michael Terry, Battalion Chief Bryan Frieders, Captain Derrick Doehler, and Deputy Fire Marshal Don Berry. Chief Terry is the longest tenure chief officer on the department, and was selected by the author in hopes that he could provide a historical perspective into the department's pre-planning efforts. Chief Frieders is currently developing the specification for new software, which may include the ability to process, store and disseminate data related to pre-fire planning. Captain Doehler was selected due to his progressive and forward-thinking approach to fire prevention and pre-incident planning, and his responsibilities related to apparatus mobile data equipment. Finally, Deputy Fire Marshal Berry was interviewed to gain insight into the current pre-fire plan system which he developed, as well as his knowledge of the current computer system capabilities.

A series of questions was developed to gain opinions from the developers, administrators, and end users of the pre-plan system currently in use at the San Gabriel Fire Department. Each

was interviewed in a fire station office while on duty, and all were asked a series of similar questions (Appendix F, G and H). The questions posed were based upon the information examined in the literature review and the results of the questionnaire, and were intended to further examine the pre-planning issue at a local level. Specifically, the interviews were conducted to thoroughly address the second, third, fourth, and fifth research questions. A comparison of each of the findings will be made in the discussion section of this research paper.

Limitations

One limitation to the use of a questionnaire is the responding participant's knowledge of their agency's pre-incident planning system or program, and the fact that numerous factors can influence a person's opinion of the system that they currently use. The author has chosen to allow multiple members from the same department respond to the questionnaire due to the fact that the goal was to obtain the opinions of the end users of pre-incident plans in general, though the participant's current system was referenced. Also assumed is that each respondent interprets the question as it is intended by the author. While the questions and response options were developed to obtain a specific range of responses, the respondent's specific job description, rank or title may preclude them from providing the most educated or informed answer.

The interview creates limitations as several of those interviewed are uninformed or unaware of the recommended components and purpose of pre-incident planning. This situation has arisen due to the lack of training and policy related to pre-incident planning. Further, inconsistency in the chain of communication within the organization has caused confusion as to what system the engine companies are to use for pre-plan activities. The overall lack of knowledge leads to limits to the responses provided during the interview process.

Results

The results of the research represent a comprehensive study of the effectiveness of pre-incident plans in the decision-making process of first arriving company officers. Through the research procedures previously discussed, the author has attempted to uncover the answers to each of the last four research questions to fulfill the purpose of this applied research paper.

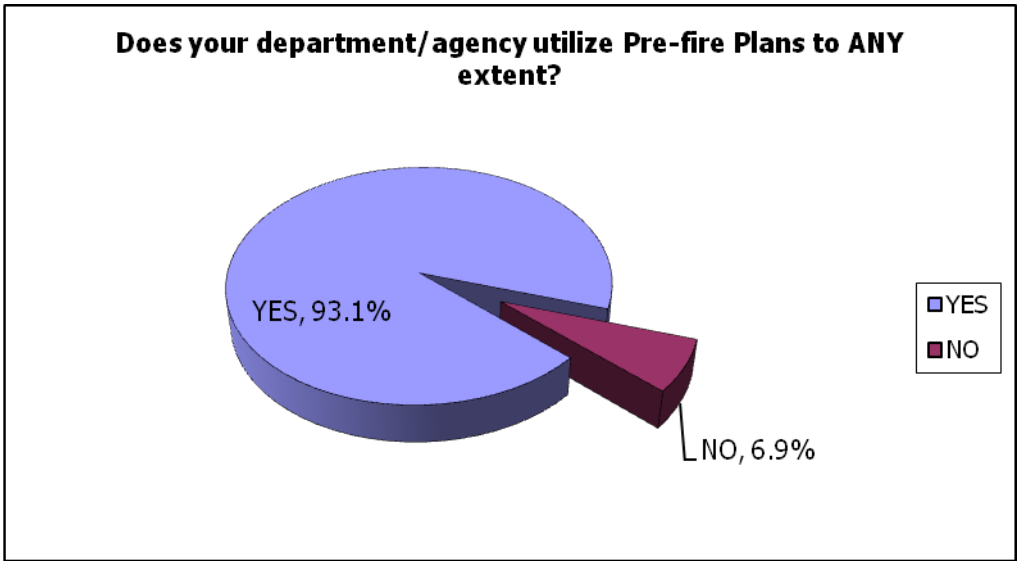
Developing Useful Pre-Incident Plans Questionnaire

The second, third, fourth and fifth research questions can be answered, in part, by the data collected through the *NFA-EFOP ARP: Dev Useful Pre-fire Plans* questionnaire, which was distributed to 761 fire service personnel. The data collected in the questionnaires can be broken down and summarized by the same specific areas described in the procedures section. The response summary is also provided as Appendix B.

Basic Information.

During the course of the fifteen day period that recipients of the questionnaire were given to respond, 300 responses were submitted. These 300 responses accounted for 44.7% of the total number of questionnaires sent out by email on August 20, 2009. The data returned represented the opinions and experiences of 300 chief and company officers from 161 fire agencies in the United States, and one agency in Australia. Agencies as small as eight members, and as large as 65,000 personnel represented fire service personnel who serve communities as small as 1500, and larger than 9 million. Over 120 company officers responded, as well as 180 chief officers from Alaska to Florida, and Hawaii to New York. Of the 300 total responses, 282 (93.1%) stated that their agency utilizes pre-fire plans in some manner (Figure 1).

Figure 1: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 3 Responses

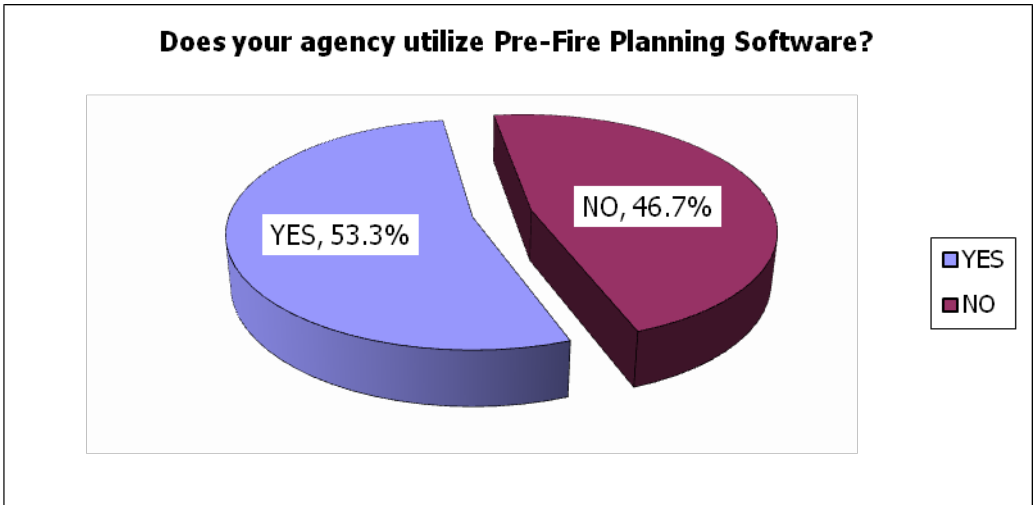


Eighteen respondents responded to Question 3 by selecting 'no', indicating that their agency does not use any form of pre-fire plan. These participants were directed to the end of the questionnaire, and were not asked to answer any additional questions. Participants responding to Question 3 with a 'yes' response were directed to continue on in the questionnaire, however, only 270 completed the remaining items. The author has no explanation as to the disposition of the twelve respondents who failed to complete the instrument.

General Pre-plan Information.

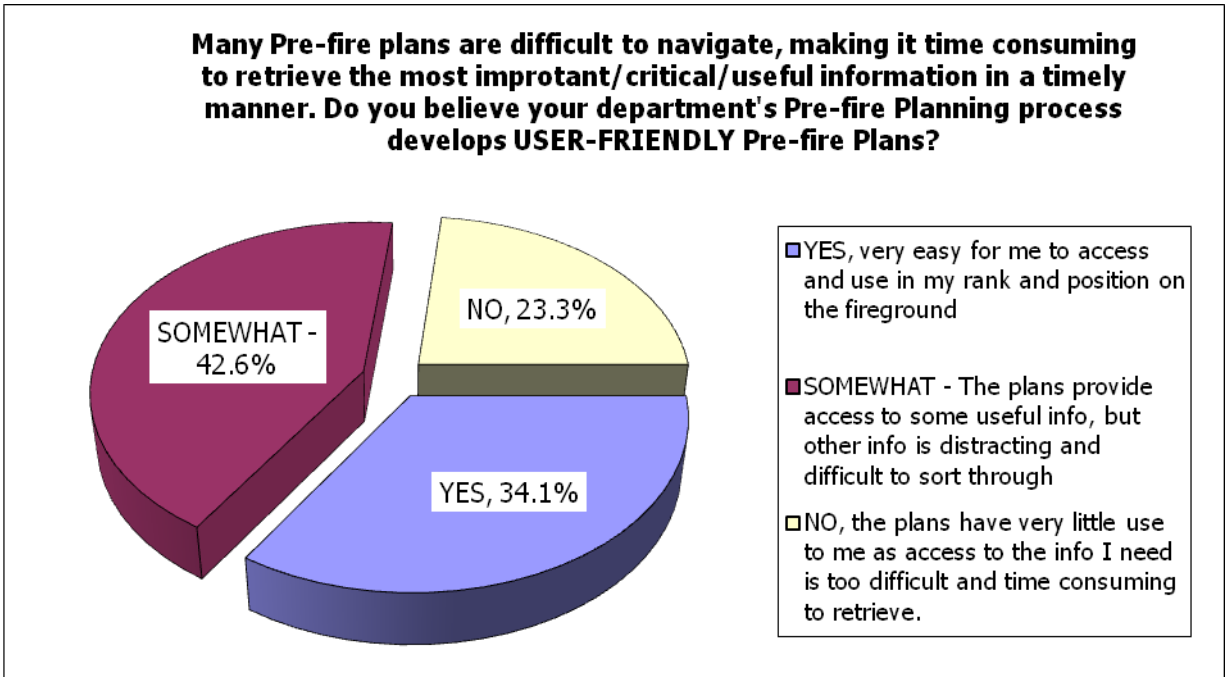
When asked whether the respondent's agency has a written policy, procedure or guideline pertaining to pre-incident pre-fire planning, 55.9% said 'yes.' A similar number, 53.3%, indicated that their agency utilized pre-fire planning software. Participants answering 'yes' were asked to provide the name of the software, and 120 answered the second part of this question. While the responses were wide ranging, the software mentioned most often, nineteen times, was FireZone, followed by Visio and FireHouse at sixteen and fourteen times respectively (Figure 2).

Figure 2: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 5 Responses



Question 6 attempted to determine how many respondents were involved in the preparation of a pre-incident plan, to which 83.7% of them indicated that they were. Of the 16.3% who were not involved in the process, 25 of the 44 stated that company officers are primarily responsible. Questions 7 through 12 ask every participant to provide their opinion based upon their experiences with their current pre-fire planning system/process. In Question 7, 54.8% of the responses selected said that their department's current pre-planning process develops plans that are 'somewhat' consistent, but contain minor variation depending upon the author/developer, while 26.3% believe the plans are very consistent and 18.9% say that the product is very inconsistent. In a similar form, Question 8 asks whether the respondent believes that their agency's plans are useful, to which 42.6% answered 'somewhat' useful, providing access to some useful information, but cluttered amongst other distracting information; 23.3% believe that their current plans are too difficult and time consuming to access, yet 34.1% feel that the plans are easy to access and use at the incident scene (Figure 3).

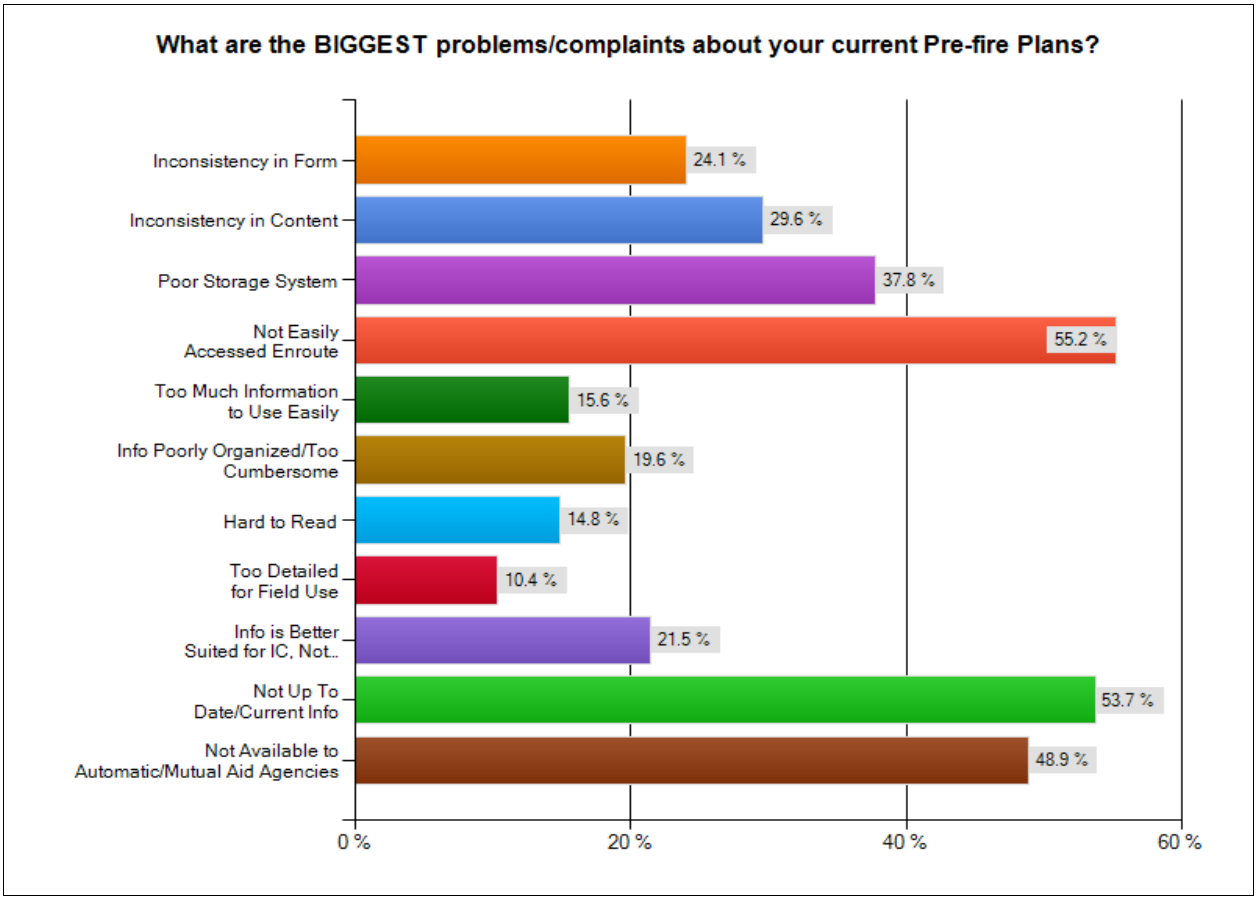
Figure 3: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 8 Responses



The data retrieved from Question 9 shows that 60.7% of pre-fire plans are stored in a binder or book on each apparatus, while 31.5% are stored in some form of computer database. The remaining 7.8% of pre-plans are not available in the field. One hundred and seventy five (64.8%) respondents indicated that their current storage and retrieval system hinders its usefulness while en route to an incident, however, while at the scene of an incident, 55.9% of respondents say that same system is effective and 34.4% see it as a hindrance (Question 10). The remaining 9.6% do not find the current system useful regardless of accessibility.

The author reveals what respondents see as the biggest complaints or problems with their current pre-fire plans by providing a list of problems and asking them to select their responses. The most common problem indicated was that the plans are not easily accessed en route to an incident (55.2%), followed by outdated information (53.7%) and the inability for automatic and/or mutual aid agencies to access the pre-plan (48.9%) (Figure 4).

Figure 4: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 12 Responses



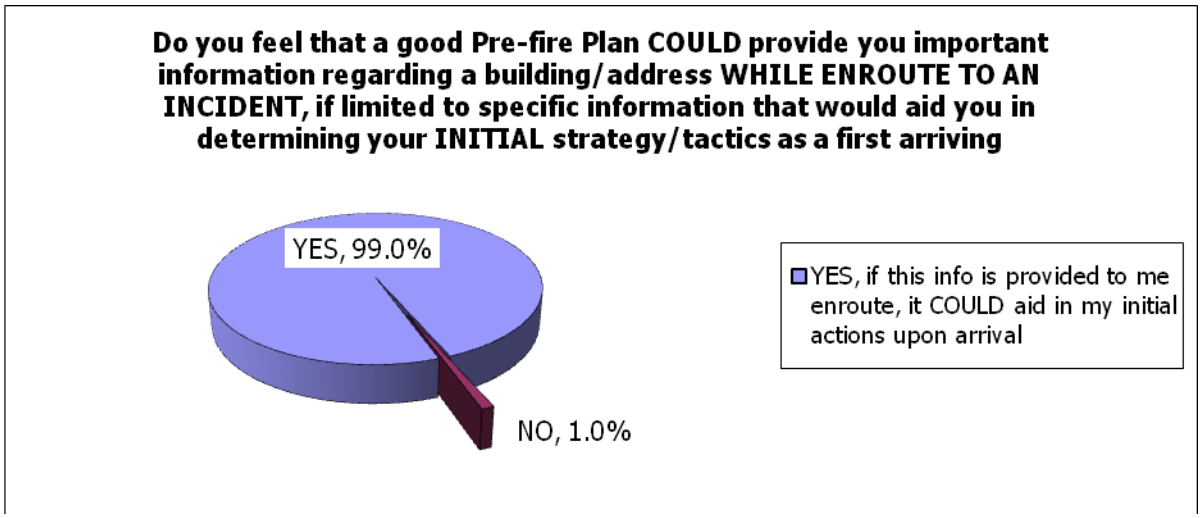
Respondents answered Question 13, and were directed to either Questions 14 and 15, or 17 and 18, depending upon the answer given. Question 13 asks which position, Company Officer or Incident Commander, the participant most often serves when responding to structure fires. Of the 270 responses, 165 (61.1%) answered Incident Commander, and were directed to Questions 17 and 18, and 105 (38.9%) were directed to Questions 14 and 15, which are specific to company officers.

Company Officer Specific Questions.

While 105 respondents indicated that they respond to an incident as a company officer, only 102 responded to the two remaining questions. The author has no information as to the disposition of the remaining three. Question 14 asks the respondent whether or not a pre-fire plan could provide important information regarding a building to a company officer while en route to an incident if it was limited to specific information used for initial tactical decision-making. Question 15 asks the company officer to select, from a list, the information that they feel would be most useful to have while en route to an incident.

Nearly every company officer, 101 of 102, responded that critical information, provided en route to an incident, could aid in the determination of initial actions of the company upon arrival (Figure 5).

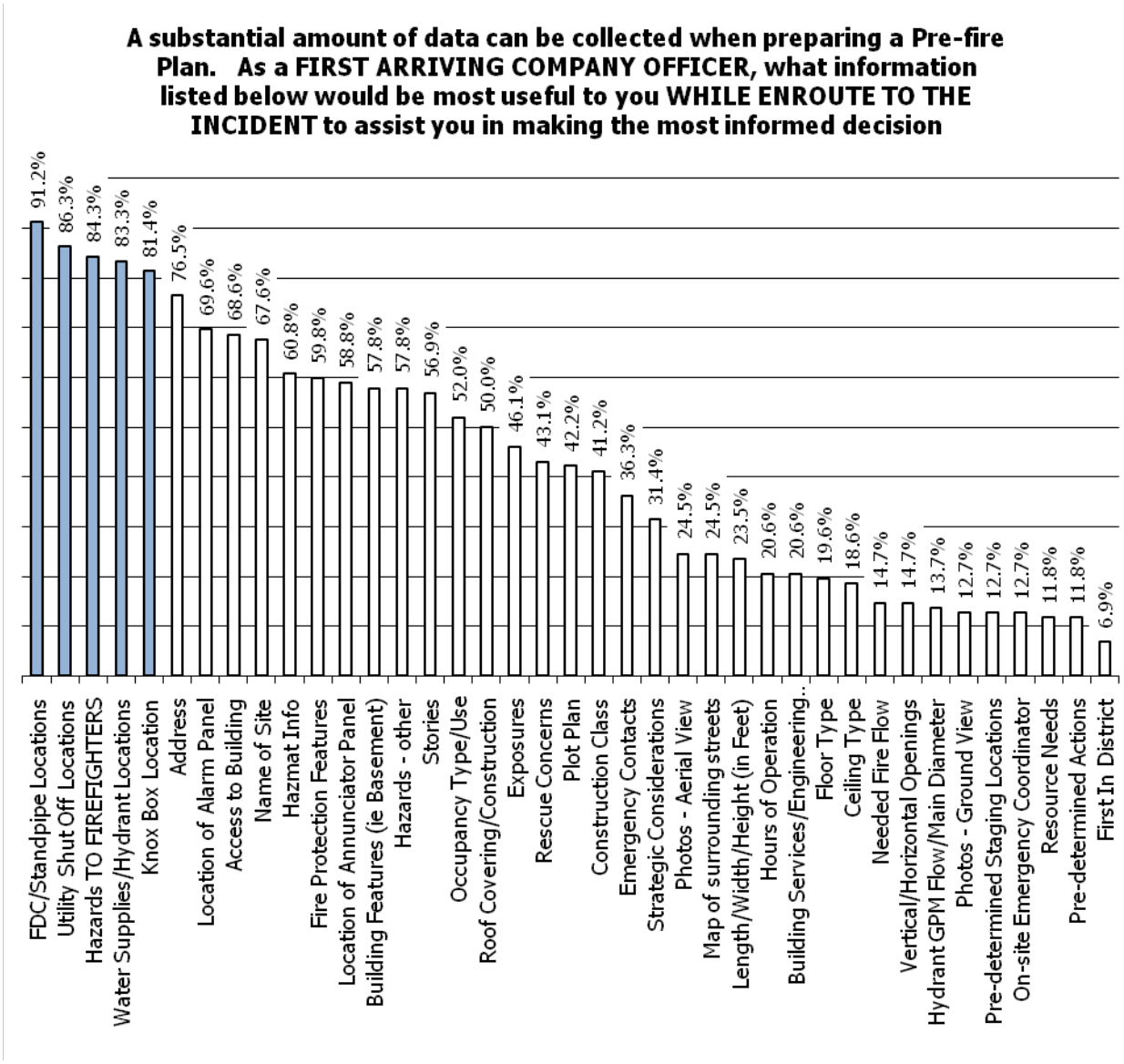
Figure 5: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 14 Responses



Company officers indicated that the information most useful to them while en route was the location of fire department connections (FDC) and standpipes (91.2%), followed by utility

shutoff locations (86.3%), hazards to firefighters (84.3%), water supplies/hydrant locations (83.3%), and the Knox Box location (81.4%) (Figure 6).

Figure 6: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 15 Responses

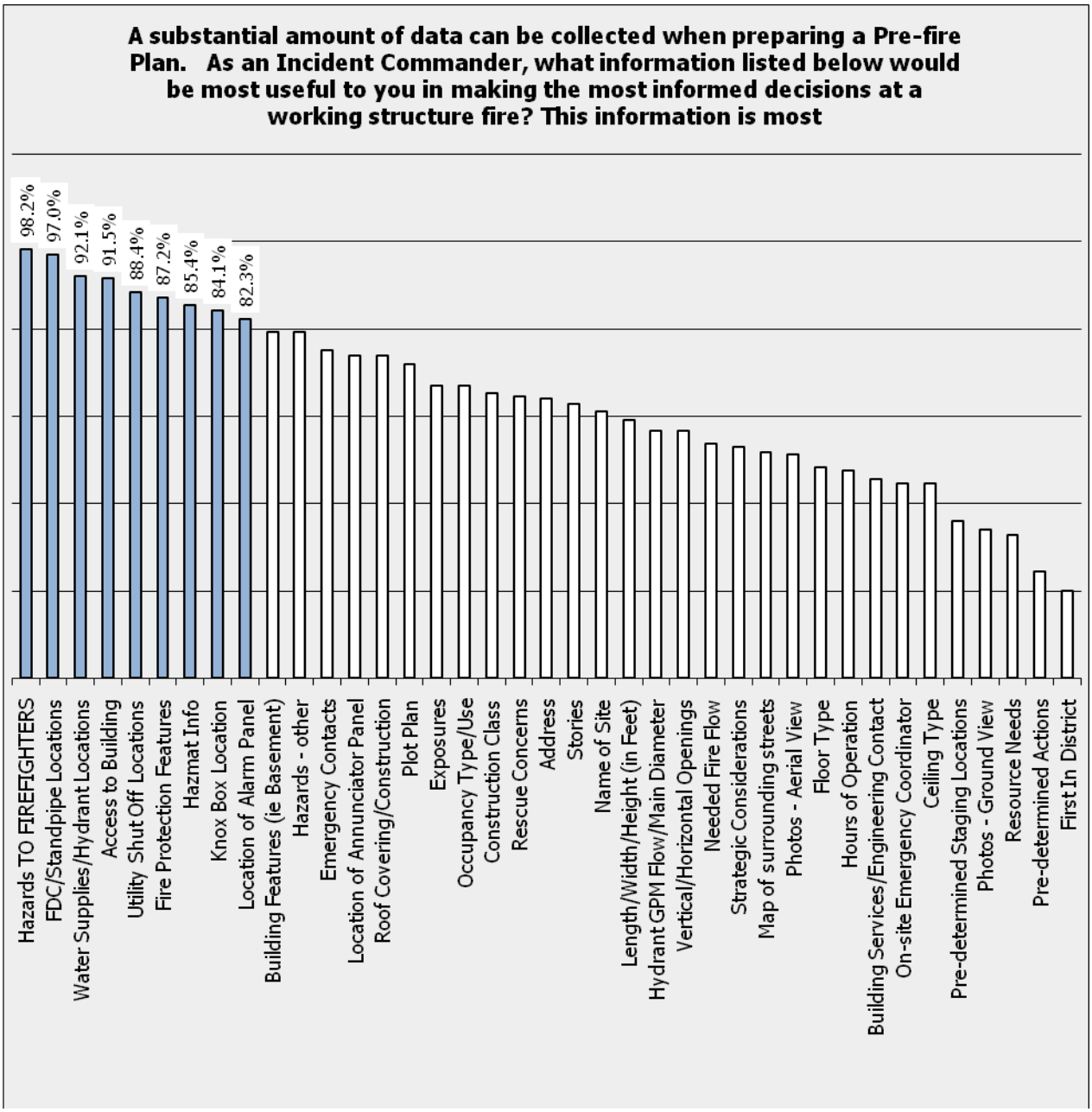


Chief Officer/Incident Commander Specific Questions.

Respondents who stated that their primary role on the incident scene was to serve as an incident commander were directed to Question 17 and 18. In regard to whether or not important

information regarding a building could be provided while en route to an incident that could aid in initial strategy development as a chief officer, 95.7% indicated yes, while only one (0.6%) selected no. The lack of a driver for most chief officers, however, caused 23 respondents (14%) to indicate that there is no way to review the information en route to an incident.

Figure 7: NFA-EFOP ARP: Dev Useful Pre-fire Plans, Question 18 Responses



When asked to select the information most useful in decision making upon arrival at a working structure fire, 98.2% felt that hazards to firefighters was the most important, followed by FDC and standpipe locations (97%), water supply and hydrant locations (92.1%) and access to the building (91.5%) (Figure 7).

San Gabriel Fire Department Staff Interviews

The author conducted interviews of four fire department staff members to determine whether the opinions, experiences and ideas of San Gabriel staff was consistent with the experiences, opinions, and research findings of the authors in the Literature Review, and the results of the Pre-plan Questionnaire. Battalion Chief Michael Terry has worked for the department for 31 years, having served the last 12 years at the rank of Battalion Chief. Chief Terry is selected for interviewing due to his tenure with the department. The author hopes to better understand the historical aspect of the department's pre-incident planning program. Battalion Chief Bryan Frieders has worked for the department since 2000, and was promoted to the rank of Battalion Chief in 2009. Chief Freiders is currently leading a program to update the computer infrastructure of the department, both hardware and software. Both Battalion Chiefs were asked twelve identical questions in their interview (Appendix E).

Captain Derrick Doehler has served the department since 1997, and he was appointed to captain in 2006. Captain Doehler is assigned to a task force that oversees the department's contract dispatch services, and is an advocate of pre-incident planning. Captain Doehler was asked eleven questions (Appendix F) that are similar to those asked of the battalion chiefs, but vary in the sense that they ask the subject to focus on details specific to the tasks of a first due fire captain in San Gabriel.

Deputy Fire Marshal (DFM) Don Berry has served the department in his position since 2000. Prior to an injury that forced him into the fire prevention bureau, DFM Berry worked as a firefighter for 20 years. DFM Berry is the department's only fire prevention bureau employee, and as such, he was tasked with re-initiating the pre-fire program for the department. DFM Berry has been assigned the additional responsibility of maintaining the department's current computer system, including the reporting system for the agency. The interview of DFM Berry consisted of 22 questions (Appendix G), and focused on his involvement in the development of the current pre-incident plan program and his vision for the full implementation of the program.

Summaries of Interviews.

For the purpose of reporting the results of the interviews in the most simplistic method, both Battalion Chiefs and Captain Doehler will be commonly referred to as the end users; DFM Berry will be referred to by his name. All end users stated the importance of having readily available, comprehensive and accurate information to streamline operations at an incident, and that pre-incident planning has not been a priority for far too long. The availability of plans through a computerized data retrieval system will have benefits to both incident commanders and company officers, enhancing the decision-making process by allowing it to begin en route to an incident. Captain Doehler emphasized the importance of ensuring that the information is available on the mobile data computers on each department vehicle so that it can be easily retrieved during the response. Collectively, all three end users agree that information regarding building features, exposures, contents, occupancy, construction, access and exit points, and hazards to personnel are most important to an incident commander and company officer alike.

The end users were each asked four questions related to the current system's ability to meet the needs of both incident commanders and company officers. All three agreed that the current system fails to provide any critical information to personnel responding to an incident, that such information could not be easily retrieved if it actually existed, that it is inadequate for pre-incident planning, and that the current CAD software is unable to provide the type of information that would be beneficial to an officer en route. Currently, there is no method available to provide pre-incident plan information to an automatic or a mutual aid company, prior to their arrival at the scene.

The battalion chiefs were asked one additional question regarding the unique needs of the first arriving company officer, and both agreed that the informational needs are different than those of the incident commander. Chief Terry believes that the needs are "much different" when tactical decisions must be made by the company officer inside and directly adjacent to the involved structure. Chief Frieders commented that a captain forced to make decisions without adequate information about the structure is making such decisions based on a "quick visual and cursory assessment of the building. This puts firefighters in a precarious position, especially if special hazards exist that cannot be visualized from the street." To conclude the interview, each end user was provided the opportunity to make additional comments. All three commented on the importance of making the information easily accessible to the user so that it may be used to aid fire officers in their effort to reduce firefighter injuries and fatalities.

On October 16, 2009, the author interviewed DFM Don Berry regarding his role in the department's pre-incident planning program. DFM Berry is the person with primary responsibility for the department's pre-planning program, which was recently implemented and re-establishes a process that has not been used or update for a number of years. Berry was not

able to provide a date that the last pre-fire plan was developed. He stated that a recent Insurance Service Office (ISO) survey prompted the fire chief to assign the task of re-establishing the program to Berry, when the agency received low scores in the training section of the survey. The San Gabriel Fire Department does not have a policy or standard operating procedure for pre-incident planning; DFM Berry does not know why there is no such policy or procedure.

DFM Berry describes the current program as incomplete in its development. The department owns preplanning software called First Look Pro. Engine companies have been assigned the responsibility of collecting information on all structures within their business inspection districts, and entering it into paper forms created using First Look Pro. The data captured on the forms is entered into a desktop computer at the headquarters fire station by the department's administrative assistant. At this point, the information on approximately 1600 commercial occupancies in the City is not available to units in the field in any format.

The future of the pre-incident program includes adding a retrieval system that makes the information available to responding units en route to an incident. Tablet personal computers are a priority, but funding is scarce and procurement hinges on the approval of Federal Grant money. DFM Berry stated that he did not conduct any substantial research into the pre-incident planning program, and that he is not aware of the capabilities of any other software or data collection program.

Discussion

The results of the research conducted by this author support many of the opinions and research discussed in the literature review. In many cases, the author's findings take the issue of pre-incident planning to a level beyond what is discussed in general terms or theory by many

authors reviewed. After reviewing the results of the original research conducted as part of this project and that of the authors cited in the literature review, the author finds it appropriate to begin the discussion section of this paper by making a few general comments on pre-incident planning, before delving into each formal research question.

The author opened the literature review discussing several general comments about pre-fire, or pre-incident planning. The authors represented several industry leaders, and a number of fire service experts who each described their ideas with regard to pre-incident planning, and its relevance to the effectiveness and, more importantly, the safety of the first responders to any incident. The definition found in *NFPA 1620*, *Recommended Practice for Pre-Incident Planning*, includes a reference to the use of a pre-incident plan "by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies…" (NFPA, 2003, p. 1620-7). Carter and Rausch (1999) add that the plan influences the means by which a fire is attacked in a particular occupancy, and Keith claims that pre-plans are one of the most valuable tools available to the responding fire department (2008).

Firefighters must manage risks on nearly every task they undertake, and risk management seeks to minimize risk through informed decision-making, which begins with identifying the exposure, then developing alternative to manage it (Jenaway, 2006). Avillo (2002) explains that size up is the evaluation of conditions upon arrival, but insists that "pre-fire planning can be thought of as the size-up before the fire" (p.2). Salka (2006) agrees that upon arrival, decisions need to be made quickly and are often made with little information beyond observation after arrival.

All of these statements can be summarized by Naum, who believes that pre-incident plans provide a significant increase in support and reduce the risk, thus improving firefighter safety (2009), and Mora (2009), who states that firefighter fatalities could be prevented if firefighters were aware of the problems facing them. Klaene and Sanders (2000) agree, writing that firefighter lives can be saved by relaying building information to responding units while they are en route to an incident. This author's purpose for this research paper is to determine why pre-incident plans are not effectively used throughout the fire service, and develop recommendations to improve the delivery of the information to the end users, specifically the first arriving company officers, so that critical information can be used to make decisions about initial company actions that are more informed, creating a safer environment for the personnel at the scene.

Each of the authors cited thus far in this section support this author's assumption that pre-incident planning can provide information en route to an incident that can enhance decision-making, and reduce the instances of injury and death to firefighters. The research conducted by this author also seems to support this assumption, however, it has become clear that the end users are not realizing the benefit of such planning because of an inability to easily retrieve the information. In the research, 99% of the company officers and 95.7% of the incident commanders indicated that a pre-incident plan that was limited to specific information that would aid in initial decision-making, if provided en route, would be useful upon their arrival at an incident. The lower number of incident commanders responding yes was limited by the lack of a driver, and therefore the inability to read while driving. This overwhelming data supports the need to improve the delivery system so that information can be available to company officers before they arrive at the scene. The data indicates that 64.8% of those using pre-incident plans

agree that their current system hinders the usefulness of the plan en route to an incident. As this discussion continues, specific problems and various solutions will be discussed.

Industry standards and best practices.

Research question one seeks to identify industry standards and best practices for pre-incident planning. Technical sources, such as the *NFPA Standard 1620, Recommended Practices for Pre-Incident Planning*, identified a general guideline for a pre-incident plan. The standard provides an outline of the content, the process for collecting data and creating a plan, and lists the factors to be evaluated. What NFPA fails to identify is exactly what factors apply to any particular end user. For example, the data from the questionnaire, as well as the interviews of San Gabriel Fire Department's end users, identified the fact that company officers and incident commanders require different 'critical' information to enhance decision-making at the fire scene. Chief Terry believes that the needs of a first arriving company officer are "much different" than those of the incident commander. Chief Frieders echoed those comments by stating that a captain without information is forced to make decisions based upon a cursory assessment of the building, thus putting "firefighters in a precarious position."

The *NFPA Standard 1021, Standard for Fire Officer Professional Qualifications*, was also reviewed. This document identifies the requisite skills of a Fire Officer I, which includes the ability to identify numerous building features so that a pre-incident plan can be developed (NFPA, 2009). While this statement is merely a guideline for company officers (particularly in San Gabriel, where the NFPA standards have not been formally adopted), its standing as an industry standard determines a baseline of knowledge for officers, never-the-less. Officers at the San Gabriel Fire Department rarely share building knowledge with their crews, as the culture is

such that prevention and pre-planning is a forced, 'necessary evil.' The department's lack of a written policy, procedure, or guideline on pre-incident planning further deepens the apathy toward the program. Deputy Fire Marshal Berry's response to the reason no policy or procedure exists was, "I don't know." During the course of his research, the author discovered that the agency did not even have a copy of *NFPA 1620*, even though a new pre-incident planning program had been developed recently. Though somewhat surprising, the attitudes toward pre-fire planning found in San Gabriel exist throughout the fire service.

The results of the questionnaire further indicate that agencies across the United States have failed to make pre-incident planning a priority. While 93.1% of respondents said that their department has a pre-fire plan program, only 55.9% of those say that their agency has a written policy, and only 42.6% say that their plan is 'somewhat' useful. This data indicates that although the industry standards describe pre-incident planning as a basic skill of company officers, and while *NFPA 1620* outlines the recommended practices for pre-incident planning, United States fire departments are merely completing plans that are seldom used by their intended audiences, for their intended purpose.

In addition to the NFPA, OSHA and ISO also comment on pre-incident plans. The OSHA suggestion is that a pre-fire plan be conducted by the local fire agency for familiarization of the workplace and its hazards (OSHA, n.d.). Conversely, ISO takes what many consider an extreme stance, awarding maximum credit in an agency survey for a department that pre-plans every commercial occupancy twice each year (ISO, n.d.). DFM Berry indicated in his interview that the cause for the re-birth of the San Gabriel Fire Department program was to obtain more points from ISO, who had recently identified this as an area needing improvement. The author believes that the OSHA recommendation is more significant, as it is made to protect the employee who is,

in this case, the firefighter. The ISO simply rates agencies as a method of setting insurance rates, and few of the ISO's rating categories consider firefighter safety as a factor. Charleston Fire Department carried a Class 1 ISO rating until 2008, when the ISO reduced it to Class 3. While Class 1 is the highest ISO rating, Charleston suffered the loss of nine of its firefighters in 2007. The ISO makes no recommendation regarding the elements, development, or use of the pre-fire plan.

NIOSH and the USFA also comment on pre-incident planning. NIOSH recommends a number of steps to reduce death and injury, including pre-incident planning (1999), and the USFA has found that lack of building knowledge has increased the danger to firefighters, and has been a factor in on the job injuries and deaths, as well as many near-miss incidents (1999). Lacey and Valentine believe that the fire service must move the emphasis of pre-incident planning from the incident commander to a focus on firefighter safety (2009). The data obtained from the research supports this concept, but indicates that the fire service has yet to implement a wide-spread, easy to use, and a unanimously accepted system to bring these concepts to fruition.

Common problems using pre-incident plans in the field.

The second research question broadens the author's look at the problems end users face when utilizing pre-incident plans in the field. Several problems surfaced as the most common issues: accessibility and consistency. While literature uncovered only two authors who discussed problems, the author was able to gather more insightful information in the responses to the questionnaire. St. John (2007) identified the fact that end users in a program that uses paper based, binder-kept plans struggle to use them effectively en route to an incident. Lohner adds that storing the plan in a binder makes the inaccessible to responding companies (2003).

The research questionnaire broached this issue in Questions 9, 10 and 12, which focus on the storage and retrieval systems in place across the fire service. Nearly 61% (60.7%) of respondents report that the pre-fire plan for their respective agency is stored in a binder or book on a department apparatus or vehicle. Just 31.5% of those questioned answered that their plan is stored in an electronic format, and shockingly 7.8% report that the plans are not available in the field. At this point in time, the San Gabriel Fire Department stores pre-plan information in a computer that is not accessible to anyone outside of the fire station. Looking at this analysis of the data, it is no surprise that 64.8% of those who responded stated that their current pre-plan system was a hindrance to retrieval while en route to an incident, supporting the literature of both St. John and Lohner. Further, the research shows that the most common problem end users report is that the plan is not easily accessed en route (55.2%).

The second most often reported problem with pre-incident plans is a lack of current information (53.7%), which is similar to the consistency problems reported by Lohner (2003). Lohner writes that the information included within a plan is often inconsistent, unreadable, or offers too little or too much information to be meaningful. The third most often reported problem is that pre-incident plans are not available to automatic or mutual aid agencies (48.9%), followed by a poor storage system (37.8%). While the storage of the plan has already been discussed, the issue of sharing the plan with neighboring agencies brings up an interesting aspect not considered in the literature as a problem.

The San Gabriel Fire Department frequently requests the aid of neighboring agencies, and the odds of that agency being first due within the city is high. There is no means by which a pre-incident plan can be shared with that automatic aid agency, in the current state of the program. The preparation of a pre-incident plan itself allows the personnel who gather the data to

become familiar with the occupancy or structure. Automatic aid agencies, however, do not have that knowledge, making those responders the ones with the greatest need for the information contained within. This issue will be addressed in the recommendations in this research paper.

Elements most useful to the first due company officer.

A number of authors discuss the elements of a pre-incident plan, however few specifically reference the information that pertains to the needs of the first due company officers. Several authors discuss the effect that a lack of specific knowledge has had on firefighter safety, and the role that this issue plays in firefighter injuries and fatalities. Mora studied firefighter line of duty deaths and found that a key contributing factor in 77% was that they occurred in enclosed structures. Through his analysis of after action reports and similar data, Mora determined that knowing the type of structure firefighters are operating in is a critical step in preventing firefighter deaths in like structures (2009). The IAFC agrees in their annual Near-Miss Report (2008), finding that situational awareness and decision-making are two of three leading factors into line of duty deaths, injuries, and near-miss incidents. Human error is the third, which this author believes can also be reduced by providing critical information prior to arrival at an unfamiliar structure. Bachman (2003) adds the importance of understanding a building's layout, and Avillo (2002) believes that occupancy type will provide insight into the life hazards and other factors that influence the tactics and strategies employes. NIOSH (1999) concludes that firefighters must be made aware of the potential for structural collapse to ensure that responders are safe.

Though the literature review unveils a profound interest in the elements that could reduce the risks to responding firefighters, the author's data from the questionnaire tells a different

story. While 99% of company officers, and nearly 96% of incident commanders agree that information that could aid in initial decision-making if made easily available while en route to an incident, the information that both parties determined to be most critical strays from the elements discussed in the literature review. While nearly every author mentioned discusses a form of building construction, layout, or occupancy, the data returned from the author's questionnaire indicates that information regarding firefighting operations takes precedence over elements that would serve to protect the firefighters themselves.

Company officers who responded to the survey listed the following items as the most critical while en route to an incident: (1) FDC/Standpipe locations; (2) Utility shut off locations; (3) Hazards to firefighters; (4) Water supplies/Hydrant Locations; and (5) Knox box location. This contradicts what numerous fire service experts profess in their literary works. In fact, the data shows that building features, as discussed by these authors, were selected as most useful to company officers (out of 39 total factors) as follows:

1. Access to building ranked 8 out of 39.
2. Building features (ie basement) ranked 13 out of 39.
3. Roof covering/construction ranked 17 out of 39.
4. Plot plan ranked 20 out of 39.
5. Construction class ranked 21 out of 39.
6. Floor type ranked 29 out of 39.
7. Ceiling type ranked 30 out of 39.

8. Vertical and horizontal openings ranked 32 out of 39.

The author finds this data a reflection of an ongoing problem in the fire service—firefighters continue to die for the same reasons over and over. When the location of the alarm panel ranks 7 out of 39 items, and higher than eight elements that describe the potential hazards within the structure, there is more than a procedural change that is necessary. It seems that the same fire service leaders who author magazine articles, reports on firefighter near-misses, and firefighter fatalities must become more proactive in moving forward the universal cultural changes to see safety of fire personnel rise above the tradition of risking it all for the fire fight.

Incident commanders responding to the questionnaire had a similar list of elements deemed most critical to their decision-making once on the scene of an incident, with several key exceptions. Incident commanders listed ‘hazards to firefighters’ as the most important piece of information in a pre-incident plan, followed by ‘FDC/Standpipe locations’, ‘water supply and hydrant locations’, and ‘access to the building.’ Other building related hazards and information were ranked much higher than those in the data from the company officers. Is this a sign that our incident commanders and company officers are not working from the same set of priorities at the scene of an emergency incident?

San Gabriel is a small fire department, yet changing the culture will be challenging. The interviews indicate that two of three battalion chiefs agree that pre-incident plans can have a dramatic effect on the safety of firefighters. Chief Freiders’ interview supports the literature in his statement that the pre-incident plan “…will enhance the tactical decision-making process by allowing it to begin en route rather than waiting to arrive on scene.” This paints a positive

outlook for change in San Gabriel, but history and reality indicate that the department will struggle through the transition period.

Differing needs of the incident commander, and the first-due company officer.

The author chose to include this research question based upon the assumption that most pre-incident plans have been, and remain, a resource for the incident commander once at the scene of an incident. Traditional paper based plans have been shown to be nearly impossible to use before arrival, and the fact that the firefighters mitigating the incident cannot use the plan, makes this supposition a reality. Enter the computer based plan, and its usefulness to the responding companies is greatly increased. The fire service now must fight traditional company officer behavior and habits, diligently persuading them to understand how important the plan can be to firefighter safety.

Ruetz and Bailer (2005) are two fire prevention officers from Tucson Fire Department (AZ) who developed a system that would provide critical information to three important audiences: station based firefighters, on scene incident commanders, and first arriving company officers. Information required by incident commanders is much different than that of company officers. Naturally, the work of the company officer and the incident commander is vastly different, though the mission and goal should be the same. The data from the research questionnaire previously discussed indicates specifically how the needs are different. While this author believes that the critical elements of company officers responding to the questionnaire are misguided, the differences between the two end user positions support this particular concept. The challenge ahead is developing unique plans for the differing needs of both company officers,

and incident commanders. This author believes that technology makes this not only possible, but fairly simple.

Access to pre-incident plans.

The existence of a pre-incident plan does not give the plan any worth if it cannot be easily accessed. The responding company officer has to manage multiple tasks in a rapidly changing environment, which serves as the motivation for the development of a method of providing the critical information before arrival at the scene. The calamity that ensues after arrival often causes the company officer to become focused on the fire fight, and additional information about the structure at this point is often overlooked.

The IAFC states that the information in a pre-incident plan should be presented in a manner in which the most critical and useful information is readily available (2006). Carter and Rausch (1999) believe that occupancies need to be prioritized so that a quality pre-incident plan will be developed. Attempting to pre-plan every occupancy is guaranteed to lead to inconsistent and useless plans, and dissention amongst those tasked with reaching such a goal. This statement is, in fact, the reality in San Gabriel, where company officers were initially required to pre-plan every occupancy within one year, in addition to their annual business inspections. This goal was never accomplished, and was the cause of the program's brief recess. The recommendations in this paper will attempt to rectify the problems, and enhance the current process into a successful program.

The San Gabriel Fire Department is currently utilizing mobile data computers, which are located in all department vehicles and apparatus, for dispatch purposes. The trend identified in the literature review is that electronic pre-incident plans have become the industry standard.

Carter and Rausch state, “When departments have on-board computers…incident commanders and subordinate officers are able to conduct more informed fire-fighting operations” (1999, p. 235). Lohner adds that pre-incident plans are easily accessed from a centralized database (2003), and St. John agrees, claiming that readily available plans can reduce decision time if the information is provided and accessed en route (2007). The results of the questionnaire support this literature, indicating that data retrieved from mobile data computers en route are most effective. Further, Bachman (2003) insists that data cannot be collected and stored in a format that cannot be easily accessed, but must be organized so that it can be applied quickly to an incident.

The current pre-incident data collection form (Appendix A) requires a substantial amount of information be obtained. DFM Berry has indicated that the original intention was to install the First Look Pro software on each MDC, so that the officers would have access to the information from the vehicles and apparatus. The problem becomes that the format displayed is the same as the form that was completed, and an issue arises in which too much information makes the use of the program impractical, except to the incident commander. Lacey and Valentine (2009) stated that “they [pre-incident plans] need to be developed by the user (operations) and used by the developer (operations)” (¶ 4). Currently, it seems that the user is gathering data for a system developed by a non-user, the deputy fire marshal, and is being used by neither, but serves only to fulfill a requirement of the Insurance Service Office. The NFPA clearly states that the presentation of the plan must “be relevant, clear, concise, and complete. It is unlikely that emergency responders will have time to read extensive text….Information that will not be of use…should not be allowed to clutter the pre-incident plan” (2003, p. 1620-36). It is clear that the current system in place at the San Gabriel Fire Department does not meet the intent of a plan,

per the NFPA standard. The author will address this issue in the recommendations section of this paper.

In conclusion, the current state of the pre-incident planning program at the San Gabriel Fire Department is in need of clarification, planning, and enhancement. This author is prepared to dedicate the effort required to see this project through to completion, based upon the findings of this research, and the support of department administration. Both the literature reviewed, and the data collected from the author's original research indicate that pre-incident planning has the potential to reduce injuries to firefighters, and save lives.

Recommendations

Developing a pre-incident planning procedure that is effective, useful and easily accessible by company officers en route to an incident requires commitment of every member of the organization. Commitment to the project must start at the top of the organization, with the full engagement of the fire chief, and the unwavering support of his staff and the company officers. The establishment of a firefighter safety program entails a cultural change for the members of the San Gabriel Fire Department, and a new philosophical approach to every emergency incident. This approach is based upon firefighter safety, and must become part of everyday activities, including training, prevention, and administrative preparation. The importance of pre-incident planning must be made real, and the consequences brought home to each employee. The department has never experienced a line of duty death caused by an accident at an incident. Few members have any personal experiences with the loss of a firefighters that they knew, thus the experience of losing a fellow firefighter in a workplace incident has never been realized, and, fortunately, is not the cause of this need for change.

This author's experience that changed his outlook occurred during a lecture from a member of the investigative team handling the Super Sofa Store Fire in Charleston, South Carolina. On June 18, 2007, nine firefighters lost their lives inside a sofa store. One of the key points that this presenter made was that the lack of knowledge of the building that these men died in directly contributed to their deaths. The first recommendation that this author makes is that the San Gabriel Fire Department presents an incident, similar to the Charleston incident, to every department member in an effort to understand what went wrong, and how significant the success of this project is.

Once the employees are engaged in the project, the department can begin to refine the details of the program, and tailor them to the specific needs of the organization. Based upon the findings of this research, the following recommendations are made:

1. The Fire Chief fully commit to supporting the development of a pre-incident planning procedure and program including, but not limited to: (a) the establishment of a formalized, written policy or standard operating procedure, developed with input from all levels of the organization, and based upon the recommendations of the end users, (b) the development of all members of the department through a formalized training program, including field exercises, (c) the financial support of this project, through traditional and progressive funding sources, (d) ensuring compliance with the standards set forth, ensuring continuous quality improvement, and consistency now and in the future.

2. Firefighter safety must become part of the department's Mission Statement and Values. Goals must be developed that include preparation for safe deployment of human

resources at every incident, with pre-incident planning being one of the means to reach such goals.

3. The development of the program should be based upon the recommendations in this paper, as well as industry standards found in the literature cited. These standards should serve as a foundation for the planning process, and suggestions from numerous sources, and particularly the end users must be incorporated into the product.

4. The department's administration, deputy fire marshal, and company officers must determine a method for prioritizing occupancies/structures to be pre-planned. All members must understand that the best plans take time to develop. Priority should be based upon occupancy type, life hazard to firefighters and occupants, and uniquely hazardous structures, as well as other agreed upon factors.

5. End users should agree upon the elements of a pre-incident plan that are most likely to support a safe work environment and sound decision-making, with firefighter safety as a priority over incident mitigation. These elements may differ between the company officer and the battalion chief, and a method for providing unique information to each must be determined.

6. Development of the program must consider and address the problems identified by this research paper. The goal of developing a plan that is used by every company officer demands that these problems not exist in any program established by the San Gabriel Fire Department.

7. The continuing use of the current First Look Pro software should be considered. Comments made on the questionnaire indicate that data retrieval software may be

compatible with First Look Pro, which can serve as the database for the information gathered by the engine companies during the plan development. Use of the current software may reduce costs, and allow information already collected in the First Look Pro system to be utilized without replicating the collection efforts.

8. Grant funding should be pursued for the hardware (if necessary) and the software to provide the most technologically advanced pre-incident planning program available. The program must meet the needs of the end user, and should be customizable to the unique demands of both the company officers, and the battalion chiefs.

9. Program developers should work with neighboring agencies, namely Alhambra Fire Department, Monterey Park Fire Department, and San Marino Fire Department, in the acquisition of grant funding that would allow the information to be shared with these agencies who often respond into San Gabriel. This concept would also allow all of the aforementioned agencies access to plans from any of the cities named.

10. Program developers should consider other uses of the pre-incident plans, such as the ability to provide copies of the building to rapid intervention teams, specialized fire service teams (Urban Search and Rescue), other public agencies such as law enforcement, and other technical specialists who may be required to assist the San Gabriel Fire Department in mitigating the incident.

Based upon the findings of this research, the San Gabriel Fire Department has the opportunity to create a pre-incident program that makes the most of cutting edge technology to improve upon a concept that has never reached its potential, and is generally underutilized throughout the fire service. In the process is the chance to change a culture that is apathetic with

regard to firefighter safety, to one that understands and respects the inherent danger in the work they perform. It is the ideal time to make such a change, as the current program has yet to take root, and technological changes being pursued for other projects can be applied to the pre-planning project, reducing overall costs and implementation time. Most important is the fundamental purpose behind this research, which is to provide company and chief officers with another means to increase the information available to responding personnel, decreasing the exposure and the risk of injury and death to San Gabriel firefighters.

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Appendix A – First Look Pro Inspection Form – Sample

First Look Pro Inspection Form

Occupant Information

Occupant _____

Address 1 _____

Address 2 _____

City _____ **State** ____ **Zip** _____ **Inspection Date** _____

Notes _____

_____

Structure Information

Construction Class _____ **Building Classification** _____

Roof Construction _____ **Roof Covering** _____

Length _____ **Width** _____ **Height** _____

Notes _____

_____

Access Information

Main Access _____ **Roof Access** _____

Lowest Access _____ **Lock Box** _____

Alarm Panel _____ **Annunciator Panel** _____

Notes _____

_____

_____

Hydrant Information

Location _____ **GPM** ____ **Pipe Diameter** _____

Location _____ **GPM** ____ **Pipe Diameter** _____

Location _____ **GPM** ____ **Pipe Diameter** _____

Location _____ **GPM** ____ **Pipe Diameter** _____

Notes _____

_____

First Look Pro Inspection Form

Protection Information

Sprinklers _____ Fire Direct Connection _____

Standpipe _____ Gas Shutoff _____

Electrical Shutoff _____ Water Shutoff _____

Notes _____

HazMat Information

Type _____ Location _____ QTY _____

Type _____ Location _____ QTY _____

Type _____ Location _____ QTY _____

Type _____ Location _____ QTY _____

Notes _____

Strategy Information

Strategy Notes _____

Mutual Aid Notes _____

Contact Information

Name _____ Type _____ Phone _____ Ext _____

Name _____ Type _____ Phone _____ Ext _____

Name _____ Type _____ Phone _____ Ext _____

Notes _____

Appendix B - *NFA-EFOP ARP: Dev Useful Pre-fire Plans* Questionnaire

NFA-EFOP ARP: Dev Useful Pre-fire Plans

1. What is the name of your fire department?

	Response Count
	300
answered question	300
skipped question	0

2. Would you please provide the following information?

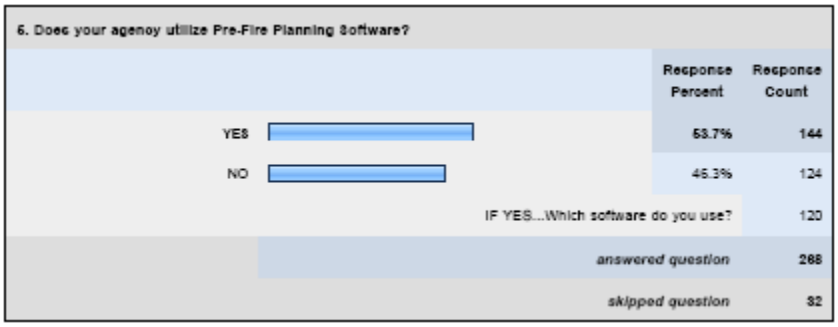
	Response Percent	Response Count
Name:	98.3%	295
Title/Rank (Required):	100.0%	300
Population Served:	99.3%	298
Number of Personnel (approx):	100.0%	300
City/Town:	100.0%	300
State:	100.0%	300
Email Address:	89.7%	269
answered question		300
skipped question		0

3. Does your department/agency utilize Pre-fire Plans to ANY extent?

	Response Percent	Response Count
YES	93.0%	279
NO	7.0%	21
COMMENT:		71
answered question		300
skipped question		0

4. Does your agency have a WRITTEN Policy/SOP/SOG that covers Pre-Fire Planning?

	Response Percent	Response Count
YES	58.3%	161
NO	43.7%	117
Comment:		25
answered question		288
skipped question		32



6. Does your agency utilize Pre-Fire Planning Software?

	Response Percent	Response Count
YES	53.7%	144
NO	46.3%	124
IF YES...Which software do you use?		120
answered question		268
skipped question		32

6. AT YOUR CURRENT RANK, have you been involved in preparing or utilizing a Pre-fire Plan?

	Response Percent	Response Count
YES	83.6%	224
NO	16.4%	44
IF NO...Who prepares Pre-fire Plans for your agency?		54
answered question		268
skipped question		32

7. Do you believe your department's Pre-fire Planning process develops CONSISTENT Pre-fire Plans?

	Response Percent	Response Count
YES, very consistent in content and form	26.1%	70
SOMEWHAT consistent, but with minor variation depending upon the author/developer	55.2%	148
NO, the plans are very inconsistent in content and/or form	18.7%	50
Comments:		40
answered question		268
skipped question		32

8. Many Pre-fire plans are difficult to navigate, making it time consuming to retrieve the most important/critical/useful information in a timely manner. Often, these plans are not useful, particularly to first in company officers. Do you believe your department's Pre-fire Planning process develops USER-FRIENDLY Pre-fire Plans?

	Response Percent	Response Count
YES, very easy for me to access and use in my rank and position on the fireground	33.6%	90
SOMEWHAT - The plans provide access to some useful info, but other info is distracting and difficult to sort through	42.9%	115
NO, the plans have very little use to me as access to the info I need is too difficult and time consuming to retrieve.	23.5%	63
Comments:		51
answered question		268
skipped question		32

9. How is the Pre-fire Plan stored and/or retrieved in the field?

	Response Percent	Response Count
Binder/Book on a Department Apparatus/Vehicle	60.8%	183
Computer Based Mobile Data Computer - Dispatch Premise Info is where the Preplan Info appears	10.4%	28
Computer Based Pre-fire Plan Software on MDC (Shared on same computer as Dispatch System- must switch between programs)	11.6%	31
Computer Based - Laptop or other Mobile Device in Vehicle or Apparatus (2 computers or dedicated computer for Preplan Software on board)	9.3%	25
It is not available in the field	7.8%	21
	Comments:	67
	answered question	288
	skipped question	32

10. Based upon your CURRENT SYSTEM: ENROUTE TO AN INCIDENT, Do you feel that the storage/retrieval method is effective and efficient, or does it hinder its usefulness?

	Response Percent	Response Count
EFFECTIVE	35.1%	94
HINDERANCE	64.9%	174
	Comments:	80
	answered question	288
	skipped question	32

11. Based upon your CURRENT SYSTEM: AT THE SCENE OF AN INCIDENT, do you feel that the storage/retrieval method is effective and efficient, or does it hinder its usefulness?

	Response Percent	Response Count
EFFECTIVE	58.0%	160
HINDERANCE	34.7%	93
NOT USEFUL REGARDLESS OF ACCESSIBILITY	9.3%	25
	Comments:	35
	answered question	288
	skipped question	32

12. What are the BIGGEST problems/complaints about your current Pre-fire Plans?

	Response Percent	Response Count
Inconsistency in Form	24.3%	65
Inconsistency in Content	29.9%	80
Poor Storage System	38.1%	102
Not Easily Accessed Enroute	**55.6%**	**149**
Too Much Information to Use Easily	15.3%	41
Info Poorly Organized/Too Cumbersome	19.8%	53
Hard to Read	14.9%	40
Too Detailed for Field Use	10.4%	28
Info is Better Suited for IC, Not Company Officers	21.3%	57
Not Up To Date/Current Info	54.1%	145
Not Available to Automatic/Mutual Aid Agencies	48.9%	131
Other (please specify)		32
answered question		268
skipped question		32

13. In your current rank, do you MOST OFTEN serve as an Incident Commander or as a Company Officer when responding to structure fires?

	Response Percent	Response Count
Incident Commander	**60.8%**	**163**
Company Officer	39.2%	105
Comment:		24
answered question		268
skipped question		32

14. Do you feel that a good Pre-fire Plan COULD provide you important information regarding a building/address WHILE ENROUTE TO AN INCIDENT, if limited to specific information that would aid you in determining your INITIAL strategy/tactics as a first arriving Company Officer? Example: You are provided with information ENROUTE that your dispatch address has a warehouse storing combustible metals at the rear of the property.

	Response Percent	Response Count
YES, if this info is provided to me enroute, it COULD aid in my initial actions upon arrival	**99.0%**	**101**
NO, this info would be of little or no use to me either way.	1.0%	1
Comments:		9
answered question		102
skipped question		198

16. A substantial amount of data can be collected when preparing a Pre-fire Plan. As a FIRST ARRIVING COMPANY OFFICER, what information listed below would be most useful to you WHILE ENROUTE TO THE INCIDENT to assist you in making the most informed decisions at a working structure fire at the Pre-planned address? SELECT ALL THAT APPLY, but keep in mind that THIS INFORMATION MUST BE RETRIEVED AND ASSESSED IN A 3 TO 6 MINUTE RESPONSE TIME.

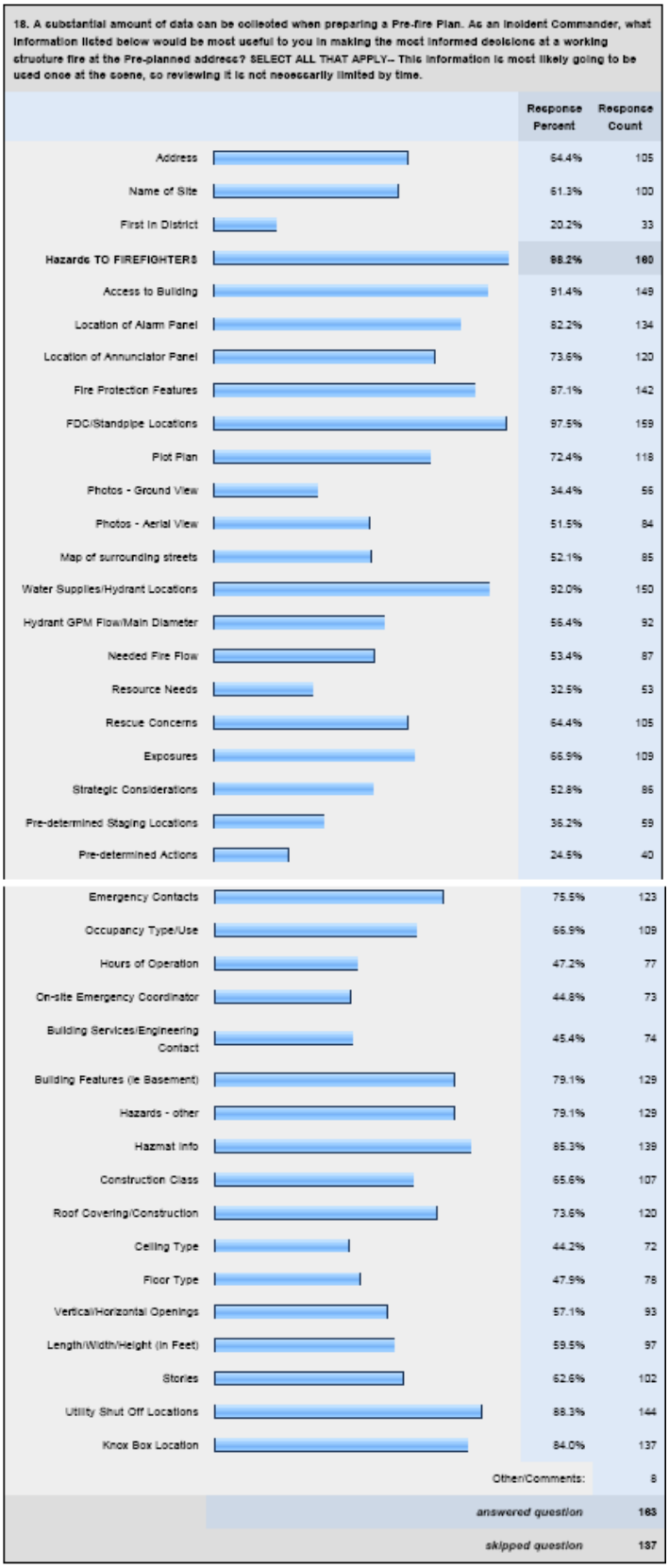
	Response Percent	Response Count
Address	76.5%	78
Name of Site	67.6%	69
First In District	6.9%	7
Hazards TO FIREFIGHTERS	84.3%	86
Access to Building	68.6%	70
Location of Alarm Panel	69.6%	71
Location of Annunciator Panel	58.8%	60
Fire Protection Features	59.8%	61
FDC/Standpipe Locations	81.2%	83
Plot Plan	42.2%	43
Photos - Ground View	12.7%	13
Photos - Aerial View	24.5%	25
Map of surrounding streets	24.5%	25
Water Supplies/Hydrant Locations	83.3%	85
Hydrant GPM Flow/Main Diameter	13.7%	14
Needed Fire Flow	14.7%	15
Resource Needs	11.8%	12
Rescue Concerns	43.1%	44
Exposures	46.1%	47
Strategic Considerations	31.4%	32
Pre-determined Staging Locations	12.7%	13
Pre-determined Actions	11.8%	12
Emergency Contacts	36.3%	37
Occupancy Type/Use	52.0%	53
Hours of Operation	20.6%	21
On-site Emergency Coordinator	12.7%	13
Building Services/Engineering Contact	20.6%	21
Building Features (ie Basement)	57.8%	59
Hazards - other	57.8%	59
Hazmat Info	60.8%	62
Construction Class	41.2%	42
Roof Covering/Construction	50.0%	51
Ceiling Type	18.6%	19
Floor Type	19.6%	20
Vertical/Horizontal Openings	14.7%	15
Length/Width/Height (in Feet)	23.5%	24
Stories	56.9%	58
Utility Shut Off Locations	86.3%	88
Knox Box Location	81.4%	83
Other/Comments:		7
answered question		102
skipped question		188

18. If there is anything else that you would like to add, please feel free to do so in the box below, then click FINISH. If not, simply click FINISH.

	Response Percent	Response Count
FINISH	100.0%	102
Additional Comments:		11
answered question		102
skipped question		188

17. Do you feel that a good Pre-fire Plan COULD provide you important information regarding a building/address ENROUTE TO AN INCIDENT if limited to specific information that COULD aid you in determining your INITIAL strategy development as an arriving CHIEF OFFICER? Example: You are provided with information ENROUTE that your dispatch address has a warehouse storing combustible metals at the rear of the property.

	Response Percent	Response Count
YES, if this info is provided to me enroute, it COULD aid in my initial decisions upon my arrival	85.7%	168
NO, this info would be of little or no use to me either way.	0.5%	1
(HOWEVER) I would have no way to review this information while driving to an incident.	14.1%	23
Comments:		22
answered question		163
skipped question		137



18. A substantial amount of data can be collected when preparing a Pre-fire Plan. As an Incident Commander, what information listed below would be most useful to you in making the most informed decisions at a working structure fire at the Pre-planned address? SELECT ALL THAT APPLY-- This information is most likely going to be used once at the scene, so reviewing it is not necessarily limited by time.

	Response Percent	Response Count
Address	64.4%	105
Name of Site	61.3%	100
First In District	20.2%	33
Hazards TO FIREFIGHTERS	**88.2%**	**160**
Access to Building	91.4%	149
Location of Alarm Panel	82.2%	134
Location of Annunciator Panel	73.6%	120
Fire Protection Features	87.1%	142
FDC/Standpipe Locations	97.5%	159
Plot Plan	72.4%	118
Photos - Ground View	34.4%	56
Photos - Aerial View	51.5%	84
Map of surrounding streets	52.1%	85
Water Supplies/Hydrant Locations	92.0%	150
Hydrant GPM Flow/Main Diameter	56.4%	92
Needed Fire Flow	53.4%	87
Resource Needs	32.5%	53
Rescue Concerns	64.4%	105
Exposures	66.9%	109
Strategic Considerations	52.8%	86
Pre-determined Staging Locations	36.2%	59
Pre-determined Actions	24.5%	40
Emergency Contacts	75.5%	123
Occupancy Type/Use	66.9%	109
Hours of Operation	47.2%	77
On-site Emergency Coordinator	44.8%	73
Building Services/Engineering Contact	45.4%	74
Building Features (ie Basement)	79.1%	129
Hazards - other	79.1%	129
Hazmat info	85.3%	139
Construction Class	65.6%	107
Roof Covering/Construction	73.6%	120
Ceiling Type	44.2%	72
Floor Type	47.9%	78
Vertical/Horizontal Openings	57.1%	93
Length/Width/Height (in Feet)	59.5%	97
Stories	62.6%	102
Utility Shut Off Locations	88.3%	144
Knox Box Location	84.0%	137
	Other/Comments:	8
	answered question	**163**
	skipped question	**137**

18. If there is anything else that you would like to add, please feel free to do so in the box below, then click FINISH. If not, simply click FINISH.

	Response Percent	Response Count
FINISH	100.0%	163
Additional Comments:		18
answered question		163
skipped question		137

Appendix C – Los Angeles Area Fire Chiefs Letter

Jeff Roy

From: Jeff Roy
Sent: Thursday, August 20, 2009 2:46 PM
To: Joseph Nestor
Subject: Executive Fire Officer Questionnaire Distribution

Dear Area C Fire Chief:

I am working on a research paper for the National Fire Academy Executive Fire Officer Program that looks into Pre-Fire Planning. Specifically, I hope to determine the information that is most critical to a first arriving company officer or chief officer so that sound, informed strategic and tactical decisions can be made quickly upon arrival. I am also looking to find a way to effectively deliver that information to that officer while en route to the incident location.

What I am asking from you is simple: to forward this survey to each of your Battalion Chiefs and Company Officers. By following the link below, they can easily access a questionnaire that can be completed in approximately 5 minutes or less.

https://www.surveymonkey.com/s.aspx?sm=MGbpRZipNlBYB81PLAiaJA_3d_3d

***If your department does not utilize Pre-fire Plans**, please reply to this email by simply stating "No Pre-fire Planning".*

I greatly appreciate your assistance in this research project. Time is critical, so I will compile all of the responses on September 4th.

Jeff Roy, Captain- Station 51B
San Gabriel Fire Department
Contact: jroy@sgfd.org

Appendix D – EFO Participant Letter

Jeff Roy

From: Jeff Roy
Sent: Thursday, August 20, 2009 3:28 PM
To: 4shonk@sbcglobal.net; abaldwin@paturnpike.com; aber@ccfd11.org; abragg@ci.akron.oh.us; aday@cob.org; admontgomery@dmgov.org; afletcher@cfpd.org; agostini7@aol.com; ahenderson@county.allegheny.pa.us; akpantelis@iafflocal1619.org; allan.cain@townofcary.org; allisoncabral@yahoo.com; altmanr@ci.boynton-beach.fl.us; andy.smith@ci.union-city.ca.us; andy.yeoh@tucsonaz.gov; angelone@canada.com; anthony_faust@savannaga.gov; apcorr@aol.com; arlene@plfr.org; armstrong40@cox.net; ashorsle@co.dekalb.ga.us; avonfirechief@comcast.net; awilliams@mfri.org; baileyd@chesterfield.gov; bandaerson011@woh.rr.com; bbarks@arlingtonva.us; bburkett@seminolecountyfl.gov; bburnside@clintonms.org; bchlapek@cjcfpd.org; bconnor@ci.goffstown.nh.us; bdchavez@gmail.com; bdeleon@scottsdaleaz.gov; beaverdad67@hawaii.rr.com; benjaminnutter@hotmail.com; bffdc2@hotmail.com; bill@essexregional.com; bkennedy@atlantaga.gov; bkielty@centralfire.org; bkroon@bellevuewa.gov; bmajor@ci.fayetteville.nc.us; bmclamb@townofchapelhill.org; bnewberry@nixafire.org; bobwilson@sioux-city.org; bonzo_mullins@msn.com; Boyd@ci.kingsport.tn.us; boydr@newbern-nc.org; bpotts@parkerfire.org; brian.bonner@homewoodal.org; brianst@ccfd11.org; bruce.evans@norfolk.gov; bruce.hannigan@appleton.org; bruce.harrison@cityofdekalb.com; bshubin@santarosafd.com; bsmith@wilsonnc.org; buddy@slcfd.org; bulanog@northcharleston.org; bullard911@msn.com; burbank@cityofithaca.org; c.jennings2@us.army.mil; c.watlington@stjfd.org; capsid@juno.com; capthazpm@aol.com; casey.snyder@gwinnettcounty.com; cbaird@cobbcounty.org; cbryant@salemva.gov; ccarmona@elp.rr.com; ccole@moorecountync.gov; cgarrett@cityofowasso.com; cgriffin@monroenc.org; chaigh@hanoverparkillinois.org; charles.brynteson@ci.minneapolis.mn; charles.goodman@cityofdenton.com; charterm@spokanevalleyfire.com; chief.thompson@blufftonfd.com; chief@bouldermountainfire.org; chiefafd@alltel.net; chiefathom@aol.com; chiefjohnson@suddenlink.net; chiefphillips@berlinfd.org; chiefshirley@bellsouth.net; chiefspencer@sbcglobal.net; churlburt@hamden.com; chwessels@atlantaga.gov; ckellen@ci.addison.tx.us; clangham@triad.rr.com; clauss@ci.pekin.il.us; cleu@sedgwick.gov; clong@ci.tulare.ca.us; cmann140@msn.com; cmccaslin@cityofallen.org; cmellon@townofchapelhill.org; cnorris@city.northampton.ma.us; coaplandl@comcast.net; coolbuell@comcast.net; correira@ci.edmonds.wa.us; cotta13@aol.com; craig.golden@hill.af.mil; craigbnash@bellsouth.net; crawford@trainingdivision.com; crigney@winchesterky.com; cseitz@comcast.net; cslauter@wrtfd.org; csmith@lagrange-ga.org; csorr@salisburync.gov; csproule@lasvegasnevada.gov; ctb@alachuacounty.us; cudabackd@ci.arlington.tx.us; cwf@sugarlandtx.gov; cwillois@westwindsortwp.com; d.daley@southmetro.org; Dabelman@cosb.org; dagreene@lowcountry.com; dan_jager@ci.juneau.ak.us; danak@ci.brea.ca.us; davdell0@aol.com; dave@ci.marysville.wa.us; david.coble@forthworthgov.org; david.dewall@ci.minneapolis.mn.us; david.dixon@norfolk.gov; david.knowles@bocc.citrus.fl.us; david.stonhill@inl.gov; davidc@hiltonheadislandsc.gov; daycock@wilsonnc.org; dbaker@NLFR.org; dbellamy@northnaplesfire.com; dberry@hamburg.mi.us; dbramble@ci.payson.az.us; dbranch@boringfire.com; dbrogers@commfiredistrict.com; dburke@duvallfire45.com; dccampbell@roanokecountyva.gov; dclark@worthingtonfire.com; dcnkm@charter.net; dcriswel@auroragov.org; dcuria@aol.com; dcwelch911@aol.com; ddfrazie@co.dekalb.ga.us; ddzook@brightdsl.net; deaster105@aol.com; deddins@dougherty.ga.us; denny.heitman@charleston.af.mil; derek.bergsten@rockfordil.gov; dewey.ray@gric.nsn.us; dewey.schmidt@okc.gov; dfogerson@co.douglas.nv.us; dfrazier@wescofire.org; dgarringer@cityofsearcy.org; dgates@pocatello.us; dhall@ci.westminster.co.us; dhard@kcfd1.com; dhodges@ci.maryville.tn.us; djknutzen@dmgov.org; djohnson@masoncity.net; djones_9110@hotmail.com; djsmith@avonfd.org; dkerk@wctc.net; dkilbury@swfla.rr.com; dkistner@ci.garland.tx.us; dkitterm@london.ca; dkrebill@cityofmarion.org; dlombardi@westmetrofire.org; dlwilliams@stgeorgefire.com; dmaggos@lagrangepark.org; dmallory@cox.net; dmcbride@whitehallfire.com; dmur@osceola.org; dnm@gocolumbiamo.com; dolson@skfr.org; don.hansen@vdfp.virginia.gov; donald.pannell@memphistn.gov; dougc@merriam.org; dparenti@ci.merrimack.nh.us; dpierce618@hotmail.com; drakoske@charlestoncounty.org; dreid@camanofire.com; droz@muni.org; dschmaltz@miamitownship.com;

To:

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Cc: Jeff Roy

Subject: EFO - Developing Useful Prefire Plans - Questionnaire

Fellow EFO Students/Grads:

I am working on my second year ARP, which deals with Developing Useful Pre-fire Plans for Company Officers. Like most of you have needed at one point or another, I need your help.

I would like to get as many Company Officers and Incident Commanders (regardless of the rank they hold in your agency) to complete this 5 minute questionnaire.

If you do not assume either of those roles under normal circumstances (structure fires), I am asking that you please forward this email to your personnel who do.

https://www.surveymonkey.com/s.aspx?sm=MGbpRZipNlBYB81PLAiaJA_3d_3d

Thank you for your help. I hope to analyze all the data beginning on Sept 4th.

Jeff Roy, Captain, Station 51B
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Appendix E – San Gabriel Fire Officers Letter

Jeff Roy

From: Jeff Roy
Sent: Friday, August 21, 2009 8:07 PM
To: FD_Captains; Richard Beckman
Cc: Joe Nestor
Subject: EFO Questionnaire - Prefire Planning

Gentlemen.

As many of you know I am currently working on my second research project for the National Fire Academy. This paper focuses on determining the critical components of a Prefire Planning System that produces a USER-FRIENDLY plan, and not simply a book or computer generated sheet that is too involved and time consuming to be useful.

I am asking that each of you complete the questionnaire by clicking on the link below. It should not take you more than 5 minutes to complete, and I need to compile the data on September 4th, as I have roughly 200 of these to review. The format is self explanatory; simply remember to click 'next' at the bottom of each page.

I hope that this research will lead us to a solution that will provide each first in company officer with necessary, critical information so that we can make well informed tactical decisions when arriving at a structure fire in an unfamiliar building. I also hope to distinguish between the needs of the first in company officer, and the longer term, strategic planning needs of the Incident Commander.

If you have any questions or additional comments, please let me know. I may also set up short interviews with each of you to discuss other aspects of this topic.

https://www.surveymonkey.com/s.aspx?sm=MGbpRZipNlBYB81PLAiaJA_3d_3d

Thank you for your input.

Jeff

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Appendix F – Battalion Chief Interview Summaries

BC Frieders Interview 1/29/10

What do you believe the significance of pre-fire or pre-incident planning is within this department?

I believe that it has not been a priority for a very long time, yet the benefits of having a comprehensive pre-planning program allow for more streamlined operations at an incident.

What benefit can pre-fire planning have for SGFD?

It will allow for each member responding to an incident to have vital information about the structure prior to arriving. It will enhance the tactical decision making process by allowing it to begin enroute rather than waiting to arrive on-scene. It also forces the field crews to become familiar with their districts, the challenges that are unique to an occupancy, and other important information specific to a building that otherwise wouldn't be obvious from the street. Additionally, it allows for face-to-face communication with the business owner, which may enhance our relationship with the community.

Do you believe that pre-fire planning can assist the IC in making decisions that can create a safer environment for the firefighters on scene, and reduce the damage to the property?

Clearly, the more information that is available to the IC, the better and more sound the decision making process becomes at the incident. This information may curtail the traditional assignments and focus on some the problems and/or contents of the property. It also increased situational awareness for all incoming companies before, during and after the operation.

What pre-fire plan information is the most important to you as the **IC** at an incident?

Building diagram, contents, type of occupancy, exits, in-dwelling fire protection systems, location of alarms, HVAC system controls, special hazards, type of construction, and other unique issues that may be a danger to firefighting operations. Also a reference to past violations, the name and address of an RP, and the location of the knox box.

Do you think that the fire engine captain has different informational needs (prior to arriving at the scene) that are vital to making sound tactical decisions upon arrival (based on information in the pre-plan)? What are those differences?

Not sure what you are asking—but I believe that the engine captain should have ALL the information about a building while enroute. As the first in company officer, they are the incident commander and should be making well-informed decisions based on factual and sound information. The preplan offers this information and more! Without this information, decisions are made based on a quick visual and cursory assessment of the building. This puts firefighters in a precarious position, especially if special hazards exist that cannot be visualized from the street.

Do you believe this information is currently available to our personnel with the system we use now (Premise Info on CAD)?

No- very vague, abbreviated and hard to read.

Do you believe that this information is easily retrievable by company officers en route to an incident?

Currently, I am not convinced that the information that is in the premise history serves any value whatsoever- mostly because we do not have a system in place to verify or update information. The system that we looked at would be very easy to access, simply because they are PDF files that don't require a lot of space on our outdated MDC's.

Do you believe the current system for pre-fire planning is adequate?

No. Not to be facetious, but do we have a pre-fire planning system that everyone is using?

Do you feel that the current system for pre-fire plans produces consistent plans?

See above response.

Do you believe we can utilize the current MDC software (CAD premise information) to more effectively provide adequate important information about a structure (ie can we add more) to responding units, both BCs and Engine Company captains?

No- the MDC information is very limited, mostly by virtue of the CAD's limitations for information and the format by which it is produced. I also believe that most Captains discount the information knowing that it is probably not accurate. The CAD does not allow diagrams and used north, south, east , and west as reference points, so outside agencies are challenged when responding into unfamiliar territory.

Do you think that we have the ability to provide adequate premise information to an automatic-aid agency should they be first-in in our City?

Not currently- see above response for the reasons! In this day in age however, I believe that we can find a very simple method of transmitting this information.

Do you have any additional comments regarding pre-fire planning, as it relates to the current system, or to how they can be more effectively used to reduce the risks to firefighters as they arrive at the scene of an incident?

As you know, familiarity with occupancies and their specific circumstances gives all responders the upper hand in safely and efficiently mitigating an incident. Because of the number of firefighter fatalities in recent years, and the deplorable construction standards that exist, we must be prudent in employing better and more comprehensive methods of gathering crucial information and transmitting it to everyone involved in the management of the incident.

BC Terry Interview 1/8/10

What do you believe the significance of pre-fire or pre-incident planning is within this department?

It is a weakness of the department and we need to get to them to get them done. We need accessible information. First hand knowledge is important and feasible.

What benefit can pre-fire planning have for SGFD?

Safer environment for the responders; better decision making ability for company officer and incident commanders.

Do you believe that pre-fire planning can assist the IC in making decisions that can create a safer environment for the firefighters on scene, and reduce the damage to the property?

Yes, of course, they help you become familiar with the properties. Even just creating the plan helps familiarize personnel with the building layout and other features.

What pre-fire plan information is the most important to you as the **IC** at an incident?

Exposures, how many stories, FP systems, water supply, contents of the occupancy, type of building construction.

Do you think that the fire engine captain has different informational needs (prior to arriving at the scene) that are vital to making sound tactical decisions upon arrival (based on information in the pre-plan)? What are those differences?

YES, interior the needs are much different. What is burning inside is just one factor. It is completely different for captains than the BC.

Do you believe this information is currently available to our personnel with the system we use now (Premise Info on CAD)?

No- a lot of our folks are familiar with buildings in their particular inspection district, but there is no formal plan available.

Do you believe that this information is easily retrievable by company officers en route to an incident?

No; what is even in place right now? I don't think we even have plans on the engines at all.

Do you believe the current system for pre-fire planning is adequate?

No.

Do you feel that the current system for pre-fire plans produces consistent plans? No.

Do you believe we can utilize the current MDC software (CAD premise information) to more effectively provide adequate important information about a structure (ie can we add more) to responding units, both BCs and Engine Company captains?

We may be able to improve on it, but it doesn't provide much in the form of useful information. But how much more can we add?

Do you think that we have the ability to provide adequate premise information to an automatic-aid agency should they be first-in in our City?

No. We cannot even provide information to our own crews; but it would be nice to be able to do that.

Do you have any additional comments regarding pre-fire planning, as it relates to the current system, or to how they can be more effectively used to reduce the risks to firefighters as they arrive at the scene of an incident?

Once the plans are complete, we have to make them easily accessible to everyone so that they actually are used.

Appendix G – Captain Doehler Interview Summary

Captain Doehler Interview -- January 17, 2010

What do you believe the significance of pre-fire or pre-incident planning is within this department?

To identify possible hazards prior to or soon after arriving on scene.

What benefit can pre-fire planning have for SGFD?

I believe it really won't be much of a benefit until it is digitalized and the information is available on the MDCs.

Assume you had knowledge of a building's fire department features (FDC locations, standpipes, hydrant locations, required fire flows, etc) and the life hazards to firefighters particular to a given structure *before arriving at the scene as a first in captain*. Do you believe that this information can assist the first arriving captain in making decisions regarding your initial actions that can create a safer environment for the firefighters as they arrive on scene?

YES

What type of pre-fire plan information is the most important to you as the first arriving captain at an incident? (Hazards to personnel, location of fire dept equipment- FDCs, etc, property info)

Knox box – keys to alarm or entrance, FDC, stairwell locations, roof type (construction), fire wall location, FP systems (sprinklers), floors or mezzanines.

Do you believe this information in currently available to our personnel?

No

Do you believe that this information is easily retrievable by company officers en route to an incident in this current pre-fire plan system?

No

Do you believe the current system for pre-fire planning is adequate?

NO

Do you feel that the current system for pre-fire plans produces consistent plans?

No

Do you believe we can utilize the current MDC software (CAD premise information) to more effectively provide adequate important information about a structure to responding units, both BCs and Engine Company captains?

Yes, but it is not adequate for the info that we would need to make effective and informed decisions since it really only gives you the location of the utilities and the knox box. Most premise information is missing from the CAD info anyway.

Do you think that we have the ability to provide adequate premise information to an automatic-aid agency should they be first-in in our City?

No, but wouldn't that make lots of sense to have the guys who don't even know our city have access to it? How about us having the same info for runs into their cities?

Do you have any additional comments regarding pre-fire planning, as it relates to the current system, or to how they can be more effectively used to reduce the risks to firefighters as they arrive at the scene of an incident?

Whatever the plan the department ends up using, accruing this data will take some time. We will never get them all done in a year, and to try will result in garbage data since some guys will just make info up to get them done. We must make sure that most of the important information is available to us en route on the MDC so that we can access it and put it to use when we arrive.

Appendix H – Deputy Fire Marshal Berry Interview Summary

Don Berry, DFM – Interview Questions October 16, 2009

Are you the primary person responsible for the pre-fire planning program at the San Gabriel Fire Department (SGFD)?

Yes

Is it correct to say that the SGFD has recently implemented a new Pre-fire (Pre-incident) Planning program, which essentially re-establishes a process that has not been utilized or updated for a number of years?

Yes

When do you think the last pre-fire plan was conducted/prepared by anyone on the department, prior to this re-establishment?

I have no idea, but I have been in this position since 2000 and I have never seen one done. Before that, I don't recall when the last pre-plan was made, but it was a long time.

What caused the department to suddenly begin to require companies to perform pre-fire plans when the agency went for nearly 15 years without completing them? (What was the motivation (or basis) for the decision to re-establish this program?)

The poor score on the ISO survey overall prompted the Fire Chief to look at all of the places we lost points. The fact that we had no pre-fire plans caused us to lose all the points in the training category. Chief Nestor wanted to regain as many points as possible so he asked me to re-establish the program.

What is the current pre-fire planning policy or SOP of the SGFD?

There is no policy or SOP.

Follow-up: Do you know why there is no existing policy?

No, I don't know.

Can you briefly describe the department's existing program "in a nutshell" for me (ie: how many pre-fire plans are to be conducted per year, what the priority occupancies are, what format is to be used, where the information will be stored, how it will be input, how it will be utilized, how it will be updated?)?

We are using First Look Pro, which will gather and store the data. I will load that software on the computers on the engines and the RA and BC car, and you can look at it in the field. The DFM will update the info as it changes. At this point, even though the Chief told everyone to do a preplan for every building in their inspection district, I have not received any in the last two years. The only ones that exist were done by me.

What was the basis of the decision to pre-plan every commercial building every year?

ISO requires that every building be done twice each year. I thought that at least once per year would give us good information that could be used in the field.

How will educational and other occupancies be pre-planned?

The fire prevention bureau will handle those occupancies.

What criterion was used to determine the most suitable software for the SGFD pre-fire plan program? When was that software purchased? What caused the delay in program rollout?

Primarily cost. I saw this one at a convention and it looked easy to use and the price was right so I bought it. I purchased it in 2005 or 2006. Time and money made the rollout take longer than I had wanted it to take.

How many commercial occupancies does San Gabriel have?

About 1600

Who conducts the plan check function for the SGFD on new and remodel submissions?

The DFM.

Do you require new projects to submit floor plans that include fire department features, such as: FDC, hydrant, standpipe, know box, alarm panel locations, HVAC controls/control rooms, exits, etc? If not, why are they not required?

Yes

Do you have any other ideas that might enhance the pre-fire planning process, making the plans more useful to SGFD personnel upon arrival at an incident?

We need to find a way to obtain funding to purchase tablet computers so that the information can be gathered more effectively in the field. Right now, the info must be written on paper, then submitted to me, and the secretary has to input it into the computer. When she doesn't understand what the crews meant, it makes the entry difficult and time consuming.

How did you envision the program would be used by our department?

Used by the captains en route and on scene by the BCs.

Do you believe we can use First Look Pro to effectively create a retrieval method that is user-friendly to the First In engine company captain?

YES, but they are the guys actually using it, so we will have to see what happens when we get to that point.

What info so you believe a first-in engine company captain needs ENROUTE to a pre-planned address to aid in the initial decision making process so that those decisions best protect our personnel, as well as provide us with the best chances of successful mitigation of the problem?

Water supply, sprinkler connections, hazmat info, utilities locations, knox box location.

Were the needs of the responding captains considered when purchasing the software?

Yes- the needs of the BCs as well.

In your opinion, how can we integrate current Inspection information with true pre-fire planning?

I don't know if we can do that, or how.

Do you believe that there is a high level of consistency in the pre-fire plans being produced by this new program, thus far?

Only in what exists because I did them all. Once they are being done by everyone else, we might have to revisit that topic.

Will existing CAD systems support RMS software utilizing pre-fire plan modules (Firehouse)?

I don't know what the capabilities are of the software and CAD.

Did you consider the sharing of information between neighboring departments using a common software application?

Yes. If it was a possibility.