Pre-Incident Planning at the Addison Fire Department

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Certification Statement

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ABSTRACT

The problem was that the Addison Fire Department (AFD) did not have a pre-incident planning program, resulting in a lack of critical building construction, occupancy and life safety information available to emergency responders. This problem was identified during district reviews by Addison Fire Department members. The purpose of this research was to determine a process to conduct pre-incident planning that would meet the needs of the Addison Fire Department in accordance with recognized standards. Descriptive research was used to answer the following research questions: (a) what are the recognized standards for fire service pre-incident planning? (b) What information should be collected during pre-incident planning? (c) How are pre-incident plans accomplished at fire departments similar in size to the Addison Fire Department? (d) How will the Addison Fire Department implement a pre-incident planning program? The research included two questionnaires (Appendix B & Appendix E). One questionnaire was sent to the officers and incident commanders within the AFD. The second questionnaire was sent to members of the Texas Fire Chief's Association to determine how other departments in Texas, similar in size to Addison, were handling pre-incident planning. Components of processes and examples of pre-incident planning were identified in the research. Benefits of the pre-incident planning included situational awareness and general building knowledge, and were emphasized by most of the respondents. NFPA 1620 (2010) was discovered to be the national standard and provided guidance and suggestions for pre-incident planning programs. A list of recommendations was created and will be used to help develop a formal pre-incident planning program that meets the organizational needs and industry standards. The recommendations included following guidelines established in NFPA 1620 (2010),

establishing a standard operating procedure for consistency, prioritize occupancies based on risk, and utilizing the program as part of incident command and interdepartmental training.

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Traditionally, fire departments take pride in customer service and protecting lives and property. Specifically in the modern fire service, training and preparation are necessary in order to effectively deliver the best service possible. A key component of preparation is planning (Bingham, 2005). Similar to soldiers preparing for battle or athletes preparing to compete, firefighters must plan for the efficient ways to respond and mitigate incidents. There is no way to predict every possible situation they may encounter, but planning ahead helps the effectiveness of service delivery. Prior to an actual emergency, firefighters have the opportunity to visit locations and gather critical information about construction, building contents and possible hazards. The information may be utilized during an emergency. This knowledge provides for an increase in situational awareness for responders and impacts overall safety. O'Neal (2007) suggests that pre-incident planning provides fire departments with a home field advantage that keeps the responders armed with information that helps with on scene decision making.

The problem was the Addison Fire Department (AFD) did not have a pre-incident planning program, resulting in a lack of critical building construction, occupancy and life safety information available to emergency responders. The purpose of this research was to determine a process to conduct pre-incident planning that meets the needs of the Addison Fire Department in accordance with recognized standards. Descriptive research was utilized to answer the following research questions: (a) what are the recognized standards for fire service pre-incident planning? (b) What information should be collected during pre-incident planning? (c) How are pre-

incident plans accomplished at fire departments similar in size to the Addison Fire Department? (d) How will the Addison Fire Department implement a pre-incident planning program?

BACKGROUND AND SIGNIFICANCE

The Town of Addison, Texas is located in the northern portion of Dallas County in north Texas. Addison was settled in the late 1800's and incorporated as a town in 1953 (Eads, 2001). Addison is small in size but contains significant target hazards and hosts numerous visitors. The town is 4.35 square miles and serves a residential population of about 15,000. However, there are often over 100,000 people in the town at any given time. Addison is a busy urban community with pockets of areas resembling a small town. There are numerous commercial buildings, mid-rises, retail and high occupancy hotels. In addition, Addison is known for its restaurants, bars and nightlife. There are over 170 eating establishments that may seat up to 20,000 people at a time. In 1975, the sale of liquor was approved and has been a major contributor to the development of the area. Citizens and visitors from all over attend the many special events that the town hosts (Addison Texas, 2011). Addison is also a transportation hub for many commuters and has dealt with increasing traffic since the 1980's (Eads, 2001). Some of the larger target hazards include one of the busiest general aviation airports in the country, a 1600 foot tunnel that runs traffic underneath the runway, a Dallas Area Rapid Transit bus terminal and railroad.

The AFD became a paid department in 1971 and became actively involved with the community as construction and development skyrocketed. In the past, firefighters visited the buildings that were under construction and were very familiar with the layouts and intricacies of these buildings. Often, training included walking through buildings and scenario based training

on the location. As the department grew over the years, the opportunities to spend time walking through new construction decreased. Occasionally, there were some drawings and important tactical information obtained, but they were stored in a box that was kept on the command vehicle and rarely referenced. There has not been a system in place to routinely gather, store, and maintain critical data for emergency responders in Addison. There has also been no method to retrieve the information easily. At best, the information was scattered, disorganized or non-existent.

The AFD has forty-eight full time members on shift in the Operations Division. There are sixteen members on each of the three shifts and they respond from two fire stations. The AFD provides fire suppression, rescue, advanced life support (ALS), hazardous materials decontamination, and is a regional provider of aircraft rescue firefighting (ARFF). In 2011, a new Fire Chief was hired and identified some weaknesses that needed attention. Most importantly, the lack of information stored and accessible for firefighters responding to emergencies was recognized. O'Neal (2007) explains that some firefighters and officers do not realize how important this information is until they need it during an event, therefore they do not place enough emphasis on pre-incident planning. Information gathered when the building is not on fire may be retrieved and used during actual emergencies. Pre-incident planning provides opportunities for responders to become aware of the building's construction, layout, contents, hazards and limitations ahead of time (Goodson & Murnane, 2008). Based on the demographics of the town, the AFD has the opportunity to visit buildings, gather necessary information, store it in a useable format and concentrate on improving the level of service.

This research paper was completed following the guidelines established by the National Fire Academy Executive Fire Officer Program (National Fire Academy [NFA], 2011a). The

problem presented in this paper was linked to Unit 11 of the Executive Development course titled “Service Quality” (NFA, 2011b, p. 11-1). The unit discussed the role of the fire service to continually search for ways to improve quality and productivity. The public’s perceived quality of the fire service was stressed. The unit also covered the importance of instituting training on the job and a vigorous program of education and self-improvement. Finally, emphasis was placed on putting everybody in the company to work to accomplish transformation (NFA, 2011b).

The United States Fire Administration (USFA) (2010) has established a strategic plan for fiscal years (2010-2014) including five operational goals. The problem addressed in this paper was related to the first four goals: “Reduce risk at the local level through prevention and mitigation. Improve local planning and preparedness. Improve the fire and emergency services’ capability for response to and recover from all hazards. Improve the fire and emergency services’ professional status” (USFA, 2010, p.13).

LITERATURE REVIEW

A literature review was completed to find out what other authors have said about pre-incident planning. The review was initiated at the Learning Resource Center (LRC) at the National Fire Academy in Emmitsburg, Maryland in September, 2011. Further information was gathered from a personal collection of resources, visits to a local library at Collin College in McKinney, Texas, and internet searches. The literature review was divided into two parts that covered recognized fire service standards for pre-incident planning and information needed for pre-incident plans.

Fire Service Standards for Pre-Incident Planning

The National Fire Protection Association (NFPA) (2010) establishes and maintains codes, standards, recommended practices and guides that provide direction for agencies and responders. NFPA 1620 (2010) is the standard for pre-incident planning and defines pre-incident plan as "a document developed by gathering general and detailed data that is used by responding personnel in effectively managing emergencies for the protection of occupants, responding personnel, property, and the environment" (p. 6). This document stemmed from another standard that was created for warehouse occupancies. The Origin and Development section of NFPA 1620 explains that a large fire loss in an Ohio warehouse in 1987 led to the development of NFPA 1420, *Recommended Practice for Pre-Incident Planning for Warehouse Occupancies.* It was later determined that NFPA 1420 could be expanded to encompass all occupancies. This determination led to the development of NFPA 1620, *Recommended Practice for Pre-Incident Planning* in 1998. The current edition is NFPA 1620 (2010), *Standard for Pre-Incident Planning*, 2010 edition.

NFPA 1620 (2010) points out occupancy characteristics and recommends a pre-incident planning program based on considerations of the occupancy's safety, size, complexity, economic impact, community value, location, presence of hazardous materials, and susceptibility to natural disasters (p 7). Information is provided for each occupancy type to include physical site characteristics, access, fire systems, water supply and special hazards to consider. The standard suggests that by collecting information and utilizing it in conjunction with the incident management system, a pre-incident plan is "one of the most valuable tools available" (NFPA 1620, 2010, p. 13).

Specifically, NFPA 1620 (2010) suggests that a simple plan should be developed, issued and periodically revised. This standard identifies that the pre-incident plans are to be used by emergency responders as the baseline for decision making (NFPA 1620, 2010). Klaene and Saunders (2000) state that this standard is an excellent resource and provides examples of different pre-plans. In NFPA 1620, there are three levels of pre-incident planning recommended: "overview, building level and process level" (p.14). Overview is the simplest format with the process level being the most complex (NFPA 1620, 2010). Other authors define four types of pre-incident plans: "complex, formal, partial and notation" (Klaene & Sanders, 2000, p.45-47). Delmar (2008) does not categorize pre-incident plans, however it is suggested that plans can range from simple to complex based on the need and effort of the agency creating them. NFPA 1620 (2010) identifies pre-planning as a "what if" approach and states the entire concept is based upon situational awareness, management commitment, education, prevention, protection, and emergency organization (p. 13).

NFPA 170 (2009) *Standard for Fire Safety and Emergency Symbols* is a standard that was created in 2008 to establish some common symbols that may be utilized for pre-incident planning. Chapter 7 is specifically about symbols for use in pre-incident planning (NFPA 170, 2009). Another recognized standard that refers to the use of pre-planning is NFPA 1021 (2009) *Standard for Fire Officer Professional Qualifications.* NFPA 1021 identifies basic knowledge required of fire officers at level I through IV. This standard states that at the level of Fire Officer I, one should be able to identify building or fire suppression features that could contribute to the spread of fire or smoke so that pre-incident plans may be developed. At the level of Fire Officer II, one is expected to be able to conduct pre-incident planning (NFPA 1021, 2009).

NFPA 1710 (2010) *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* states "the fire department shall set forth operational requirements to conduct pre-incident planning" (p. 13). The standard also emphasizes the importance of pre-planning for target hazards. NFPA 13E (2010) *Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems* contains information regarding pre-incident planning. Although not officially designated as a standard, this document is called a recommended practice. It is defined as having similar content as a standard but utilized the word "should" in the text (NFPA 13E, 2010, p. 4). This document suggests how to recognize problems with automatic sprinkler systems and make corrections during pre-incident planning. It also emphasizes the importance of locating valves and connections to be included in drawings and plan notations. It stresses the importance of knowing the building and the limitations of automatic sprinklers by referencing information gathered in pre-incident planning.

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that researches work related illness, injuries and fatalities to make recommendations for prevention of similar incidents in the future (About NIOSH, n.d.). In a recent NIOSH report about a volunteer firefighter killed and eight firefighters injured, the number one recommendation was for fire departments to pre-plan high risk occupancies and to update the plan annually (NIOSH, 2010). An additional recommendation in the report includes a proper scene size-up. The recommendation goes on to explain that one of the elements of an effective scene size-up is pre-incident planning (NIOSH, 2010). NIOSH has historically recommended that pre-incident planning must be conducted so that the incident commander has the knowledge

to make informed decisions and determine the best method to attack the fire or situation (NIOSH, 2000).

The Insurance Services Office (ISO) (2011b) is an advisory organization that provides guidelines and expectations utilized for insurance underwriting. The information is used to help communities with risk management. Additionally, ISO (2011a) states the capabilities and effectiveness of fire departments and dispatch are evaluated and measured by ISO's Fire Suppression Rating Schedule (FSRS). This is a system that provides a numerical grade called a Public Protection Classification (PPC). Pre-fire or pre-incident planning is a component of this score. According to ISO (2011a), for an agency to receive full credit under the training category, they must have a system in place to collect and provide updated pre-incident planning information on a regular basis.

Information Needed for Pre-Incident Plans

NFPA 1620 (2010) explains that pre-incident plans are most effective when they are brief and objective with minimal amounts of data. Bingham (2005) identifies that one of the reasons pre-plans are not always used is that they are too wordy. The first arriving company officer and the busy incident commander do not have time to sort through lengthy documents on the emergency scene (Bingham, 2005). According to Klaene and Sanders (2000), only items important to the fire ground incident commander should be on the plan. It is important the format be simple and easily used on scene (Delmar, 2008). Perhaps the most important element to include in the collected information is the building's address as occupancies and owners often change (International Fire Service Training Association [IFSTA], 2008). NFPA 1620 (2010) recommends that consideration to the building's physical size also be given. The standard

advises that the square footage, height, number of stories and the age of the building be noted (NFPA 1620, 2010).

Brunacini (2002) categorizes buildings into one of four categories: "super weight, heavy weight, middle weight and light weight" (p.108-109). Super weight buildings are those that present special hazards and would be very dangerous and resource intensive to mitigate an incident. An example given by Brunacini was a hospital. Heavy weight buildings are large area buildings like warehouses and commercial occupancies. Middle weight buildings are strip malls, smaller industrial buildings and some multi-family dwellings. Light weight buildings are smaller single family dwellings. According to Brunacini (2002) the categories allow for the incident commander to make more informed decisions.

Additional information should be collected to give firefighters a place to quickly reference the building's construction type, contents, fuel load and any hazardous materials stored there (IFSTA, 2008; NFPA 1620, 2010). Lasky (2007) explains that knowledge of the exits, utilities, hazards and fire department connections provides a higher level of safety to firefighters. This information should be included on a survey form or field collection card to provide a snapshot of information to be quickly reference (NFPA 1620, 2010). Singles (2007) contributes that it is also important to include the presence of any overhead wires, nearest hydrant locations and any emergency contact information. Building access can be impeded by security gates, windows or doors (IFSTA, 2008; Brunacini, 2002). Notations regarding a primary entrance or possible lock box are important (NFPA 1620, 2010). Lee (2009) states that a pre-incident plan is a good place to find the location of windows or potential rescue openings in the structure. These openings may be utilized for a rescue or for any specific evacuation considerations that are noted (Lee, 2009).

The Tucson Fire Department in Arizona has implemented a program titled *Critical Observations from Building Risk Analysis* (COBRA) (Ruetz & Bailer, 2005). It is intended for major target hazards and is a pre-planning program that includes a template used for data collection. The authors explained that the program template is divided into five information areas: geographic orientation, fire service features, building construction, specific hazards and systems and salvage (p 130-131). Geographic orientation is simply how the building is situated and the layout (Ruetz & Bailer, 2005). Fire service features include components of fire protection systems such as standpipes, fire pumps, fire department connections (FDC), chemical systems, fire alarms, portable extinguishers, and smoke management systems (NFPA 1620, 2010, p. 9). Building construction information helps for decision making regarding potential collapse, materials that may add to the live or dead load of the building, and any features that may confuse or trap firefighters (Lee, 2009). Ruetz and Bailer (2005) suggest that specific hazards refer to access problems, confined space or hazardous material problems. Finally, the systems and salvage components are those internal systems that could affect firefighting operations. Examples are electrical, HVAC, elevators and internal stairs. The COBRA program recommends including information on first due units, digital photographs of all sides, exposures, roof ventilation considerations, access problems and owner information regarding items to be salvaged (Ruetz & Bailer, 2005). NFPA 1620 (2010) provides input in support of this program by also recommending digital photographs of the areas in and around the facility for reference. The data collected during pre-incident planning may be stored together by utilizing a template that is standardized and easily referenced (NFPA 1620, 2010; IFSTA, 2008).

In addition to the information gathered during the pre-incident plan, a drawing or sketch of the area is extremely useful and highly recommended (Klaene & Sanders, 2000). The phrase

"a picture is worth a thousand words" emphasizes the importance of having a drawing depicting the property (Klaene & Sanders, 2000, p.49). Today, fire departments are taking advantage of technology and utilize geographic information systems (GIS) and mobile data terminals (MDTs) on their apparatus (Lasky, 2007). NFPA 170 (2009) provides symbols that may be used for computer or hand drawn plot plans or building layouts. There are symbols to represent any physical feature of the building that may be needed during an incident. Lock boxes, access points, alarm panels, hydrant and FDC locations are some points of interest that may be needed (NFPA 1620, 2010). Klaene and Sanders (2000) recommend using symbols that are easy to recognize and do not necessarily need a legend. Common symbols are advised to be used as much as possible (International Fire Service Training Association, 2008). Bingham (2005) advises that drawings should show the shape, height and dimensions of the building. According to Brunacini (2002), this information is useful for the incident commander to direct incoming tactical units.

The drawings and the documented tactical information can be stored in binders on apparatus, or they may be available to all arriving units with computers (Bingham, 2005). The information gathered and drawn for an effective pre-incident plan must be "bare-bones basic," but provide necessary information (Bingham, 2005, p. 161).

Summary

The literature review suggested that pre-incident planning is a valuable resource for incident commanders and responding company officers. There is only one national standard that is specifically about pre-incident planning. The information in this standard is referred to by other standards and best practice recommendations. The literature was consistent in

recommending the use of a standard template to record building information, physical site characteristics, hazards and special considerations. Drawings or sketches were emphasized, as well as the ability to review or reference the information on an emergency scene. Additionally, it was stressed to keep the pre-incident plans brief and objective.

PROCEDURES

The original concept of this research was the result of a recognized absence of a pre-incident planning program. A problem statement, purpose and research questions were developed. Surveys (Appendix B) (Appendix E) were created using Zoomerang (2011), an on-line survey creating engine. The Texas Fire Chief's Association provides a newsletter titled "The Friday Report" (Appendix D) available to Texas Fire Chiefs and provides current news for the association, State of Texas and fire department training resources. In the November 18th, 2011 edition of "The Friday Report" (Appendix D), posted a link to a survey titled External Fire Department Pre-Incident Planning Survey (Appendix E) to assist with this research. By November 28th, there were only twenty-two surveys completed. A second request for participation was sent out in the December 2nd, 2011 "Friday Report" (Appendix D) with an established survey closing date of December 7th. The survey closed with forty-five participants having completed the survey. Respondents were eliminated from the survey if they indicated in survey question #2 (Appendix E) that they had more than 100 uniformed personnel in their department. Ten surveys were eliminated for this reason as they are much larger departments than the AFD. Respondents were also deleted from the survey results if they did not utilize a pre-incident planning program as indicated in survey question #3 (Appendix E). If they did not utilize pre-incident plans, they were instructed to not go on. Eleven surveys were deleted for this

reason. A total of twenty-one surveys were eliminated. A total of twenty-four surveys were included and analyzed because they had departments with less than one hundred members and currently utilize a pre-incident planning program. The analyzed surveys represented fifty three percent of the total received. The survey was made up of ten questions that related to the implementation of a pre-incident planning program (Appendix F). This audience was chosen based on the area of the country and similarities in construction features to be pre-planned.

A second survey was submitted internally at the AFD. The survey is titled Addison Fire Department Internal Survey on Pre-Incident Planning (Appendix C). This ten question survey was sent to the officers of the department. Thirteen officers received and completed the on line survey. The survey was designed to identify how the officers at the AFD view an effective pre-incident planning program. An e-mail (Appendix A) was sent to the officers that identified the reason for the survey, instructions and a completion date. The e-mail was sent out on Sunday, November 6, 2011 and a completion date was established for Thursday, November 17th (Appendix A). There were only nine responses as of Tuesday, November 15th so a reminder was sent out on that day (Appendix A). All responses were submitted by the 17th and the survey was closed. The audience was chosen because they are formal leaders in the organization and are most familiar with the needs of the organization.

The internal survey was designed for the officers to provide input utilizing their own personal knowledge and experience within the department. They were able to contribute to help determine:

- who would manage the program;
- who would perform the pre-incident plans;
- what day of the week and time of day would be best;

- who could access the plans;
- how they should be stored;
- how often they should be done;
- should there be an AFD Standard Operating Procedure;
- will pre-plans be used for training;
- what information is important;
- establish a name for the pre-incident plans specific to the AFD.

Most questions were set up with various choices; however there was room for the officers to provide additional information if it was applicable. The additional responses are included in Appendix C.

There were limitations associated with this research. There was only one recognized standard specific to fire service pre-incident planning. There was not a specified format mandated for a pre-incident plan. Some sample pre-plans were presented but results largely depended on the needs of the department and the information desired. An external survey was sent out (Appendix E) but the number of recipients remains unknown and it is possible that multiple people from the same department received them. The surveys were anonymous and the link may have been shared with others in the same organization. A possible limitation also exists in that the survey was only sent to departments in Texas and not nationwide. Internal survey questions were answered by personnel on duty. It is possible that some felt obligated to provide answers that reflect positively on themselves. It is also possible that interruptions occurred during the surveys. There may be a lack of concern regarding pre-incident planning due to lack of an established program or training in that discipline.

RESULTS

The descriptive method of research was used and helped to determine a process to conduct pre-incident planning that meets the needs of the Addison Fire Department in accordance with industry standards. The literature review provided insight to two of the research questions. The first question was: (a) what are the recognized standards for fire service pre-incident planning? It was discovered that the most comprehensive information regarding pre-incident planning was located in NFPA 1620 (2010), the Standard for Pre-Incident Planning. The standard was referred to by other authors and standards and provides a foundation for fire department pre-incident planning programs to build on (Klaene & Sanders, 2000). NFPA 1620 (2010) lays out considerations for developing a pre-incident plan and encourages the use of the plan in the incident management system (p. 7). Data collection, physical site considerations, occupant considerations, water supplies and fire protection systems, special hazards and emergency operations are all discussed in this standard. The document provides detail and specifics that should be taken into account when creating a plan for each occupancy type. The standard recommends the use of photography, drawings and sketches to provide information along with the information obtained. Efficiency and successful plan development are emphasized (NFPA 1620, 2010). NFPA 1620 is the recognized standard for fire service pre-incident planning.

The second research question addressed was: (b) what information should be collected during pre-incident planning? Klaene & Sanders (2000) directly referred to the information presented in NFPA 1620. Life safety issues, building specifics, and information useful to responders were the common themes for information to be included in a pre-plan. NFPA 1620 (2010) emphasizes that the information should be kept concise and useful for emergency

responders. The literature review left much of the final decision to the department creating the plans. There were recommendations as to what information is important such as building construction, layout and fire suppression systems. It was strongly recommended in the literature reviewed to create drawings and include them in the plan (Bingham, 2005, Klaene & Sanders, 2000, NFPA 1620, 2010). Information gathered for the exposure buildings could also be useful when mitigating an expanding incident. This question was also addressed in the AFD Internal Survey on Pre-Incident Planning (Appendix B). This survey questioned what information should be collected during a pre-incident plan? The thirteen AFD officers that participated unanimously agreed that building construction type or features, Knox or lock box location, fire department connection, utilities shut off information, and special hazards/hazardous materials data be included in the plan. Ninety-two percent of the respondents wanted to include emergency contact information and site maps. Eighty-five percent believed that occupant information is useful. Seventy-seven percent responded that hours of operation, fire alarm and fire protection system information and floor layouts are beneficial to include in a pre-incident plan. Only fifty-four percent of the officers agreed that fire flow information is important enough to include. Finally, only forty-six percent wanted to include exposure information. One officer that responded to the survey included specifically that roof trusses should be noted.

Research questions (c) and (d) were answered through the use of surveys. The AFD Survey on Pre-Incident Planning (Appendix F) that was sent externally was used to answer research question (c): How are pre-incident plans accomplished at fire departments similar in size to the Addison Fire Department? Of the twenty-four surveys used, it was evenly spread out as to what position managed their programs. Battalion Chief and Captain/Lieutenant positions were both 30%. Only one department has a firefighter manage the program. Ninety-two percent

responded that the on duty engine or truck company should perform the pre-incident planning in the field. When asked if the information is stored on paper, computer or both, 67% responded that the use both. Only two departments rely on paper pre-plans alone. Nineteen departments responded with the type of software used to draw and document pre-plans. More than half of the respondents utilize Firehouse Software©. The other answers varied. The participants were asked how often buildings are pre-planned. Only 21% replied that they do them twice a year or more. Forty-two percent responded that they do them less than one time a year. Fifty percent of those surveyed base their pre-planning program on NFPA 1620 recommendations. Five departments responded that they did not know. Finally, 52% have a standard operating procedure or guideline to assure consistency in performance.

The fourth research question was addressed with an internal survey. The question was: (d) how will the Addison Fire Department implement a pre-incident planning program? The survey was sent to the thirteen AFD officers, including the Chief and Deputy Chief of the department. When asked who should be responsible for managing the pre-incident planning program, 77% felt that a Battalion Chief would be the best answer. Survey question 2 asked who should perform pre-incident plans. The survey did not indicate that they could choose more than one selection so there were six “other” responses that indicated all or any of the companies could do this. Only 1% chose the Prevention Division alone. The results indicated that engine, truck or ambulance companies could perform the pre-incident plans. Several choices were given in survey question 3 as to what day and time of day would be preferred. The answers were surprisingly very scattered. The two top responses respectively were weekends and Thursday mornings. All agreed that responding tactical units should have access to the plans and more than half felt that automatic aid units should have access as well. One hundred percent of the

officers would like to have the information available on the mobile data terminals on each apparatus. Eighty-five percent believe that performing the pre-incident plans once a year would meet our organizational needs and that the AFD should implement a standard operating procedure to maintain consistency. One hundred percent believe that the pre-incident plans will be useful for company and shift level training. Survey question 9 asked what information should be collected and this information was utilized to address the second research question. Finally, the AFD officers were asked what they would like to call the pre-incident plans. They were given choices and room to include their own responses. Fifty-four percent responded that they would like to refer to the Addison Fire Department pre-incident plans as tactical surveys. Several officers gave positive feedback that they support implementing a formal pre-incident program and were appreciative of being involved in the survey.

DISCUSSION

The literature review indicates that NFPA 1620 (2010) supplies the necessary information for fire service agencies to perform successful pre-incident planning. The standard recommends occupancies that are critical to pre-incident plan and suggests the use of drawings or sketches to supplement the information. The standard also categorizes different types of pre-plans from simple to complex. Klaene and Saunders (2000) recommend this standard as a resource to develop pre-plans. They do not provide categories for the pre-plans but emphasize that the complexity of a plan is based on the needs of the organization (Klaene & Sanders, 2000). The internal survey (Appendix C) provided a method to for the AFD to identify the needs as recognized by leaders in the organization. The data recorded from the two surveys (Appendix C) (Appendix F) supports Klaene & Sanders (2000) in that the agency that will be conducting the

plan has the ultimate decision on the amount of information or detail assembled in a pre-incident plan, but that the plan must be brief and easy to access. Brunacini (2002) mentions that incorporating pre-incident planning with the incident management system arms the incident commander with a quick reference to immediate hazards and building information. Lee (2009) supports this with recommending pre-incident plans be used to answer the immediate questions on scene; "What do I have? What do I need to do? Do I have enough stuff to get it done?" (Lee, 2009, para. 8). The surveys conducted indicated that standard operating procedures based on NFPA 1620 (2010) provide consistency. The implication was that the fire service can improve its efficiency and situational awareness by following the recommendations in this standard. In summary, NFPA 1620 (2010) attempts to provide some standardization in the practice of pre-incident planning in the fire service and is a foundation to build a program on.

Addison Firefighters recognized the need to become more familiar with the buildings in their jurisdiction (Appendix C). Pre-incident planning is a way to gather data and store it for future reference or utilize for training. NFPA 1620 (2010) breaks down each occupancy classification and provides recommendations on data to be gathered. The standard implies that is important for the pre-incident plan be brief and not too wordy (NFPA 1620, 2010). Ruetz & Bailer (2005) cite the use of a template to make sure hazards are noted and not missed. The literature showed that authors, Lasky (2007) and Brunacini (2002), agreed that building construction features and fire protection system information is a priority; and that drawings or sketches are to be included. Survey questionnaires sent to AFD officers support this information. Ruetz and Bailer (2005) and Lee (2009) are in agreement that special or unique hazards must be noted. The AFD officers surveyed did not all agree that exposure information needs to be included. Lee (2009) points out that exposure protection is an important element of

strategy and tactics and the information is important to command. The implication for AFD is the need for a template to gather information consistently for the various occupancies and a standardized method to record information. In summary, the information collected should be brief, accessible, and provide pertinent.

The external survey used to determine how other fire departments similar in size to the AFD indicated that not all fire agencies are currently utilizing a pre-incident planning program (Appendix E). The data and the literature review support the need and value of performing pre-plans and gathering information. There is an advantage to having the knowledge of hazards and building layouts prior to responding to emergencies. NIOSH (2010) recommends pre-incident plans be available and that they are part of the size-up. Brunacini (2002) and Lasky (2007) are among many authors that emphasize the pre-incident plan helps provide a safer fire ground and arms the incident commander with critical information. The survey of departments similar in size to AFD (Appendix F) indicated that they are conforming to NFPA 1620 and utilizing this standard to implement their programs. They are storing drawings and information on both their mobile data computers and backing them up on paper. Not all departments have established standard operating procedures but they are acquiring the information and putting it into a useful format. This implies that the AFD is lacking a vital program that is providing benefit to many other agencies. Although each fire department has specific needs, establishing a program that follows recommendations in NFPA 1620 is likely the best practice. In summary, fire departments similar in size to the AFD have established program managers and are having fire companies collect and store information, drawings and photos to be utilized on scene.

The respondents that took the AFD Internal Survey (Appendix C) support the establishment of a formalized pre-incident planning program. Each research question was

addressed as a result of the research, literature review and surveys. The data supports that a Battalion Chief would be a good choice for a program manager. The respondents are in agreement that any fire company may be able to gather the information necessary to create a plan. Sixty two percent of the AFD officers would like the pre-planning information to be accessible to the automatic aid units arriving. The data indicates that it is desirable to acquire similar information when responding to other cities. Pre-incident plans and drawings are useful tools on scene, but they have value in a training environment as well (NFPA 1620, 2010; Singles, 2007). Survey respondents agree that shift level training will benefit from a pre-incident planning program. The implication for the AFD is that it will provide a better service for the community by performing pre-incident planning. In summary, the AFD has responded and provided input on how a program would best be implemented.

RECOMMENDATIONS

Based on the research for the applied research project and discoveries, a list of recommendations for the AFD has been made. The following recommendations are intended to help guide the leaders of the AFD toward the establishment of a pre-incident planning program that meets the organizational needs and complies with the practices recommended in the national standards.

Recommendation one: Establish a program manager that will be the point of contact and decision maker throughout the process. Data supports recommending Battalion Chief be considered for this responsibility. The AFD officers prefer the term “Tactical Surveys,” so using this term will allow for some ownership and buy in from the members (Appendix C, question 10).

Recommendation two: Utilize NFPA 1620 (2010) and surrounding agency examples to develop a template to gather information. An in service training class that covers the template and occupancy specifics provided in NFPA 1620 would assure that all members receive the same information. Keep the form simple and easy to read.

Recommendation three: The program manager and Fire Chief should work closely with the Information Technology specialists to find software that will store the data and is user friendly so that company members may create drawings for reference. It is recommended that the pre-incident planning software on the apparatus mobile data terminals be utilized. If this is not possible, then convert information into a format that will be accessible on scene for immediate recognition of building hazards, fire protection systems and water supply.

Recommendation four: Create a list of occupancies and prioritize them based on risk potential and specific hazards. Assign tactical surveys or pre-incident plans to AFD companies to complete each month. Allow time for companies to visit buildings, gather and store information.

Recommendation five: Utilize the stored information on scene as part of the Incident Management System. Utilize the information for training purposes for building, district and target hazard familiarization.

Recommendation six: It is recommended that a standard operating procedure be developed to assure consistency among all members. The document should refer to NFPA 1620 as the recognized standard and example of best practice. Periodic training over this procedure is also recommended.

Future readers of this paper should determine their fire department's specific needs based on the demographics. Specific consideration as to software and technology may be based on

monetary availability. The program may be very simple and expand as other resources become available.

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APPENDIX A

AFD Internal Survey Request Email and Reminder

From: David Jones
Sent: Sunday, November 06, 2011 3:53 PM
To: Fire Battalion Chiefs; Fire Captains; Fire Lieutenants; John O'Neal; Chris Kellen
Subject: AFD Officers Internal Survey

To all Addison Fire Department Officers,
Please take about 1 or 2 minutes and complete the 10 question survey attached to the link below. It will be utilized to gather your input for a potential pre-fire planning program. I appreciate your help and again, this will not take but a minute or two of your time.
Please complete this survey by **Thursday, November 17th**.
Thanks very much,
David Jones

http://www.zoomerang.com/Survey/WEB22DPNU5V9ZV

From: David Jones
Sent: Tuesday, November 15, 2011 10:37 PM
To: Fire Battalion Chiefs; Fire Captains; Fire Lieutenants; John O'Neal; Chris Kellen
Subject: RE: AFD Officers Internal Survey

Just a reminder but if you have not done this survey, I would appreciate your input. It only takes a minute.
If you have, please disregard.

Thank you,

David Jones | **Battalion Chief** | **Operations Division**
Town of Addison | 4798 Airport Pkwy | Addison TX 75001
ofc 972.450.7226| fax 972.450.7208 | djones@addisontx.gov

Omnis Cedo Domus

APPENDIX B

AFD Internal Survey on Pre-Incident Planning

1.
Who should manage a Pre-Incident Planning Program at our Fire Department?

- ○ Fire Chief
- ○ Deputy Chief
- ○ Battalion Chief
- ○ Captain
- ○ Lieutenant
- ○ Driver
- ○ Firefighter
- ○ Other, please specify

2.
Who should perform Pre-Incident Plans?

- ☐ Engine Companies
- ☐ Truck Company
- ☐ Prevention
- ☐ Other, please specify

3.
Please rank when Pre-Incident Planning should be performed?

Monday AM
Monday PM
Tuesday AM
Tuesday PM
Wednesday AM
Wednesday PM
Thursday AM
Thursday PM
Friday AM
Friday PM
Weekends

Drag items here to rank them

4.
Who should have access to the Pre-Incident Plans and drawings?

- ○ Command only
- ○ All Addison tactical units
- ○ All responding units, including Automatic Aid tactical units

5.
How would you prefer to view this stored information?

- ☐ Binders
- ☐ On board filing boxes
- ☐ Mobile Data Terminals

6.
How often should we Pre-Incident Plan buildings?

- ○ Twice a year
- ○ Once a year
- ○ less than once a year

7.
Do you feel we need to implement a Pre-Incident Planning Standard Operation Procedure to maintain consistency?

- ○ Yes
- ○ No

8.
Would Pre-Incident Plans be useful for company and shift level training?

- ○ Yes
- ○ No

9.
What information should be collected during a Pre-Incident Plan?

- ☐ Building Construction Type or features

- ☐ Knox Box location
- ☐ Fire Flow information
- ☐ FDC location
- ☐ Occupant information
- ☐ Hours of operation
- ☐ Emergency contact information
- ☐ Utilities shut off information
- ☐ Fire Alarm and Fire Protection system information
- ☐ Site maps
- ☐ Floor layouts
- ☐ Exposures
- ☐ Special Hazards / Hazardous Materials
- ☐ Other, please specify

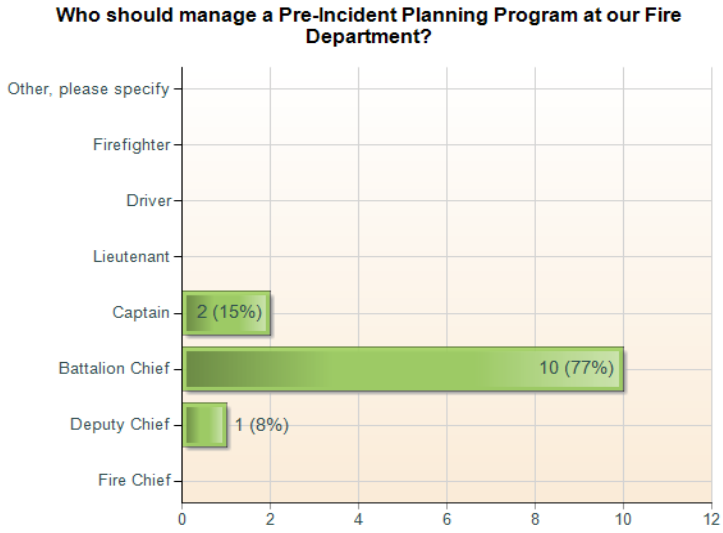
10.
NFPA 1620 establishes the standard for conducting detailed Pre-Incident Plans. If a brief snapshot of the plan is provided for reference to first-due units, what should we call it?

- ○ Pre-Incident Plan Summary
- ○ Quick Action Plan (QAP)
- ○ Tactical Incident Survey (TIS)
- ○ Tactical Survey
- ○ Other, please specify

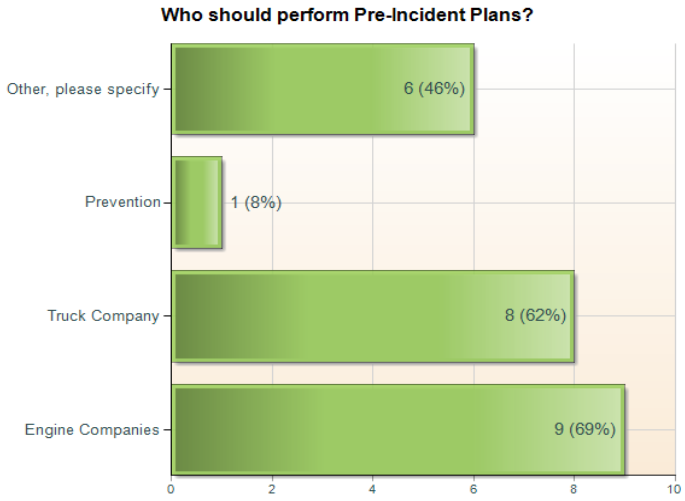
APPENDIX C

AFD Internal Survey on Pre-Incident Planning: Analysis

1.



2.

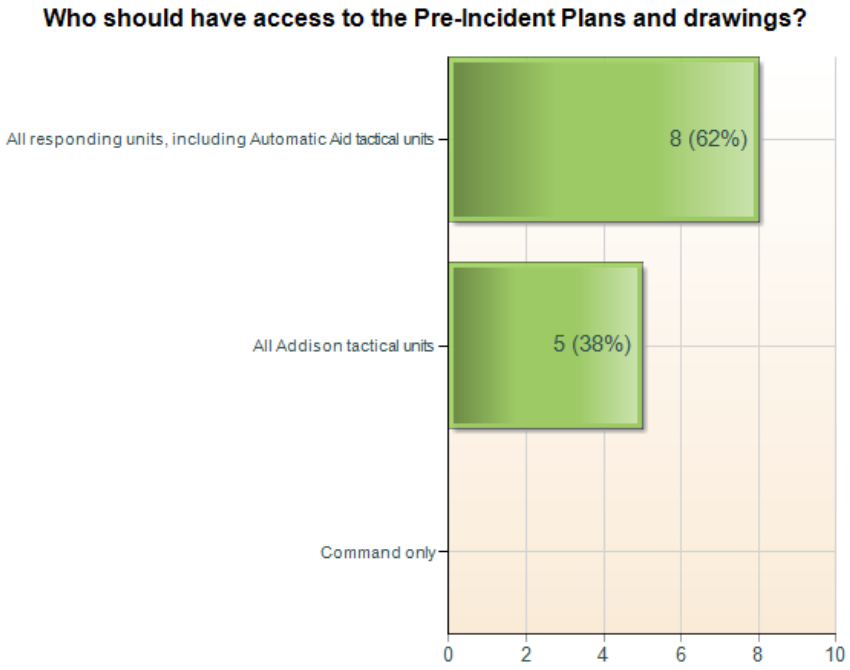


Responses for Other: 3 responses were for All of the Above, 1 response was for Engine & Truck Companies, 2 responses were for Ambulance Companies

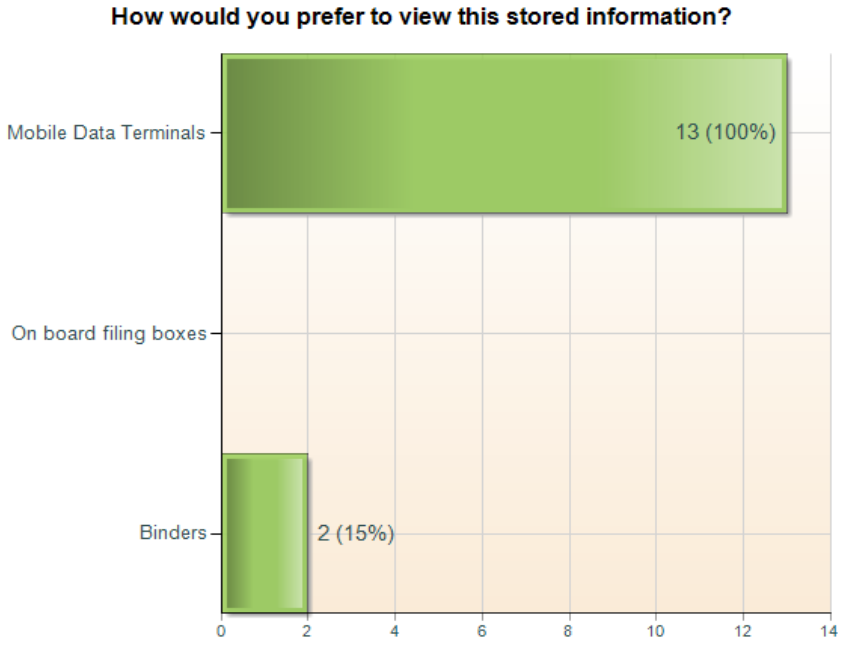
3. Please rank when Pre-Incident Planning should be performed?

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	1	2	3	4	5	6	7	8	9	10	11
Monday AM	1 20%	0 0%	1 20%	0 0%	0 0%	1 20%	0 0%	1 20%	0 0%	0 0%	1 20%
Monday PM	4 44%	0 0%	0 0%	2 22%	0 0%	0 0%	2 22%	0 0%	0 0%	1 11%	0 0%
Tuesday AM	3 60%	0 0%	0 0%	0 0%	0 0%	0 0%	1 20%	1 20%	0 0%	0 0%	0 0%
Tuesday PM	3 33%	6 67%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Wednesday AM	0 0%	1 14%	3 43%	0 0%	1 14%	0 0%	0 0%	1 14%	1 14%	0 0%	0 0%
Wednesday PM	1 9%	3 27%	4 36%	2 18%	0 0%	1 9%	0 0%	0 0%	0 0%	0 0%	0 0%
Thursday AM	0 0%	0 0%	0 0%	0 0%	3 60%	0 0%	1 20%	0 0%	1 20%	0 0%	0 0%
Thursday PM	0 0%	2 22%	1 11%	3 33%	0 0%	2 22%	0 0%	1 11%	0 0%	0 0%	0 0%
Friday AM	0 0%	0 0%	0 0%	0 0%	1 25%	0 0%	0 0%	0 0%	2 50%	1 25%	0 0%
Friday PM	0 0%	0 0%	0 0%	1 20%	1 20%	1 20%	0 0%	0 0%	0 0%	2 40%	0 0%
Weekends	1 25%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	3 75%

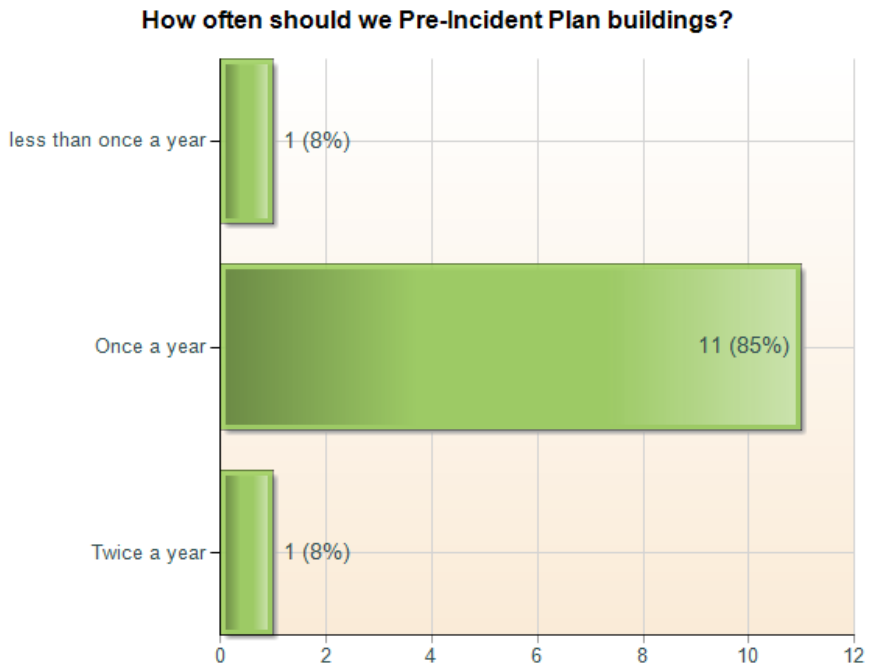
4.



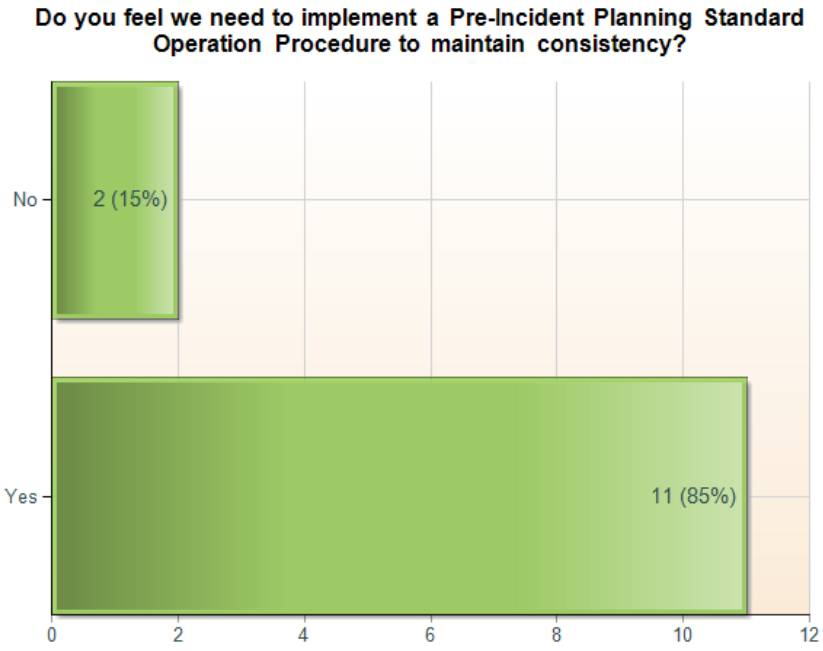
5.


How would you prefer to view this stored information?
Mobile Data Terminals
13 (100%)
On board filing boxes
Binders
2 (15%)
0
2
4
6
8
10
12
14

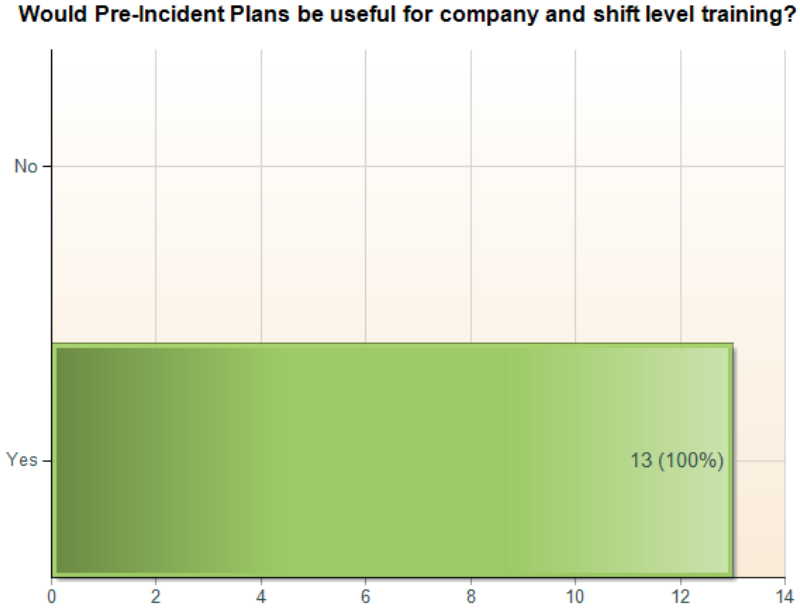
6.


How often should we Pre-Incident Plan buildings?
less than once a year
1 (8%)
Once a year
11 (85%)
Twice a year
1 (8%)
0
2
4
6
8
10
12

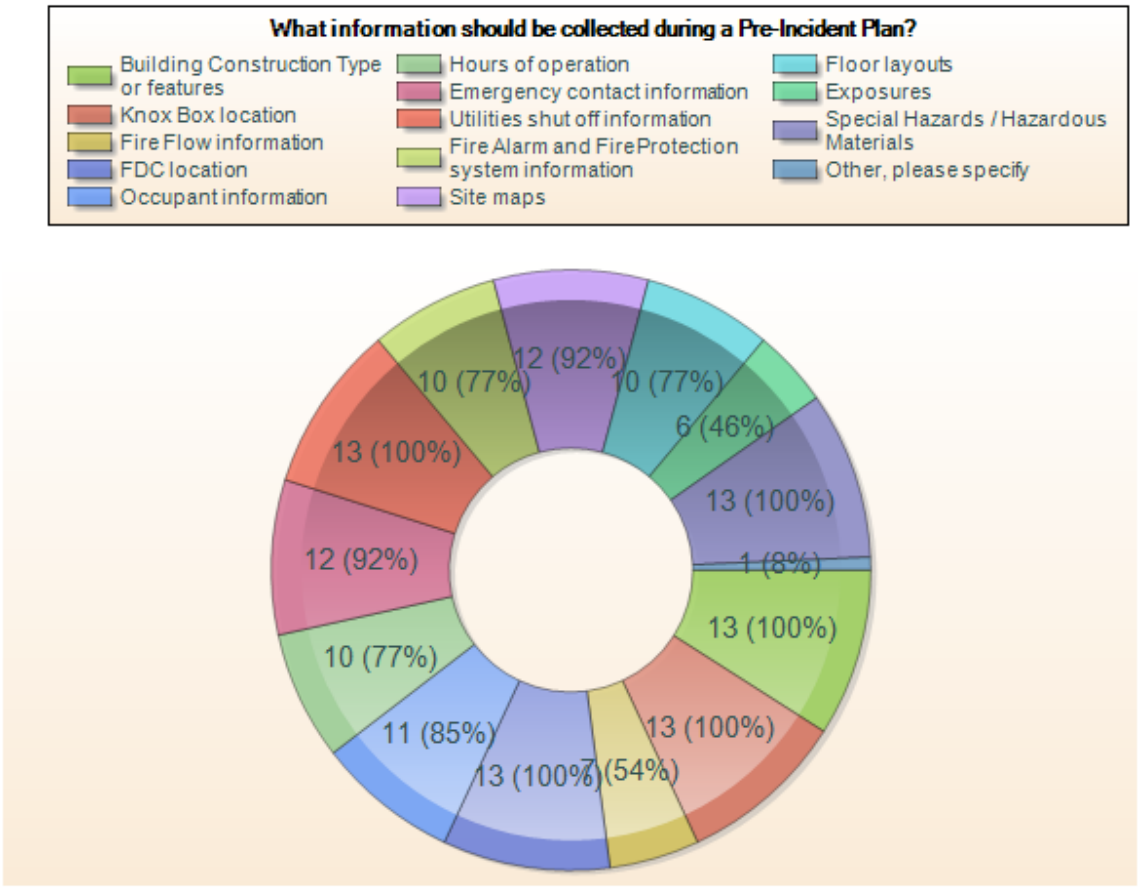
7.


Do you feel we need to implement a Pre-Incident Planning Standard Operation Procedure to maintain consistency?
No
2 (15%)
Yes
11 (85%)
0
2
4
6
8
10
12

8.

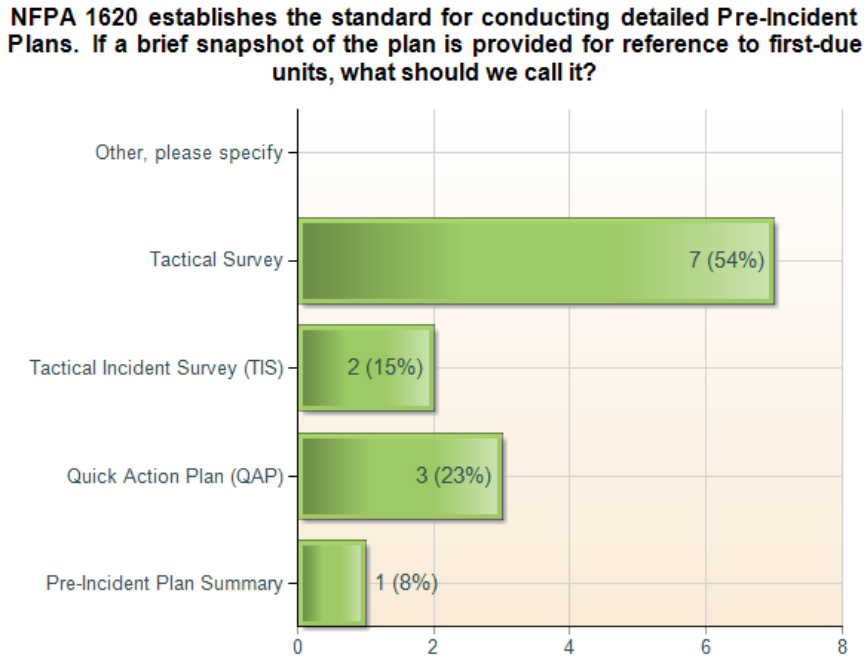

Would Pre-Incident Plans be useful for company and shift level training?
No
Yes
13 (100%)
0
2
4
6
8
10
12
14

9.



Response for Other: 1 response for Roof Trusses

10.



APPENDIX D

Texas Fire Chiefs Association Survey Request and Reminder

The Friday Report

Texas Fire Chiefs Association

TEXAS NEWS – NOVEMBER 18, 2011

EFO Project - Please Respond

Please click here and respond to this survey to gather information regarding your Fire Department's Pre-Incident Planning program. This information is to be used for a National Fire Academy Executive Fire Officer Applied Research Project being undertaken by David Jones, Battalion Chief, Addison Fire Department. Please take this two-minute survey or forward it to the appropriate person. Your assistance is greatly appreciated. Thank you, David Jones, djones@addisontx.gov.

The Friday Report

Texas Fire Chiefs Association

TEXAS NEWS – DECEMBER 2, 2011

Last Call - EFO Project - Please Respond

Please click here and respond to this survey to gather information regarding your Fire Department's Pre-Incident Planning program. This information is to be used for a National Fire Academy Executive Fire Officer Applied Research Project being undertaken by David Jones, Battalion Chief, Addison Fire Department. Please take this two-minute survey or forward it to the appropriate person. Your assistance is greatly appreciated. **Please note that this project will close on December 7th so please respond now!** Thank you, David Jones, djones@addisontx.gov.

APPENDIX E

External Fire Department Pre-Incident Planning Survey

1.
Is your Fire Department:

- ○ Fully Paid (career)
- ○ Combination
- ○ Volunteer

2.
How many uniformed personnel are in your Fire Department?

- ○ Less than 100
- ○ 100-200
- ○ Over 200

3.
Does your Fire Department utilize a Pre-Incident Planning Program?

- ○ Yes
- ○ No

4.
If the answer is NO to question #3, do not go on, submit your response and thank you.
If YES, who manages the program?

- ○ Fire Chief or Deputy Chief
- ○ Battalion Chief
- ○ Captain or Lieutenant
- ○ Firefighter
- ○ Prevention Officer

5.
Who performs the Pre-Incident Plan in the field?

- ○ Engine or Truck Company

- Inspector/Prevention
- Outsourced Agency
- Other, please specify

6.
How is Pre-Incident Planning information stored?

- Paper, Files
- Computer
- Both

7.
If applicable, what is the name of the software used to store this information?

8.
How often are buildings Pre-Planned?

- Twice a year or more
- Once a year
- Less than once year

9.
Is your Fire Department's Pre-Incident Planning Program based on NFPA 1620 – *Standard for Pre-Incident Planning*?

- Yes
- No
- I don't know

10.
Does your Fire Department have an SOP or SOG for Pre-Incident Planning?

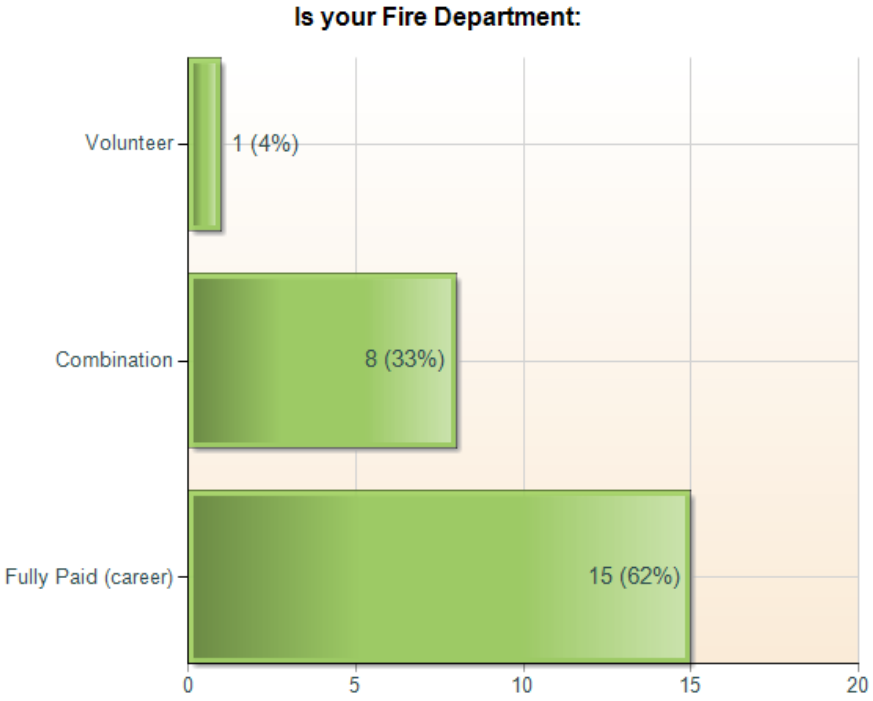
- Yes
- No

Submit

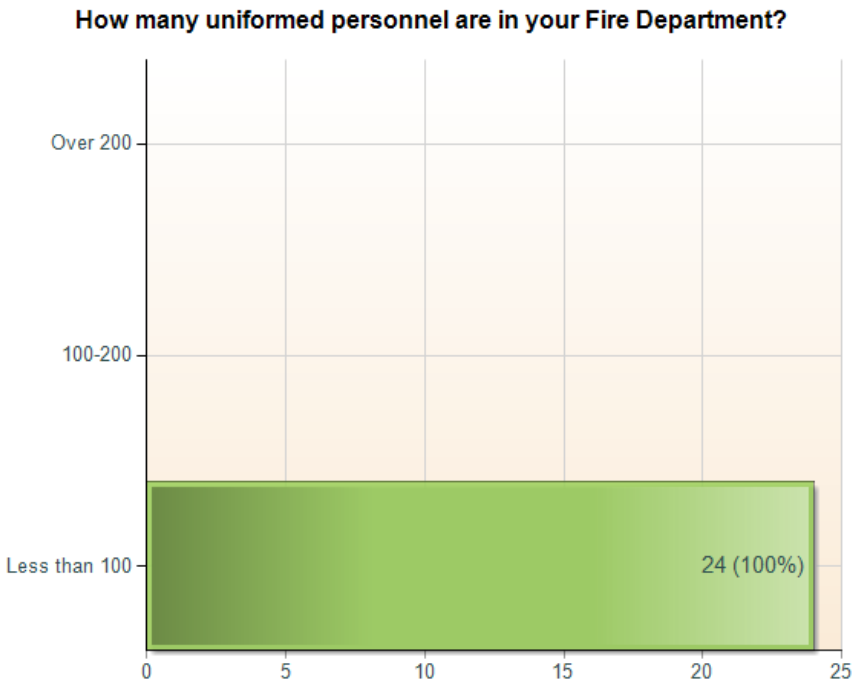
APPENDIX F

External Fire Department Pre-Incident Planning Survey: Analysis

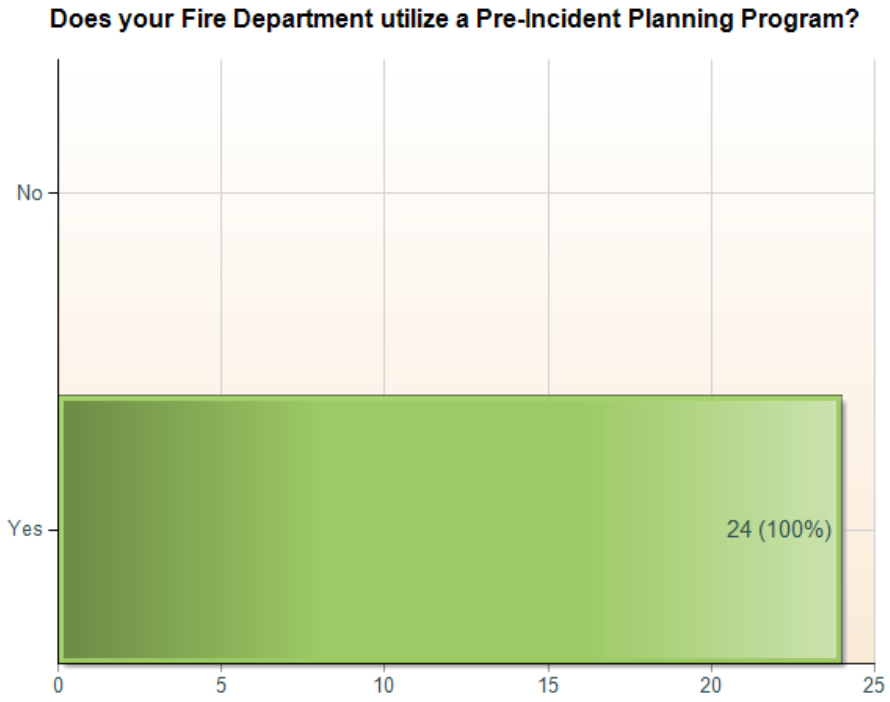
1.



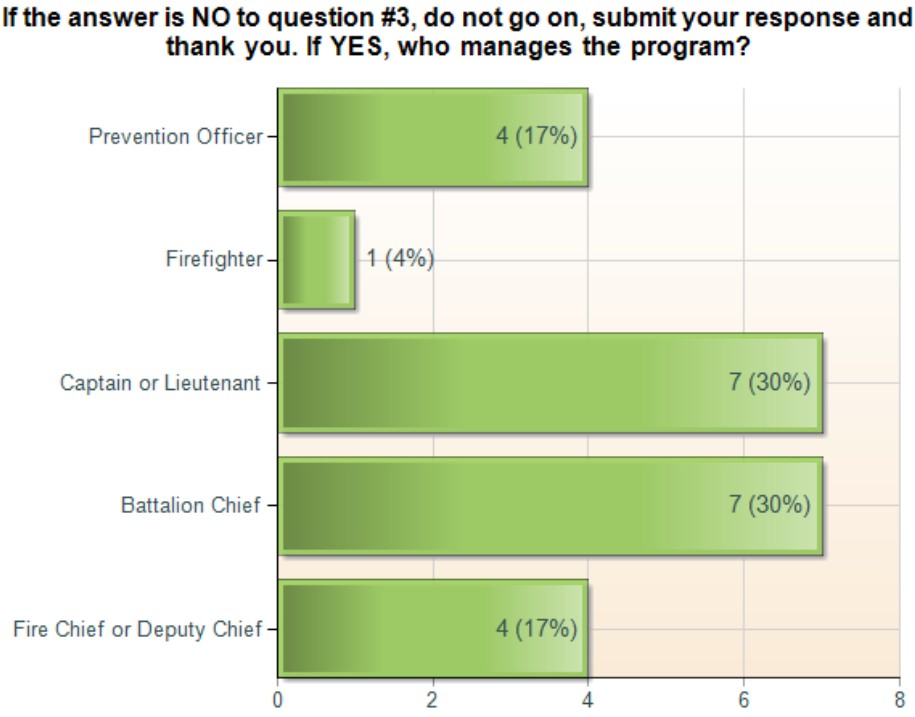
2.



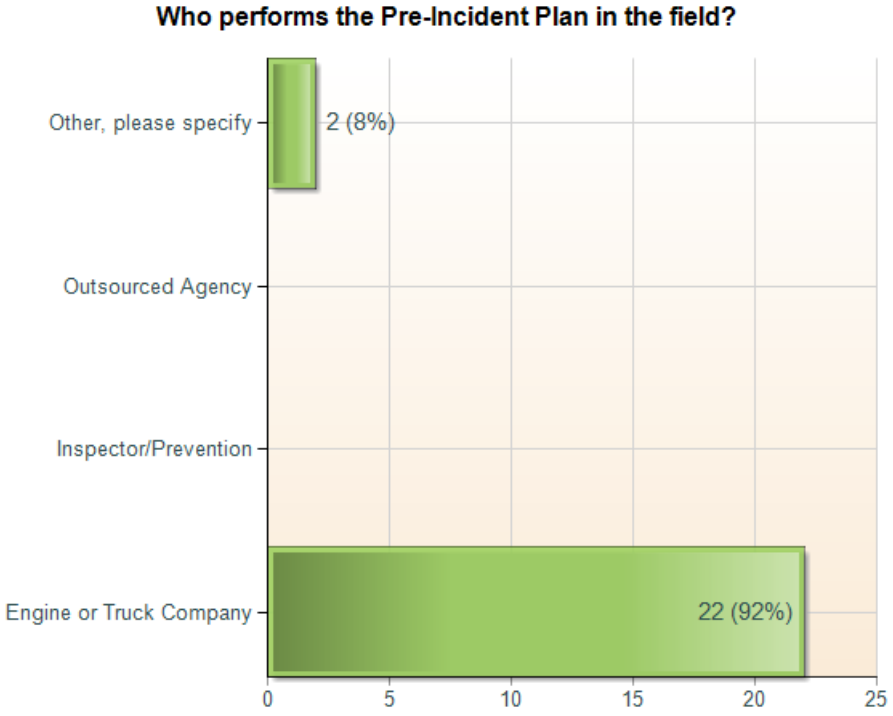
3.


Does your Fire Department utilize a Pre-Incident Planning Program?
No
Yes
24 (100%)
0
5
10
15
20
25

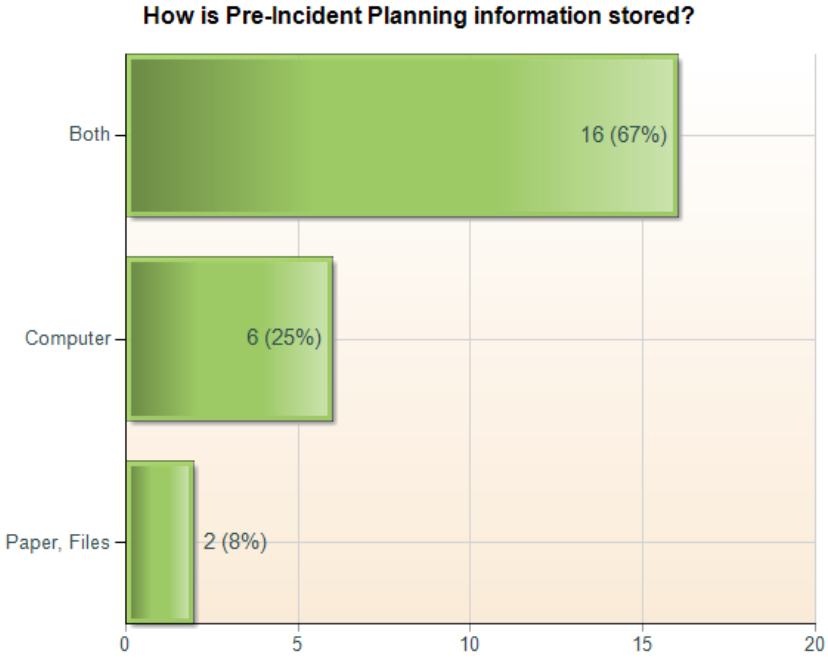
4.


If the answer is NO to question #3, do not go on, submit your response and thank you. If YES, who manages the program?
Prevention Officer
4 (17%)
Firefighter
1 (4%)
Captain or Lieutenant
7 (30%)
Battalion Chief
7 (30%)
Fire Chief or Deputy Chief
4 (17%)
0
2
4
6
8

5.

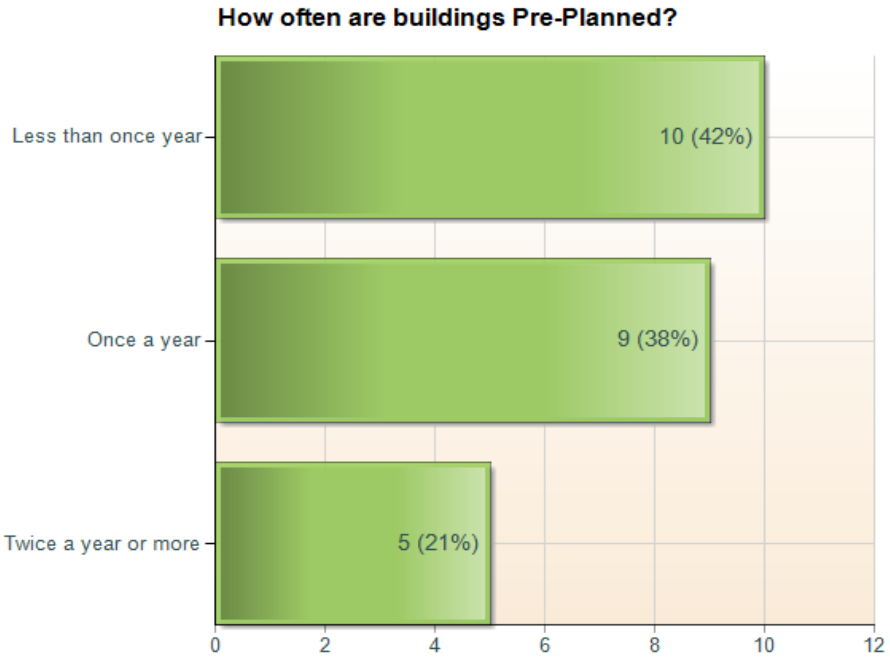

Who performs the Pre-Incident Plan in the field?
Other, please specify
2 (8%)
Outsourced Agency
Inspector/Prevention
Engine or Truck Company
22 (92%)
0
5
10
15
20
25

6.

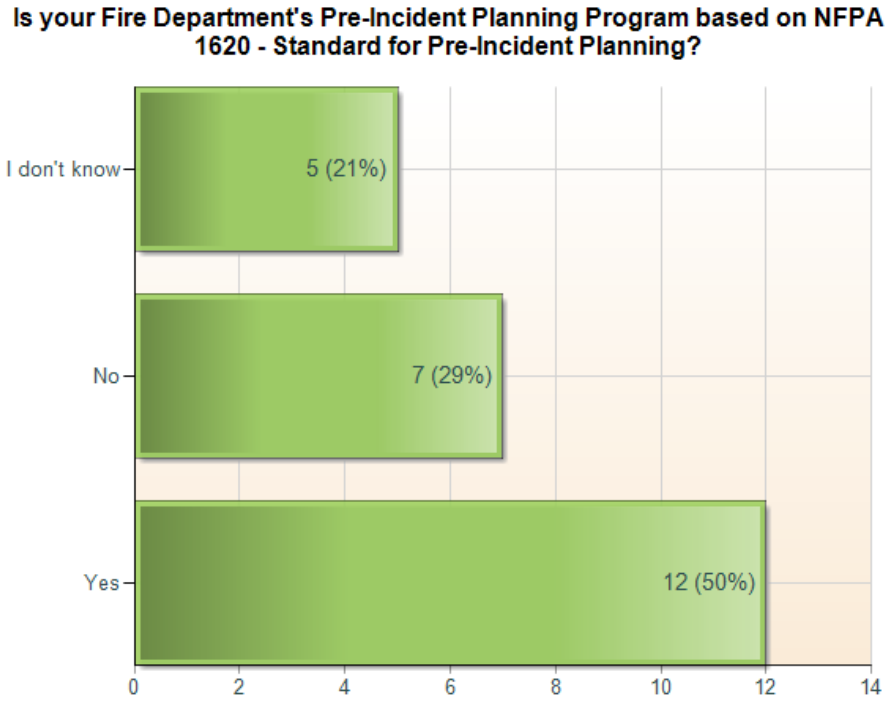

How is Pre-Incident Planning information stored?
Both
16 (67%)
Computer
6 (25%)
Paper, Files
2 (8%)
0
5
10
15
20

7. If applicable, what is the name of the software used to store this information?	
#	Response
1	firehouse
2	David?? This is Les: we currently use Word to draw our programs here in San Marcos and we are going to a program called Apex. We used a program called Fire-Zone in Garland. Either the Apex or Fire Zone are both good programs. Depends on what is most compatible with your MDCs and can be most easily accessed by the BCs and Company Officers. Since there isn't anywhere else to write, we used a program in Garland where each station was required to turn in 1 pre-fire plan each month. If they took on a large building (hospital or Sherwin Williams) they could ask for additional months credit - usually 3-4 months. We did all schools and churches first.
3	Firehouse, Adobe Acrobat
4	Firehouse Software with FH Sketch
5	Fire Programs. We are switching to Firehouse.
6	Firehouse
7	Firehouse Software
8	firehouse
9	Firehouse
10	Unknown, We pre-planned many buildings and have not seen any actual useable results. The initial sample products were installed in our CAD system and available form Mobile units and fixed computers.
11	We use a internal system we created.
12	FireZone
13	First Look Pro
14	Firehouse
15	FireHouse
16	internal .pdf file
17	NO formal software program, just scanned maps, diagrams, notes
18	Currently Excell spread sheet
19	The CAD Zone First Look Pro

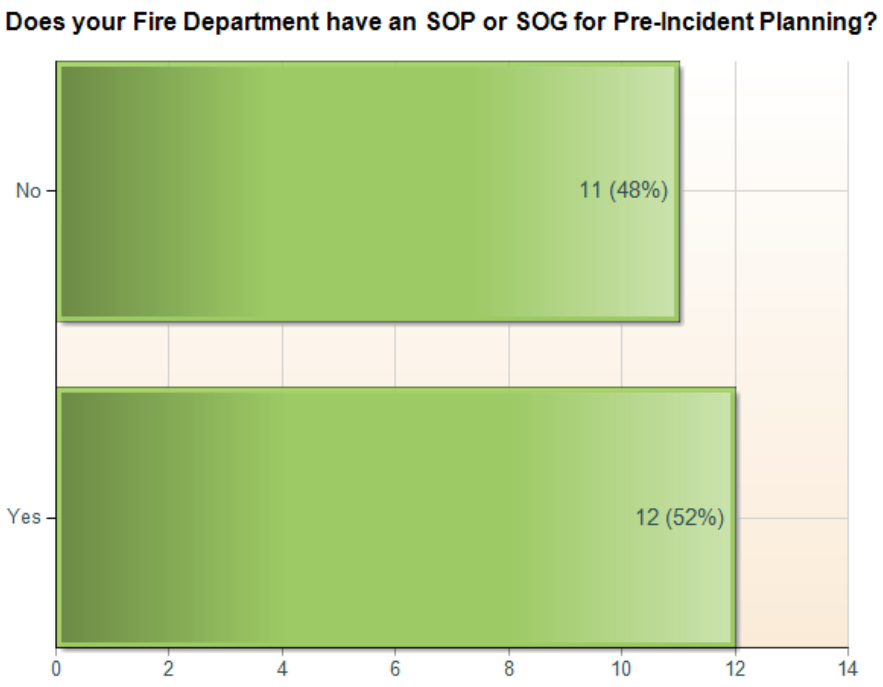
8.


How often are buildings Pre-Planned?
Less than once year
10 (42%)
Once a year
9 (38%)
Twice a year or more
5 (21%)
0
2
4
6
8
10
12

9.


Is your Fire Department's Pre-Incident Planning Program based on NFPA 1620 - Standard for Pre-Incident Planning?
I don't know
5 (21%)
No
7 (29%)
Yes
12 (50%)
0
2
4
6
8
10
12
14

10.


Does your Fire Department have an SOP or SOG for Pre-Incident Planning?
No
11 (48%)
Yes
12 (52%)
0
2
4
6
8
10
12
14