PRE-FIRE PLANNING: DOES IT MEET CURRENT NEEDS FOR EFFICIENT AND EFFECTIVE FIRE GROUND OPERATIONS FOR THE CITY OF TWO RIVERS FIRE DEPARTMENT

EXECUTIVE DEVELOPMENT

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Abstract

It is the primary mission of the Two Rivers Fire Department to protect the lives and property of the people in the community from the adverse effects of fires, medical emergencies and the like. This is accomplished by delivering services in an effective and efficient manner. One of the challenges faced is meeting the needs of the community to keep pace with the ever-changing political and economic climate.

The problem was that the fire pre-planning program was a low priority that remained static and didn't evolve as an effective tool for fire ground operations.

The purpose of the research project was to identify if the current pre-fire planning system was providing accurate information for fire ground operations and if not, to suggest modifications to more adequately meet the current needs and resources. A descriptive research method was used to answer the following questions:

1. What is pre-fire planning?

2. What are the objectives of pre-fire planning?

3. What information should be included in pre-fire plans?

4. How do fire pre-plans impact fire ground operations?

5. How often should fire pre-plans be updated?

Procedures for the research project included a literature review of Executive Fire Officer Applied Research Projects, fire service trade magazines, fire service books, fire service instructional manuals, and a dictionary, as well as an interview with the current fire chief. In addition a survey was created and information solicited for comparison to the results of the research.

The results of the literature review and research indicated that although the Two Rivers Fire Department made an attempt to *bridge the gap* relevant to the existing fire pre-plan program by implementing a Quick Reference Information Sheet, it fell short of providing adequate information to meet current needs.

The research identified the paramount importance of developing a systematic approach to gather pertinent information that can be incorporated into a strategic planning process that identifies specific objectives for fire ground operations. The planning process must identify target occupancies and integrate additional resources. Once created, they must be easy to understand, accessible, and updated on a regular basis.

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Introduction

Fighting fires has evolved from being reactionary to becoming more proactive. To this end fire pre-planning has been used in some form or another for many years in the fire service. Specific fire pre-planning has become increasingly more important to enhance fire ground efficiencies as well as to more effectively promote the safety of fire personnel.

The fire department for the City of Two Rivers has evolved to include many new services in a political and economic climate that has required a business-like approach to operational issues. Although the City of Two Rivers Fire Department (TRFD), much like most fire departments, has a fire pre-planning program in place, the problem is that the fire pre-plans have not evolved as effective, up to date tools that address the needs of the department and community. Updating the pre-fire plans was not considered a high priority as duties and responsibilities expanded. Unfortunately the fire pre-planning program became a casualty of progress and has remained static for several years. It has not been updated to address our current needs and changing demographics.

The purpose of this research is to identify if the current pre-fire planning system is providing accurate information for fire ground operations and if not, to suggest modifications to more adequately meet our current needs and resources. A descriptive research method was used supported by a literature review to answer the following questions.

1. What is pre-fire planning?

2. What are the objectives of pre-fire planning?

3. What information should be included in pre-fire plans?

4. How do fire pre-plans impact fire ground operations?

5. How often should fire pre-plans be updated?

Background and Significance

The TRFD serves a city of approximately 13,000 residents that covers a 6 square mile area. The department consists of a chief, 3 assistant chiefs, 3 lieutenants, 13 firefighter/paramedics, 15 paid on call firefighters and a part time administrative assistant. The chief works a 40-hour week. The fulltime personnel are divided into 3 shifts, each work a 24-hour shift on the California Plan. The paid on call firefighters are divided into two shifts and are utilized as a supplementary force for fire suppression only.

The fire department offers an array of services whose mission is to protect the lives and property of the people in the community from the adverse effects of fires, sudden emergencies, or exposure to dangerous conditions created by either man or nature. This is accomplished by providing fire suppression, emergency medical services, fire prevention/public education, code enforcement, specialized rescue, and hazardous materials response.

Over the past ten years or so the department has concentrated on, and has modernized itself, to become more customer friendly. Brunacini (1996) talks about the essential mission and number one priority of the fire service being the delivery of the best possible service to the customer. In keeping with that commitment the TRFD went through a re-organization in an attempt to shift from a paramilitary, reactionary organization to a proactive, business-like administrative organization.

Unfortunately, during that time many of the efforts of the department focused on developing new programs that addressed the needs of a fast paced business world.

Many of the existing programs remained static. One of the casualties was the pre-fire plan system. Although the department had a pre-fire planning system in place that took into consideration new occupancies, it didn't address the existing occupancies.

Several key factors can be identified that caused them to take a backseat. The primary reason may have been at the expense of technology. While it was understood the need for a software program could be interfaced with current information to produce an updated pre-fire planning system, the TRFD continually encountered political and financial roadblocks. The fire department operated under a McIntosh format while the rest of the city operated under a DOS format. The city realized advances in technology and initiated research into new software systems that would be used citywide. During this time a moratorium was placed on the purchase of any computers or software peripherals. A decision was made not to devote a great deal of time updating the current pre-fire plans because it was uncertain how they would interface with the new software program. The city finally decided on a new computer system, however another time delay was encountered when our city protective services ventured into a countywide Computer Aided Dispatch (CAD) center. Once again, a moratorium was in place until the 21 fire departments in the county could agree on a universal fire software package.

The focus of the TRFD remained on offering newer services. Keith (1993) disclosed, "In today's society, municipal services have come under increased pressure to do more with less and to be more productive. The fire service is no exception to the taxpayers' expectation" (p.4). The department has provided emergency medical services (EMS) for over forty years. In those forty years the level of service has continued to be upgraded with the biggest step occurring in 1997 when the department upgraded to

paramedic status. This major undertaking basically caused all other functions to remain stable for a year.

Training issues in the fire service became paramount. The need to provide specialized rescue required additional training. In addition, firefighter safety and survival awareness has placed a greater emphasis on expanded and in-depth training. Adding to the increased training schedule was the need to upgrade both fulltime and paid on call staff to state required certification levels.

The fire department operated out of a single station that was built in 1932 that at the time was centrally located. It became obvious that the station wasn't large enough for today's massive pieces of apparatus. Also it was not designed to cope with the needs of the evolving fire service management style. With that in mind the fire department began plans for building a new station. As plans moved forward the concept was explored about replacing one station with two. Although the thought was entertained to build two stations to better serve the community, the financial impact was too great. The decision was made to build the new station in the same location.

The city was expanding in four different directions. To the northwest, expansion included an elementary school, medical clinic, and an assisted living facility. To the northeast a new high school was built and a plans were underway for a new residential subdivision. To the south was a new multi-million dollar hospital/medical facility. To the west is an expanding industrial park. Even though the station remained centrally located, the coverage boundaries were expanding and the response times increasing. The type of occupancies that were being added could pose significant risk and challenges due to the possibility of large numbers of life safety in the event of a major emergency. Adding to

the risk is that many of the occupancies being built weren't required to be sprinkled because State of Wisconsin's building and fire code sprinkler thresholds are less restrictive than the model codes. In addition the city hasn't adopted any local more restrictive ordinances.

TRFD felt it has two choices to address the problems. One option is to enact local legislation that would impose more restrictive building and fire codes to address the potential risk of fire. The other option is to more adequately address our ability to respond to an emergency in a more effective and efficient manner.

The significance of the applied research project is linked to the Service Quality chapter of Executive Development. The research is aimed at obtaining historical and evaluative data that will assist in upgrading our current pre-fire planning system. The updated pre-fire plans will interface new and existing information with our new software program that will more adequately meet the current needs of our department. It will allow us to overcome the geographical limitations we face when responding to emergency incidents with an improved system that provides us with current, accurate, and readily available information. It will improve the fire officer's fire ground tactics thus enhancing fire fighter safety and promote a comprehensive, multi-hazard risk reduction plan that addresses life safety and property conservation.

Literature Review

Whatever it is called, pre-fire planning, fire pre-plans, pre-incident planning, pre-incident intelligence; we are virtually talking about the same process. The very prefix "pre" is defined, 1 a (1): earlier than: prior to: before (2): preparatory or prerequisite to (b) in advance: beforehand 2: in front of: anterior to. (Merriam-Webster's Collegiate

Dictionary, 1993). Basically stated, one is gathering information before a situation occurs to be prepared to deal with the situation when it happens.

"A wise general stated, 'The battleground is a very poor place to start to develop plans.' This is true too of the fireground" (McDonald and Phelps, 1984, p.16). The article continues to state that gathering critical information at a fire scene is going to be wrought with error due to time and pressure. If the information we gather at the scene is insufficient, then how accurate will the decisions be (McDonald & Phelps, 1984). Carter (1989) takes it one step further. He refers to gathering the necessary information for developing an action plan to that of combating a fire. It will allow action much more quickly and streamline decision-making processes by knowing the battlefield in advance. Operational success is greatly enhanced by information gathered ahead of an incident. Knowledge is preferable to ignorance when the safety of lives and personnel are on the line.

Several of the authors in the literature review noted that pre-planning incidents directly impact the effectiveness and efficiency of fire ground operations. "Pre fire planning is one of the most valuable tools that a fire department has to aid in making an effective fire attack" (Cox, 1985, p. 51). McDonald and Phelps (1984) state "The purpose of a pre-plan is to allow your department to conduct operations in a more effective and efficient manner" (p.16). They go on to reemphasize knowledge of a particular occupancy allows the incident commander to deploy companies more quickly and effectively resulting in reducing property loss and fewer injuries to firefighters.

In addition to answering the questions posed in the introduction, the literature review provided adjunct information to the researcher about what types of occupancies

that should be pre-planned. Cote (1991) talks about pre-fire planning, at a minimum, are

conducted on major facilities because the need for pre-incident information increases

with the size and complexity of the building. Carter (1989) is even more specific when

he answers the question, what sort of buildings should you pre-fire plan in your

community. He answers the question saying that target hazards should receive top

priority in your community. But what are target hazards? Carter says, "A target hazard

is any condition, facility or process which could produce or simulate a fire that would

involve a possible large property fire loss, or a potentially large loss of human life" (p.22)

Bennett (1999) also talks about target hazards as buildings or occupancies that require

special tactics and strategies because of their size and type of occupancy.

Factory Mutual (1978) says that pre-fire planning requirements are based on

occupancy classification, therefore different occupancies have different planning

requirements. "Do we have to pre-plan every building in our district? Is that practical"

(McDonald and Phelps, 1984, p.17). They also reference target hazards as buildings with

a potential for a large loss of life. Feagley (1992) agrees that target hazards should be

identified, and states that preplanning programs should include a list of structures needing

preplans by priority. In fact, Feagley has developed a target list that he uses for the basis

of preplanning. All that being said, Smith (1989) narrows it down to an individual choice

when he writes, "Choosing those facilities that should be preplanned is the responsibility

of each department" (p.16).

Another critical element that was identified during the study was how to store and

access pre-fire plan information. It ranged from a simple index card to an elaborate

computer generated program. Smith (1989) says there is a fine line between being

comprehensive and overwhelming. A standardized method must be in place that allows

the fire ground commander (FGC) the right amount of information without being

inundated. Smith, (1998) nine years later in an article published in *Firehouse*, discusses

numerous ways of storing information. He cautions that however it is stored it must

easily be recalled in an emergency. Stored data can be kept on large index cards for easy

reference, however this limits the amount of information available. It can be kept in a

booklet consisting of multiple pages with more comprehensive information that may be

difficult to access because of the amount of data. Information can be stored in a database

that can be printed out at the time of the alarm. It can also be sent automatically to the

scene via on-board printers or fax machines. Unfortunately, this may prove to be cost

prohibitive. As a solution, Smith offers a combination of the index cards and the booklet.

Initial concerns are identified on the index cards that can be easily accessed by the initial

responding units. More comprehensive information can be obtained from the booklet as

the situation allows.

Modern technology and the computer age have brought about amazing changes in

storage and access of fire pre-plan information. There is a wide-range of software

programs that are available on the current market that address a gambit of needs. The

main object seems to focus on being user friendly. Cook (2001) says that computers are

fast becoming the preferred pre-plan storage method. Although the information is easier

to organize and store, it may require several steps to retrieve the needed information.

What is the importance of pre-fire planning and will it address the needs of fire

departments? McDonald and Phelps (1984) state it best.

Does this mean that preplanning is the answer to all our problems? Not totally, but through pre-planning we will reduce the chance for error and also improve our fire ground operations. We will have gathered needed information and data in a non-pressure situation. We will have had time to analyze this information and formulate plans. There will be greater chance of accuracy in the decisions we will be required to make at an incident. (p.16)

In summary, the literature review provided an abundant amount of information on what pre-fire planning is and how it should be incorporated into fire ground operations. The literature review also pointed out that in depth pre-fire planning would effectively and efficiently enhance the outcome of the incident from a multitude of perspectives. This information persuaded this researcher the impetus to analyze and compare the work and opinions of others to the situation that currently exists within the City of Two Rivers Fire Department.

Procedures

This project utilized a descriptive research methodology to determine the extent of work on the subject by others. Three primary sources were considered when searching for information. First, information was obtained from the Learning Resource Center (LRC) at the National Emergency Training Center (NETC) located in Emmitsburg, Maryland. Research data collection began with a search of the LRC subject list by entering key words such as pre-fire, pre-incident, pre-plan, pre-emergency planning, preplanning, and target hazard.

The results of the subject list search provided literature from a variety of sources consisting of Executive Fire Officer Program (EFOP) Applied Research Projects (ARP) , fire service trade magazines, and fire service books. Photocopies of the literature were made for future review. Second, the library of City of Two Rivers Fire Department was consulted. Sources utilized were fire service trade magazines, fire service textbooks, fire service handbooks, and a dictionary. Third, an electronic visit to the Internet was made. Using a search engine, the words pre-fire, pre-incident, pre-plan, pre-emergency planning, preplanning, and target hazard were entered. Information was reviewed, downloaded and printed if applicable. It should also be noted that later on in the literature review another visit was made to the LRC online subject list. This time the key words fire ground operations were entered in an attempt to gain additional information. The subject list provided additional sources of information available. An e-mail request was made to an EFOP graduate for a copy of his ARP, a textbook was acquired through the inter-library loan process, and again several periodicals from the Two Rivers Fire Department library were consulted. In all, over 50 sources of information were reviewed for literature on the subject or related matter.

Photocopies of all the information were made to assist in the literature review process. As the researcher reviewed the article, pertinent information was highlighted using color-coded markers and notations in the margins. The color-coded system was used to make it easier to identify the relevance of the information to the specific question or section of the ARP. The information again was photocopied and collated into respective folders making it easier for retrieval later in the process.

Once again the researcher reviewed the literature and highlighted information more specific and germane to the research. The researcher felt that the information obtained through the literature review was substantial enough to address the questions and concerns brought about in the introduction. Although the researcher felt that the literature review could satisfy the project requirements, a survey was developed to ascertain how other fire departments utilize pre-fire plans. The survey was created in an attempt to compare and contrast the results of the literature review and is included. (*Appendix A*)

The survey mirrored the questions that were asked in the introduction. The survey was directed at fire departments similar in size and within the State of Wisconsin. The researcher felt that the respondents chosen for the survey were likely to return them in the required amount of time. The surveys were distributed by a variety of means. Some were hand-delivered at a meeting, some were sent by mail and others sent by electronic means either faxed or e-mailed. Of the 20 surveys that were distributed, 17, or 85% responded. Of the 17 that responded 16 identified that they currently utilize some form or another of pre-fire planning. The results are included. (*Appendix B*)

Limitations and Assumptions

The results of the survey were of a small sampling of fire departments located within the State of Wisconsin. Therefore, it cannot be construed to represent the entire fire service. However, if fire departments have similar missions the results could be applied within their program. It should also be of note the survey was not conducted for the purpose of scientific research but merely for comparison purposes.

In addition, although the researcher was able to conduct a literature review utilizing a sufficient amount of information, one may consider most of the material somewhat dated and not current. However, the researcher felt that the literature reviewed provided enough relevant information to adequately address the problem facing his fire department.

Definition of Terms

Apparatus – a term used to describe vehicles used for fire suppression or support by a fire department, fire brigade, or other agency responsible for fire protection.

California Plan – a work schedule for organizations that provide coverage for 24-hour shifts. The typical schedule is as follows: 24 on, 24 off, 24 on, 24 off, 24 on, 96 off.

Fireground – defined by an imaginary line (fireground perimeter) which encloses the space where the fire situation creates potential hazard to fire personnel.

Fireground Commander (FGC) – the person who assumes overall command and control of personnel and apparatus at the emergency incident scene. The FGC assumes the role of commander and manager, operating at the strategic level.

Quick Reference Information Sheets (QRIS) – a sheet that was developed to provide basic contact information, occupancy information, utilities location, and alarm and suppression information for facilities within the community.

Results

Reviewing and analyzing literature that was acquired using a descriptive research methodology to answer the following questions obtained the results of this applied research project.

Research Question 1 What is pre-fire planning?

To answer this question the researcher was looking for definite and specific answers. The research provided several different definitions of pre- fire planning. This researcher agrees with another EFO research project, Donald Willy (1998) that it is important to note that the literature authors did not always identify the level of pre-planning they were citing. The use of the words pre-fire, pre-incident, fire pre-plans, pre-incident intelligence, and pre-emergency are used indiscriminately. The definitions can be separated into two basic categories; definitions listed in a formal concept, I.E. reference books, codes and standards, and instruction manuals, and informal definitions offered by the authors contributing to the literature review.

The National Fire Protection Association (NFPA) 1620 (1998 Edition) defines a pre-incident plan as, " A written document resulting from the gathering of general and detailed data to be used by responding personnel for determining the resources and actions necessary to mitigate anticipated emergencies at a specific facility" (p. 1620-6). The International Fire Service Training Association (IFSTA) (1998), current edition of *Essentials of Fire Fighting* defines pre-fire planning as, "Advance planning of fire fighting operations at a particular location, taking into account all factors that will influence fire fighting tactics" (p. xvii).

Brunacini (1985) in *Fire Command* defines pre-fire plan as a written analysis of the fire problems of a particular building in terms of size, hazards, and built-in protection. Burns and Plaugher (1991) in the *National Fire Protection Handbook* define pre-incident planning as a joint venture between the emergency services and the property management team. Eric G. Bachman (2000) refers to preincident intelligence, more commonly known as (PII), as preincident planning, preincident survey, or risk assessment as a vital fire

department resource. Smith (1998) states, "Preplanning is a tool that sets forth a framework for interfacing all fire protection components before an emergency occurs. It is a method of gathering facts and collating information" (p. 18).

Research Question 2 What are the objectives of pre-fire planning?

To answer this question the researcher was looking for literature that specifically addressed the objective, the action needed to attain a purposeful goal, of pre-fire planning. Answers to this question range from very short and concise statements made to longer more editorialized dissertations.

Brunacini (1985) in *Fire Command* offers, "The preplan format is important if the plan is to be a regular component of fire ground operations" (p. 42). He further offers "The preplan should direct attention to the features which will affect tactical decisions and firefighting" (p.43). Hank Christen (1989) offers a more in depth answer. He sees the objective that preplanning is a system of collecting information that can be integrated into the incident command system to develop a flexible *plan of attack*. With the information you literally are combating an incident before it happens.

In an article by Klaene and Sanders (2001) they write about getting the operation off to a predictable start by having an action plan. The object is to take the guesswork out of those first precious moments on the fire ground by providing pre-designated assignments. First arriving company officers follow a prescribed course of action that allow for immediate and predictable actions, thus giving the incident commander (IC) time to evaluate the overall situation and develop a comprehensive strategic plan. In many cases this will accomplish two major tactical objectives: life safety and extinguishment.

Feagley (1992) believes that knowing your resources is vital in planning. You must plan for the most effective use of resources. Planning is primarily a management function that analyzes the hazards and applies the resources needed based on the probability of occurrence and the manner in which they used to control the situation. Preplans should not be secret documents. They should be made available to all firefighters and chief officers to review.

Bachman (2000) states that an objective of preincident planning is to identify hazards and response limitations in your community. Knowing the hazards drives your need for equipment and training. Gathering preincident intelligence before, during, and after construction of facilities will reduce the unknowns and will prepare you to effectively direct fire ground operations. In its *Recommended Practice for Preincident Planning* (1998) NFPA offers "A pre-incident plan should assist the incident commander in developing tactical options" (p.7)

Perkins, Bremerton, WA Fire Department, (2000) very bluntly states "The main concern is life safety for both the fire fighters and victims" (para.11). Bennett (1999) states, "Pre-incident planning and inspection will result in fire-fighter survival" (p. 11). Smith (1989) tells us, "Remember the six Ps: Proper Prior Planning Prevents Poor Performance" (p.20). Finally, McDonald and Phelps (1884) sum it up by saying, "What is required of a good pre-plan is that it be useful to the personnel using it" (p. 17).

Research Question 3 What information should be included in fire preplans?

The literature search provided many articles on pre-fire planning and the like that listed a wide-range of information that should be included in the plans. The information

was listed within the context of completing tactical surveys being very specific to the occupancy itself and to information integrated with outside resources and the occupancy management team as well.

McDonald and Phelps (1984) in their article, **The model incident command system series, Pre-fire planning**, a fourth in a series of articles on the National Fire Academy's incident command system, cautions that it is not necessary to have all sorts of miscellaneous information on the pre-plan. Rather they identify needing specific pertinent information that will assist the incident commander making the right decision in the first crucial minutes. They make the analogy that one should approach the situation through the design of a *bull's eye,* identifying rings of information based on what's really essential or must-know, the should-know information, and the nice-to-know information. The must know information can be incorporated into a quick-access plan that serves as an adjunct to the longer preplan. They list the following as suggestions to include in the must-know information:

- Address
- Brief description of the building resources responding
- Available fire flow
- Needed fire flow
- Fire's predicted behavior (in respect to travel and time)
- Strategy
- Problems affecting firefighting
- Hazards to personnel
- Plot plan

- Floor plan (for each floor, include below grade)

Craig Schroll (1982) authored an article entitled, **The tactical survey: A useful tool in pre fire planning.** In the article, Schroll stated that information gathered during a tactical survey could be divided into four major areas:

- General information

- Information on the surroundings of the building

- Information about the building itself

- Information about the contents of the building

Burns and Plaugher (1991) discuss pre-incident planning that provides valuable information about a structure. In order to improve the ability of emergency services personnel to respond effectively, they must address vital fire protection concerns. These include structure layout, including access systems; contents; construction details; and types and locations of built-in fire protection systems. "Knowledge of factors and conditions that may affect a fire enables the industry and municipal command officers to make intelligent fire behavior predictions and reliable estimates of the resources they will need to control the situation" (p. 9-79). They list six categories of pre-incident information significant in the control of a fire:

- Occupancy, or type of building construction, and contents

- On-site fire protection features, including water supply sources

- Environmental factors

- Area knowledge, including access

- Interagency assistance

- Plan forms and storage of information

Bennet (1999) approaches pre-planning from a historical perspective looking back at major incidents that resulted in firefighter injuries and deaths. He states, "It doesn't take a genius to conclude that, if those firefighters had more pre-incident information, they might have survived the incident" (p. 8).   Bennet continues and lists eight factors that should be taken into consideration during specific planning and inspection:

- Building construction and age

- Occupancy type

- Fire loading

- Anticipated fire behavior

- Interior and exterior hazards

- Actual inspections

- Building Inventory forma and accessibility

- Testing- a simulated fire problem

Cox (1985) authored an article for *Fire Engineering* entitled, **A new look at pre-fire planning**. In the article Cox expressed that a well-developed pre-fire plan involves five very important parts:

- Information gathering

- Information Analysis

- Information dissemination

- The "what if" syndrome

- Review and drill

He goes on to explain how each one of the parts is integral in developing the pre-fire plan. In addition the finished pre-fire plan should consist of two items: the data sheet and the building layout. To compile this information he suggests six major areas:

- Number and type of occupants

- Type of occupancy

- Fire department response

- The fire building (access, suppression systems, water sources, fire load, construction)

- Exposures

- Utilities

In addition to the many items already listed, Bachman (2000) says mapping is an important tool in disseminating and applying preincident intelligence. A map can illustrate the layout of the property and facility and identify specific reference points critical to effective and efficient incident command operations.

Research Question 4 How do pre-fire plans impact fire ground operations?

The impact of pre-fire planning on fire ground operations can be measured in a variety of ways, but primarily focus on two main tactical operations of life safety and property conservation. In doing so the goal is to accomplish them in the most effective and efficient manner possible.

"A lack of knowledge can be a dangerous thing at the scene of a fire" (Volk, 1989 p. 32). Volk further goes on to say that pre-fire planning brings about an awareness of the facility's contents allowing the firefighters to safely and effectively fight the fire.

Without pre-fire planning the future of the facility and the lives of the fire fighters may be jeopardized (Volk, 1989).

Brunacini (1985) says pre-fire plans are drawn under the best of conditions but generally are used under the worst conditions and that planning is conducted with the advantage of ideal situations. Pre-fire planning arms the FGC with facts that are likely impossible to acquire under fire conditions. This increases the awareness and familiarity for the firefighters operating at the scene and is essential to the overall fire ground operation.

Words like strategies, plans, and tactics, are spoken very often in the fire arena. Dunn (1988) makes the connection very clear. A FGC must have thorough knowledge of, and the ability to put into use many different types of strategies and plans that may have to be put into operation at a moment's notice. A FGC must be able to function effectively within these plans and direct the operational tactics to achieve the fire ground strategy. Toth (1999) states that strategy in general is a written plan to control an emergency. Information must be gathered to help make the proper tactical application to put the strategic plan into action at the time of the incident. To effectively handle an emergency three tactical priorities of life safety, incident stabilization, and property conversation must be considered. Combine this with fire ground objectives of rescue, confinement and extinguishment and the functions necessary to mitigate an incident are present.

Providing the first-due fire company with a tactical worksheet on the facility benefits everyone to improve efficiency and effectiveness on the scene. This assists the fire department complete their mission and help the facility resume operations as soon as possible (Kirsch, 1992). Pre-fire planning enables the incident commander with the

necessary structural information and building hazards that are critical in the decision-making process. Armed with this information, the incident commander will make informed decisions and implement an appropriate plan of attack (Jones, 2001).

IFSTA (1998) in its *Essentials of Fire Fighting* says that a pre-incident survey provides up front information necessary to assess conditions during an emergency to safely, efficiently, and effectively control fire incidents.

> The information contained in a pre-incident plan should enable the
>
> incident commander to anticipate likely scenarios.… Consulting the pre-
>
> incident plan throughout the incident should keep the incident commander
>
> aware of factors that might affect the success of the operation and the need
>
> for strategic or tactical adjustment. (NFPA 1620, 1998 p.7).

Research Question 5 How often should pre-fire plans be updated?

There seems to be a wide range of opinions, suggestions and guidelines that call for the updating of pre-fire plans from a continuous process to a dynamic approach that is based on the target occupancy. "Effective preplanning is a dynamic process that allows the department to plan and develop strategies and resources on a continuous basis" Feagley (1992, p121). Feagley goes on to say that a preplan is only relevant as long as all components affecting the emergency remain unchanged and even though changes can occur overnight, effective preplanning still is possible.

Bennet (1999) talks of a pre-fire planning system that uses a "quarterly drive-through" to note any changes in occupancies, new construction or fresh fire hazards. Christen (1989) believes that information in pre-planning should be checked every six months to maintain confidence in your preplanning system. He continues that is

especially important so you don't encounter a situation when you pull up to an incident

expecting the occupancy to be a dry cleaning business and discover that is now a sporting

goods store. Smith (1989) says plans should be reviewed annually to see if any

modifications are needed to guarantee the plan will function properly when needed.

In an article in the *Record* (author unattributed, 1993) Chiefs Jack McElfrish and

Daniel B.C. Gardiner were quoted as saying, "Pre-fire planning visits to facilities at least

annually will help ensure that changes are recognized and incorporated into existing

plans" (p. 11). Chief Gardiner further qualifies this by saying, "It's a continuous process-

it has to be" (p.13).

Kirsch (1992) quotes Prefire Planning Division Captain Michael Lackman, of the

Elk Grove Illinois Fire Department as saying, "The department's ultimate goal is to

conduct a prefire planning session at all facilities once a year" (p.9). Lackman also states

that their sessions are prioritized based on NFPA standard occupancy assignments and

range from once a year for high priority, to a 18-month frequency for medium priority to

a two-year frequency for a low priority facility.

To summarize the importance of fire-pre planning one needs to look at the

National Fire Protection Association and the document that was created to specifically

address pre-incident planning. (NFPA 1620, 1998) Origin and Development offers a

brief history on the development of the document. As a result of a 1987 large loss fire in

a warehouse that occurred in Ohio, fire service and insurance company officials met to

discuss such fires and to determine whether steps could have been taken to avert the

problem. After a series of meetings the group developed a report that led to NFPA 1420,

Recommended Practice for Pre-Incident Planning for Warehouse Occupancies, and was

adopted in 1993. Following the adoption another committee was established to expand

the document to include all occupancies. The document has been renumbered as NFPA

1620, *Recommended Practice for Pre-Incident Planning*. In addition to the document

several appendices are included specific to data collection, and data reduction and pre-

incident plan presentation, as well as a sample pre-incident plans and data collection

forms. Although this researcher believes this information is vital to pre-planning efforts

and should be included as part of this research project, copyrights prohibit the inclusion.

However, one can refer to the document for reference.

In addition to answering the questions a survey was conducted. The purpose of

the survey was not intended to reach scientific conclusions but merely used to compare

and contrast the findings of the research. Twenty surveys were distributed by various

means to fire departments throughout the State of Wisconsin. Of the 20 surveys, 17 were

returned, however two were unable to open via electronic methods.

The findings appear to support the research in that all but one of the responding

departments use some form of pre-fire plans. Objectives of the respective pre-fire plans

include all of the objectives listed in research question 2, with the need to plan for

hazards and life safety the two most identified. Likewise, information included in the

pre-fire plans offered a wide-range if items, all of which where included in research

question 3. The top four items listed were building layout information, fire suppression

information, hazards, and utility locations. Whether or not specific occupancies were

targeted was an approximate split between the respondents. Of those who target

occupancies, the types of occupancies they identify are categorized in a few major

categories, buildings that accounted for high occupancy loads, buildings with high

hazards, and industrial facilities. Those persons who usually made updates to the pre-fire plans were also responsible for conducting on-going code enforcement activities. Similar to what the research brought out, there was the gamut of answers given for updating the pre-fire plans. Answers ranged from twice a year to every 5 years with several indicating theirs haven't been updated, one respondent for as long as fifteen years.

The results of those who regularly update their pre-fire plans appear to have a correlation between those who feel their pre-fire plans provided accurate information for fire ground.

<div align="center">Discussion</div>

When researching the literature it became quite obvious that whether you call it pre-fire planning, fire pre-planning, pre-incident planning, or pre-intelligence information, the concept of gathering information, developing strategies, and applying tactics is critical to effectively and efficiently mitigating an incident. An article in the *Record* (author unattributed, 1993) Chief Jack McElfiish stated that "A fire department incident commander who arrives at a burning facility without a pre-fire plan is the same as a football coach who goes to the game without an offensive or defensive plan. It just doesn't make sense" (p. 9). Further supporting that philosophy, Carter (1989) states, "Know it before you need it" (p.22). This philosophy seems easy enough to understand and simple enough to follow but unfortunately in today's fire service the effort is not put forth.

The literature pointed out several facts that certainly apply within The City of Two Rivers Fire Department. "The need for preincident planning has been drummed into our heads for decades, and rightfully so. But sadly, the task is too often neglected"

(Bowen, 1988, p.38). Personally, the researcher believes it is not a conscious choice that

is made, but rather a choice of convenience. Too often fire departments are too busy

concentrating on keeping up with the *current trend* that the fire service pursues. The

researcher agrees with an editorial *An Ounce Of Prevention* (Brooks, 2000) when she

states that so much time is spent on administrative tasks, rescue duties, specialize training

and the like that prevention has been pushed into the background simply because there

isn't enough time. That's not to say that fire protection, rescue and administration aren't

important concerns, but shouldn't familiarity with the people and places being protected

be of equal concern?

What determines whether or not fire preplanning has an impact on fire ground

operations? It's been stated over and over that well prepared and developed pre-incident

planning is a valuable tool in assisting the FGC to efficiently and effectively and operate

at the emergency scene. Kirsch (1992) says that pre fire planning is like providing the

FGC a tactical worksheet on the building that benefits everyone because we can improve

our efficiency and effectiveness on the scene and complete our mission.

The literature review also made the researcher realize that there are two

distinctive forms that pre-fire planning can follow. One without the other could lead to a

disastrous outcome. One major part of an effective pre-plan is some type of survey or

tactical work sheet that provides the fire department with quick access information about

the occupancy itself. However that information alone is not enough to sufficiently plan

for an emergency and provide the tools necessary for the FGC to control the incident.

McDonald and Phelps (1984) refer to the quick access plan as a plan that is concerned

with the must-know information, what the incident commander would want to know

initially. The must know information can be incorporated into a quick-access plan that serves as an adjunct to the longer preplan. Similarly, Schroll (1982) says that central to any planning effort is an effective tactical survey that is intended to gather information for use in an action plan by the FGC. But he cautions that they are only part of the pre-fire planning effort.   The researcher agrees with these comments. Information about the occupancy is important and must be available to the FGC. But this information alone is not sufficient enough to complete a comprehensive pre-fire plan.

The other main component of successful pre-fire planning revolves around incorporating a variety of resources within the planning process. It is the researcher's opinion that as a fire service, fire departments tend to take care of their own. They are trained to react to emergencies, something which every fire fighter and fire department takes pride in. Firefighters are looked upon as the "fire safety experts". However it must be realized that fire departments alone cannot, and should not, take it upon them to develop pre-plans. But, how do they go about it, and how do they assure themselves that they are meeting today's current needs?

The literature review provides the researcher with an insight that in order to meet current needs fire departments have to become more involved with facility management representatives. It should be a joint effort between the fire department, some form of representation from the facility, and other outside agencies. As pointed out in Factory Mutual's brochure, *Prefire Planning* (1978), prefire planning between the local fire department and the property owner is a mutually rewarding strategy. Who better knows the facility than the occupants that work there on a daily basis. Employees with special knowledge can support the firefighters utilizing their skills and equipment to the best

advantage. Kirsch (1992) quotes Terry Keil, St. Louis district chief engineer, who even more emphatically stresses the importance of working together.

> Sometimes, what seems like a good thing to do at the scene from a fire fighter's perspective is not always the best action to take from an insured's point of view…but, if the fire department is aware of a facility's special concerns, it can respond more effectively. (p.7).

It is summed up best by Volk (1989) when he says "Effective prefire planning can only be accomplished through the cooperative efforts of the fire department and the facility management…such a mutually beneficial relationship could prove to be the best prefire planning tool imaginable" (p.15).

The study parallels and points out several important areas of weakness within the system currently being utilized by the TRFD. The department is currently operating with two forms of pre-fire plans. There are the pre-fire plans that were developed several years ago that were designed to plan for an emergency, that unfortunately haven't been updated, and the Quick Reference Information Sheet (QRIS) that were introduced as a means of providing tactical information about a facility. It's already been pointed out that just having tactical information is not adequate enough to develop an efficient and effective pre-fire plan.

The research also emphasized the importance of continually updating the pre-fire plans already in place. "Maintaining prefire plans and keeping them up to date is critical" (Author unknown, Record, 1993, p.11). Kirsh (1992) refers to Gary Kieth's comments that pre-fire planning should not be a one-shot deal. You can't leave the plan on the shelf and assume that years later, when an incident occurs, the plan will still work. Facilities

are dynamic and subject to change. Changes can occur in layout and construction as well as protection systems. "A prefire plan can be an effective firefighting tool, but only if it is constantly revised and updated" (p.8). The researcher agrees that pre-fire plan information must be continually updated. Without the most current information the pre-fire plans can quickly become outdated and ineffective.

The chief of the TRFD realizes the importance of fire plans and their objectives and feels strongly that they affect fire ground operations.

The main importance of pre-fire plans is to provide the FGC and staff familiarization with all aspects of occupancies to efficiently and effectively deal with emergencies as they occur. Even though the process may be cumbersome, it pays huge dividends when responding to an incident. (M. J. Pohlman, personal communication, 1/13/03)

The researcher feels it won't happen overnight, but the benefits will outweigh the time and effort. Wolf (1998) refers to Robert A. Woodard as saying creating pre-incident plans can be a tedious job, and from a fire department standpoint it's not the most exciting thing to do. However, pre-incident planning pays off on the fire ground. The more familiar firefighters are with the facility, the easier it will be to deal with a fire. The researcher agrees and feels that developing and implementing a pre-fire plan that addresses current needs will be an arduous task, but one, that fire departments must accept, and embrace with open arms.

In summary, the researcher believes it must be understood that no individual or department can confidently predict how a totally unexpected fire incident will be

handled. However, pre-planning does reduce the chances incidents going wrong. It allows the FGC the insight to deploy forces to get ahead of it physically.

If fire departments want to project a positive image, meet current needs, and achieve a goal of reducing fire and loss of life, business as usual in the fire service must change. Pre-fire planning is a change that will be used to determine just how professional any department is (McDonald and Phelps, 1984). The need for pre-fire planning is well documented. Unfortunately, many fire departments have no pre-planning program, or a haphazard one at best.

Recommendations

Based on the study, the researcher determined that fire pre-planning, the act of gathering information before a situation occurs and preparing to deal with it, is a vital component integrated into fire ground operations. It provides the FGC with valuable information that is used in developing strategy and tactics to efficiently and effectively control the incident. However, the study also pointed out that fire pre-planning is comprised of two main elements: basic building information and the utilization of additional resources.

The study provided the researcher with a wealth of information that can be incorporated into the design and development of an appropriate pre-fire plan. It also made the researcher aware that several different levels of fire pre-plans can be developed and put into operation that are applicable to respective fire departments and communities. When developing fire pre-plans it is paramount to consider the occupancy type and associated hazards and develop them based on a priority need. Once developed pre-fire plans must be easily understood and stored in an accessible manner, available for all to

utilize. Having pre-fire plans without updating them is like having smoke alarms without changing the batteries. The chance of a fire pre-plan lending to a positive outcome on the fire ground is directly related to the accuracy of the information that is included.

Based on the research project it is apparent that the current fire pre-fire plans being used by the City of Two Rivers Fire Department may not be providing enough information to adequately assist the FGC with fire ground operations. Therefore, the following recommendation are made to meet our current needs and resources:

1. Develop a system for gathering pre-incident information.

2. Identify specific objectives for fire-pre plans within the department

3. Identify target hazards within the community.

4. Incorporate additional resources into the planning process.

5. Identify a means for storage and retrieval of the pre-fire plans.

6. Determine how and when the pre-fire plans will be updated.

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Appendix A

Pre-fire Plan Survey

1. Does your fire department have a fire pre-plan program?   Yes _____   No _____

If yes please answer the following questions

2. What are the main objectives of your fire pre-plans?   _____

_____

3. What information is included on your fire-pre plans?   _____

_____

_____

_____

_____

4. What types of occupancies are included in your fire pre-plan program?   _____

_____

_____

_____

5. Does your preplan program target specific types of occupancies? Yes _____ No _____

If yes please explain. _____

_____

_____

6. Who is responsible for creating your fire pre-plans?   _____

_____

7. How often are your fire pre-plans updated and how?   _____

_____

_____

8. Do you feel your fire-pre-plans provide accurate information for fire ground operations?

Please explain. _____

_____

_____

Person completing survey _____ Position _____

Fire Department _____

It would also be appreciated if you could include a copy of your fire pre-plan form.

Appendix B

Pre-fire Plan Survey Results

Question 1. Does you fire department have a fire pre-plan program?

       Yes - 14   No - 1

Question 2. What are the main objectives of your fire pre-plans?

     Identifying hazards
     Life safety
     Identifying building features
     Building location and access
     Water supply
     Incident command information
     Occupancy type and familiarization
     Training

Question 3. What information is included in your fire pre-plans?

     Building layout information
     Fire suppression information
     Hazard locations
     Utility locations
     Exposure information
     Water supply
     Evacuation needs
     Occupant information
     Special processes
     Mutual aid resources
     Strategy

Question 4. What types of occupancies are included in your fire pre-plan program?

     Multi family residential including hotels/motels
     Industrial facilities
     All
     Medical facilities
     High Hazard occupancies
     Educational
     Daycare
     High-rise buildings
     Assembly occupancies
     Large storage occupancies
     State and Federal buildings

Question 5. Does your fire pre-plan target specific type of occupancies?

                Yes – 8   No - 6

If yes please explain.

        High occupant load
        High hazard occupancies
        Large industrial facilities – determined by square footage thresholds

Question 6. Who is responsible for creating your fire pre-plans?

        Fire Inspector
        All staff members
        Company officers
        Fire Lieutenant

Question 7. How often are your fire pre-plans updated and how?

        Just started
        On-going
        Two times per year
        Once per year
        Three to five years
        Five years
        Hit and miss
        Not for 15 years
        Not established
        Have not

Question 8. Do you feel your fire pre-plans provide accurate information for fire ground operations?

                Yes – 8   No – 3   Uncertain – 3

Please explain.

        Yes

        Tool available to aid Incident Commander in the decision making process
                (2 responses)
        The information has helped us many times at incidents
        In our initial stages, hope to grow from here
        Provides Incident commander with building information
        Yes, however would like to add red flag warning system
        Yes, if they don't they're a waste of time. We call them "Quick Access Forms"
        Updated information affects planning

No

Keeping accurate up to date info in today's changing world is never 100%
Not enough, not updated enough, not complete or accurate
A lot of times they are ignored by the officers