

**THE USE OF COMPANY PERFORMANCE EVALUATIONS TO IMPROVE
FIRE SERVICE DELIVERY**

EXECUTIVE DEVELOPMENT

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ABSTRACT

From 1980 to 1994 the Fresno Fire Department experienced a series of budget cuts that included a reduction in minimum company staffing levels from four to three firefighters. Since that time, the effectiveness of initial fire attack crews was only speculated. The problem was the Fresno Fire Department did not measure the effectiveness of initial fire attack crews. The purpose of this research was to determine if a company performance evaluation program should be used to evaluate the effectiveness of initial fire attack crews.

Evaluative research methodology was used to answer the following questions:

1. Is a company performance evaluation program considered an effective management tool for today's fire service?
2. What are the benefits of implementing a company performance evaluation program?
3. What procedures should be included in a successful company performance evaluation program?

The procedures used in this research project included a literature review of the managerial principles, benefits, and procedures of company performance evaluation programs. Also, two surveys were used to determine the observations of such programs by outside organizations as well as company officers within the Fresno Fire Department.

The results indicated the practice of identifying standard levels of performance, evaluating actual performance, and taking appropriate corrective action were considered essential management procedures. Further, benefits to the delivery of fire suppression services were realized through enhanced training, emergency preparedness, and increased safety.

The recommendation was for the Fresno Fire Department to adopt NFPA Standard 1410 and establish a company performance evaluation program for interior fire attack operations. Subsequent development of company standards for master stream operations, sprinkler system support, and truck company operations should follow. These changes were recommended to better ensure quality service delivery to the citizens of Fresno.

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INTRODUCTION

From 1980 to 1994 the Fresno Fire Department experienced a series of staffing reductions. Included was a reduction in minimum company staffing levels from four to three firefighters. Since that time, the quality of fire ground operations had been questioned. Most notably, the effectiveness of initial fire attack crews was only speculated. The problem was the Fresno Fire Department did not measure the effectiveness of initial fire attack crews. The purpose of this research was to determine if a company performance evaluation program should be used to evaluate the effectiveness of initial fire attack crews.

Evaluative research methodology was used to answer the following questions:

1. Is a company performance evaluation program considered an effective management tool for today's fire service?
2. What are the benefits of implementing a company performance evaluation program?
3. What procedures should be included in a successful company performance evaluation program?

BACKGROUND AND SIGNIFICANCE

The City of Fresno is located in the central valley of California. The city consists of a highly diverse population whose major industry continues to be agriculture. Fresno is situated approximately midway between Los Angeles and San Francisco.

The Fresno Fire Department serves a population of approximately 410,000 with jurisdiction covering 101 square miles. The department provides services including fire suppression, fire investigation, fire prevention, emergency medical services, and hazardous materials mitigation from 16 fire stations.

From 1980 to 1994 the fire department experienced reductions in staffing levels of its sworn firefighting personnel. These reductions in staffing were mainly due to the decrease in property tax revenue brought about by the passage of California's property tax initiative, Proposition 13. Proposition 13 limited the amount of property taxes that could be collected to 1% of the assessed valuation (Christiansen, 1998).

In 1980, the department employed 303 sworn firefighting personnel. By 1994, the department was reduced to 214 sworn firefighters. Through this reduction, 10 of the 16 management positions (chief officers) were eliminated through attrition and demotion. This included the elimination of the training chief's position. Also, the department reduced its minimum company staffing levels from four to three personnel. All the while, the city's population almost doubled from 216,500 to over 400,000 (Smith, 1997). A department, which once prided itself in maintaining a Class 1 rating from the Insurance Services Office, had been reduced to a Class 4 rating.

While the Fresno Fire Department's staffing levels were reduced, new fire suppression technology was introduced to the department. In 1986, each engine company was equipped with 1000 feet of four-inch large diameter hose. A 1 ¾-inch pre-connected hose line was added to the two pre-connected 1 ½-inch hose lines on each engine. Automatic spray nozzles were added to each of these hose lines and changes were made in the fire department's hose manual. However, while many fire departments implemented or revised company performance evaluation programs during this time, the Fresno Fire Department never implemented such a program. It seems emphasis was placed on training in the areas of emergency medical services and hazardous materials

response capabilities. Therefore, the quality of basic fire ground operations had been questioned for over 20 years.

From 1994 to 2000 the Fresno Fire Department hired eighty new firefighters. The department's training section revised its training manual to include up to date individual performance evaluations for basic firefighter competencies. However, a playbook, which combined individual skills and contained company performance evaluations, had only been considered in conceptual form. Such a playbook had been suggested to better ensure quality of service during fire ground operations.

The purpose of this research project, to determine if a company performance evaluation program should be used to evaluate the effectiveness of initial fire attack crews, relates to Unit 10: Service Quality/Marketing of the *Executive Development* course taught at the National Fire Academy (NFA, 1998). This module defines service quality and provides examples of organizations that are recognized as providers of superior quality services and products.

LITERATURE REVIEW

A relevant literature review was conducted for this research project with the objective of answering three questions. First there was a need to determine if sufficient evidence exists in the form of management principles, which supports the implementation of a company performance evaluation program. Subsequently, there was a need to determine the benefits of such a program. Last, the procedures of a successful company performance evaluation program had to be identified.

Management Principles

According to Coleman (1995) the vast majority of a fire chief's time is devoted to program management. While an organization may have an overall plan, have organizational structure and direction, it is what is done on a day-to-day basis to address the organization's mission that makes the organization effective, efficient, or both. Further, Coleman describes a number of essential sub-management techniques, which are important. The first among these is the manager's responsibility to define acceptable standards of performance. Effective managers, he implies, are those who define standards that are appropriate for the community and then evaluate them. Evaluation is just as important to the planning process as any other management function. For it is evaluation that determines whether the plan is being executed.

To support Coleman's philosophy, the late W. Edwards Deming, founder of the quality movement, defined quality service as those activities that conform to standards (NFA, 1998). A standard can be defined as a specific performance goal that a product, service, machine, person, or organization is expected to meet (Bittel & Newstrom, 1990). Such performance standards have become the core of education and training programs in the fire service (Strickland, 1995).

Therefore, the development of performance standards, which meets the needs of the community, is an important part of the management process. Further, evaluating work processes as they relate to established standards is a vital function in determining the effectiveness and efficiency of the organization.

Brunacini (1996) described the output of the fire service organization as being part of the overall service delivery plan. The service delivery plan requires strong

planning, continual practice, and refinement. According to Brunacini, it is only after quick response and effective performance occur that added value can happen. In order to do this a performance management system must be maintained.

Bittel and Newstrom (1990) also described the use of supervisor controls, which help organizations meet production goals and quality standards. Here, the control process is described in four steps. These steps, in order, include the need to set performance standards, collect data to measure performance, compare results with standards, and take corrective action. It can be argued that a company performance evaluation program is a control function since it includes all four steps of the control process.

Lecuyer (1999) defines a company standard as a minimum task performance requirement that a company working as a team must meet. Management control takes place once performance of the company is measured, compared to the standard, and needed corrective action occurs. The corrective action, usually in the form of training, enables the company to meet the established standard.

The Benefits of Performance Evaluations

In the fire service an effective company performance evaluation program promotes training, determines the effectiveness of that training, and documents the department's capability to perform fire combat tasks at an acceptable level (Drake, 2000). Drake's study emphasized the importance of evaluating the company's ability to perform task- oriented evolutions. Company performance evaluations are considered the bare minimum of fire company training, and are a mechanism to verify proficiency. Such verification is important. Otherwise, the effectiveness of the training program is merely a guessing game.

Lecuyer (1999) defined standard company evolutions as part of an organization's standard operating procedures (SOP). Like Bittel and Newstrom, Cook (1999) considered these procedures to be forms of managerial controls that establish standard courses of action. Cook referred to Henri Fayol, who described such controls as being necessary for verifying whether the actions of members are in accord with the organization's plans and underlying principles. Such procedures also provide structure to make the organization more professional. Accordingly, structure within standard procedures reduces freelancing by individual members.

Practicing standard evolutions also provides excellent fire ground simulation in fire combat situations. Maximum time to complete the evolution to be evaluated should be established as part of the standard. Using such time frames benefits the fire department since the time factor simulates the stress found at actual incidents (Smith, 1996).

A case can also be made for emergency preparedness. Today's fire departments face a multitude of different emergencies. A department that establishes standards or timed evolutions for engine and ladder companies and then trains utilizing those criteria will be better prepared to handle the varied problems that occur at an incident scene (Smith, 1996).

Further, there exists an ever-increasing need to document the fire department's ability and competency through training. Davis (1991) found that the documentation, which results from performance evaluations, provides valuable support in the form of a paper trail when legal scrutiny occurs.

Graham (1994) further emphasized the importance of verifying such training. Today more than ever, fire departments are being sued due to an overall distrust of government services. Unfortunately, fire departments are losing some of these cases. Graham cited three ways to reduce liability of the fire service. These included selecting quality people, training personnel to perform all aspects of their work, and documenting good performance. Training must be ongoing and verified. In other words, we must continually assess the ability of our firefighters to ensure they have the knowledge and skills to achieve the standards set by the department. It may be argued that a company performance evaluation program aids in providing the assessment process and documentation needed to verify knowledge and skills of firefighters. Such validation provides an added benefit of increasing confidence among crewmembers.

Warren (1998) discussed evaluation as one of the four components of an effective lesson plan used by fire service instructors. Warren explained that while few people like to be tested, evaluating crew performance allows for realistic expectations of the fire company. Such knowledge may prove valuable to an incident commander who is about to assign tasks at an emergency scene. Testing also enables firefighters to recognize their personal limitations and strive to become better at their job. Hence, the first step in improving performance may be realized.

Lastly, company performance evaluations can be used in the development of criterion task testing (CTT). Criterion task testing matches company standards to actual job tasks. During such tests skill proficiency is evaluated in addition to physical work capacity. The CTT is preferable to outdated physical performance assessments, which

were sometimes used in entry-level tests. Evaluating minimum essential skills meets legal requirements associated with such examinations (Lecuyer, 1999).

Procedures of a CPE Program

The nationally recognized standard on training for initial emergency scene operations is NFPA Standard 1410. Standard 1410 specifies basic evolutions that can be adapted to local conditions. The evolutions specified measure the capability of a department's first responding unit(s) and personnel. Evaluations are divided into two groups, engine company operations and truck company operations. Engine company operations are further divided into handlines, master streams, and automatic sprinkler system support. The components of handline evolutions were outlined as they relate to this research project (NFPA, 2000).

While sample hose evolutions are illustrated in NFPA 1410, the standard requires fire departments to use evolutions and hose layouts normally used by the department. Engine company staffing of five personnel is considered optimum. However, company staffing may be no more than the number of persons normally assigned. To provide flexibility, more than one company may complete each evolution. This is permitted so long as subsequent companies begin the evolution at least 30 seconds after the first company begins (NFPA, 2000).

The hose layouts for each evolution must flow a minimum rate of flow. Three hundred gallons per minute (GPM) are required for handline evolutions. This must be accomplished through two pre-connected hose lines (NFPA, 2000). Further details concerning minimum flow rates are covered in the section on measurements.

Safety of personnel is addressed in the chapter on logistics. A safe, controlled area, free of vehicular and pedestrian traffic must be provided. Ladder evolutions must be performed in an area free of overhead power lines. Full protective clothing including self-contained breathing apparatus must be worn (NFPA, 2000).

In addition, requirements for interior structure firefighting outlined in The Occupational Safety and Health Administration Standard 1910.134 are reinforced (NFPA, 2000). Namely, two firefighters must staff the attack handline to be used in areas that are immediately dangerous to life and health (IDLH). They must be in visual or voice contact. Also, at least two firefighters must staff the backup hoseline to be located outside the IDLH atmosphere. This reinforces the “Two-out” requirement of the OSHA standard (United States Department of Labor, 1998).

For hand line evolutions, NFPA (2000) states the initial attack line and backup line must be advanced at least 150 feet. The initial attack line must flow at least 100 GPM at standard nozzle pressure. The backup line must flow a minimum of 200 GPM at standard nozzle pressure. Where an apparatus water tank supply is used to supply the initial attack line, the backup line shall not be charged until an adequate water supply is established through one or two supply lines. Water pressure must be maintained without interruption until all lines are properly operating.

Evaluation of performance is based on the measurement criteria. First, a supply line, one initial attack line, and one backup line must be placed into service without delay. Secondly, effective streams must be produced which flow a total of 300 GPM through two handlines. Third, nozzle pressures and flows of individual handlines must be correct. Fourth, the hose layouts from the water source must be adequate to supply the

engine. Finally, the fire streams must be operated without major interruption (NFPA, 2000).

In developing standard company evolutions to meet local conditions, Litvinchuk (1994) outlined seven steps. First, a needs assessment including common calls, special needs, and given equipment is conducted. Next, evolutions are drafted using existing staffing and equipment. Third, evolution functions are distributed to firefighters listing individual responsibilities. Some departments call these task sheets, while others refer to them as job breakdown sheets. Evolutions are then field tested for accuracy, and input from field personnel is requested. Cook (1999) supports this step as input from members taps the collective knowledge and experience of the department. Fifth, a final draft of the evolution, including time, is established. Sixth, each company is evaluated. If a company does not meet the performance standard, retraining occurs with subsequent evaluation until satisfactory performance is established. Finally, a review of task sheets is done to assure each individual job breakdown supports efficient completion of the company standard.

In summary, the literature review identified the management principles, benefits, and recommended procedures of company performance evaluation programs. The management objectives fostered by CPE included identifying standard levels of performance, planning, and determining effectiveness and efficiency within the organization. Attaining such objectives was found to support the management control process.

Company performance evaluations proved to be beneficial to the overall training program. Such training was found to provide structure to the organization that increased

professionalism and safety through reduced freelancing. Practicing CPE was also found to provide opportunities for simulation and emergency preparedness. Accordingly, practice and validation of fire ground knowledge and skills were found to be beneficial to individual crewmembers by enhancing ability and confidence. Added benefits included improved decision making by incident commanders who had more realistic expectations of fire attack crews. Finally, documentation may be provided that supports the department in meeting legal requirements.

Recognized procedures for CPE were found in NFPA Standard 1410. This standard provided an outline that covered hose layouts, safety, and evaluation through measured performance. The implementation of such programs was described including assessing the need for standard evolutions, field-testing evolutions, and gaining field input from workers involved. Retraining was recommended for companies that do not meet standard performance. Finally, task sheets or individual job breakdowns were found to be essential components of the company standard.

PROCEDURES

Definition of Terms

Attack line. A hose line used primarily to apply water directly onto a fire and operated by a sufficient number of personnel so that it can maneuvered effectively and safely.

Backup line. An additional hose line used to reinforce and protect personnel in the event the initial attack proves inadequate.

Company. The basic firefighting organizational unit staffed by various grades of firefighters under the supervision of an officer and assigned to one or more pieces of apparatus.

Company Performance Evolution. The performance of a set of prescribed actions by a fire company that result in an effective fire ground activity.

Engine Company. A group of firefighters who work as a unit and are equipped with a pumping engine rated at 750 or more gallons per minute.

GPM. Gallons per minute.

Supply line. One or more lengths of connected fire hose used to provide water to other hose lines or the intake of a pump.

Truck Company. A group of firefighters who work as a unit and are equipped with one or more pieces of aerial fire apparatus.

Research Methodology

The research procedure used in preparing this research project began with a literature review at the Learning Resource Center at the National Training Center in Emmitsburg, Maryland. The review focused on three topics: management principles of performance standards, benefits of performance based training, and components of a company performance evaluation program.

The literature review sought to determine whether such a program is considered a legitimate management process in business as well as today's fire service. Also, the author sought to find beneficial outcomes of such a program. Namely, the author sought evidence of increased efficiency, improved performance, increased safety, or decreased liability as a result of the evaluation of performance standards. Finally, the literature

review sought to identify procedures of a successful company performance evaluation program.

Two survey instruments were also developed and administered. The first was sent to all 70 company officers of the Fresno Fire Department. The purpose of this survey was to determine what value the organization's supervisors would place on a company performance evaluation program. This included several questions which helped to answer the three research questions of this project: whether a company performance evaluation program would be considered a valuable management tool for the Fresno Fire Department; whether a company performance evaluation program would be considered beneficial to the organization; if implemented, what procedures would be considered most useful for such a program in this department (see Appendix A). Of the 70 surveys distributed, 48 were completed and returned.

The second survey was sent to 60 randomly selected fire chiefs of American cities with populations ranging from 100,000 to 400,000. The purpose of this survey was to determine what value fire departments of similar size currently place on company performance evaluation programs. This survey also asked questions that helped to answer the three questions of this research project (A listing of those departments who were surveyed and the survey instrument used are included in Appendix C). Of the 60 surveys distributed, 42 were completed and returned.

The data from both surveys was analyzed to determine if responses from within the organization were consistent with those from outside the department. Next, the data was analyzed to determine if the responses from both surveys was consistent with the evidence found in the literature review.

Assumptions and Limitations

Assumptions. It was assumed only knowledgeable individuals experienced in the subjects of organizational management or initial fire attack crews were the authors of the written materials that were used in the research. It was also assumed these authors were honest and unbiased in their research and opinions.

An assumption was made regarding the respondents of each survey. Namely, that all survey questions were answered honestly by persons with sufficient knowledge about the subject areas and that their opinions on company performance evaluations were unbiased and based on personal experiences and knowledge.

Limitations. A limited number of references were reviewed during this research. Only references from the National Training Center's learning resource center, Fresno City College, the Fresno Fire Department, and the author's personal library were used. Hence, the references sought were not necessarily representative of all experts of the areas covered in this research.

The survey of company officers of the Fresno Fire Department did not include the opinions of chief officers or line personnel. Of the 70 captains surveyed, only 48 were completed and submitted. It is assumed the 48 surveys completed are representative of all company officers of the department. The responses to the second survey were limited to the opinions of officers from 60 fire departments similar in size to the Fresno Fire Department. Of the 60 fire departments surveyed, only 42 responded to the survey. It is assumed the opinions of those who responded are representative of departments of similar size to Fresno. Accordingly, the departments surveyed did not represent cities with general populations outside the range of 100,000 - 400,000.

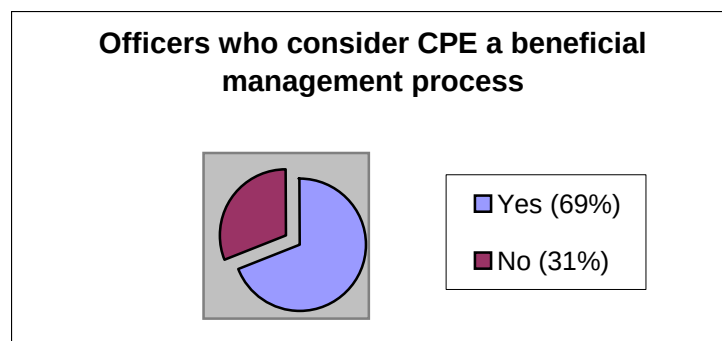
RESULTS

The results of the research project were achieved through analysis and interpretation of the literature review. Also, two surveys were distributed, and the corresponding data was compared to the evidence found in the literature review. The results and answers to the research questions are as follows:

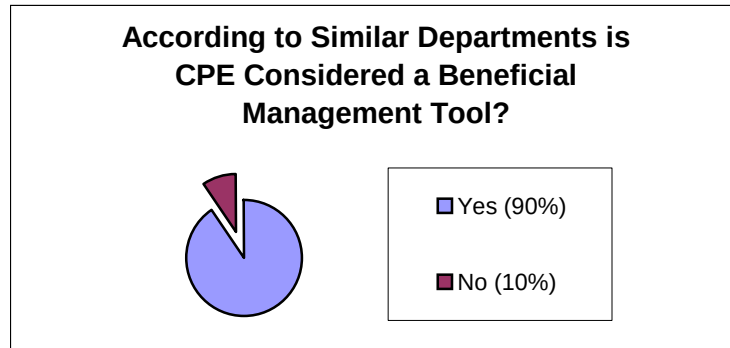
Research Question 1. Is a company performance evaluation program considered a valuable management tool in today's fire service?

Based on the literature reviewed, there was sufficient evidence to suggest a CPE program is considered a valuable management process in today's fire service. In fact, the management processes of identifying standard levels of performance, evaluating actual performance, and taking appropriate corrective action when necessary are considered essential techniques used in the control process. Further, attaining such standard performance goals was found to define quality service.

The results from the survey instrument given to captains of the Fresno Fire Department (FFD) support the literature review. Forty-eight of 70 FFD captains responded to the survey. Thirty-three of the 48 officers who responded considered a CPE program a beneficial management process. The results are illustrated in the following chart (Specific results of the FFD captain's survey may be found in **Appendix B**):



The results of similar fire departments surveyed overwhelmingly supported the literature review. Forty-two of 60 similar fire departments identified responded to the survey. Thirty-eight of the 42 departments indicated a CPE program is considered a beneficial management tool. The results of this data are illustrated on the following chart (Specific results of the survey of similar fire departments can be found in **Appendix D**).



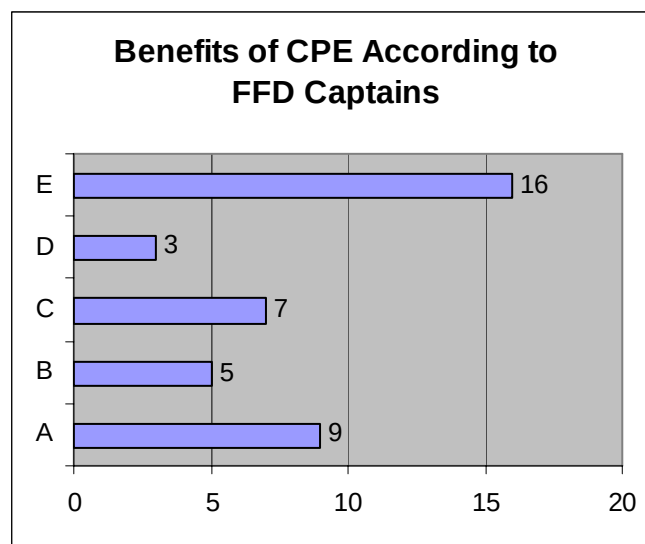
Of the four departments that indicated CPE was not a beneficial management tool, none actually had a CPE program in place.

Research Question 2. What are the benefits of a company performance evaluation program?

The literature review discovered several benefits to a CPE program. First, such a program enhances training and determines the effectiveness of the training program by evaluating actual performance. Next, standard operating procedures are created which serve as managerial controls that set standard courses of action at emergency incidents. Such structure was found to decrease freelancing of individual members, thereby increasing safety. Third, CPE simulates fire combat situations. The time element used to establish the standard simulates stress found at actual incidents. Emergency preparedness was a fourth benefit to CPE. A fire department that establishes standard performance and practices such standards is better prepared to handle the varied problems that may be

encountered on the emergency scene. Also, criterion task testing may be developed as a result of CPE to establish minimum skill requirements for entry-level physical examinations. Finally, the need to document competency has become ever important. A fire department that documents the ability of its members is more likely to overcome the legal scrutiny that may occur in today's litigious society.

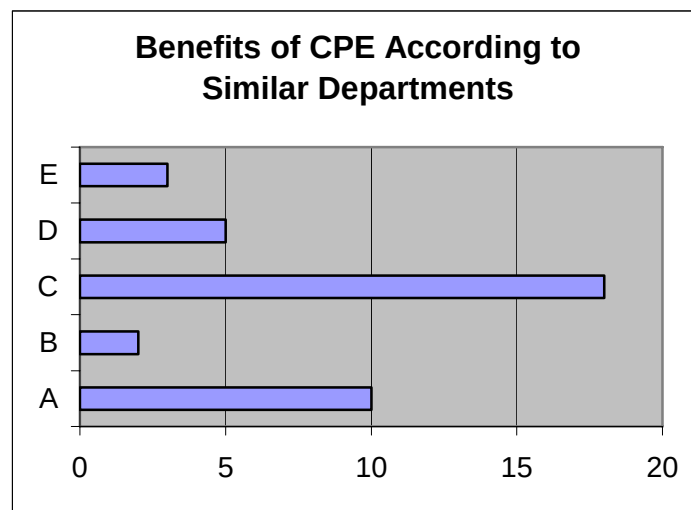
The results of the FFD captain's survey supported the literature review. Of the 48 officers who responded, 37 indicated a CPE program would aid the department in providing better service to its customers. General reasons for improved service through CPE were grouped into five categories providing results in the following graph (Specific data regarding these results may be found in **Appendix B**):



- A. Identify levels of acceptable performance.
- B. Increase motivation of personnel.
- C. Maintain skill proficiency.
- D. Enhance the training program.
- E. Improve company performance.

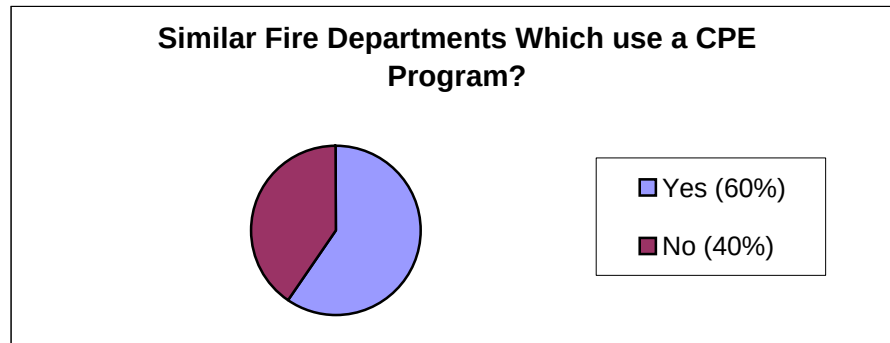
The majority of FFD captains indicated improvement of company performance as the major advantage of company performance evaluations.

The results of the survey given to departments of similar size to Fresno also supported the literature review. In fact, responses were very similar to those given by company officers of the Fresno Fire Department. Thirty-eight of the 42 departments surveyed listed benefits to a CPE program. General benefits of CPE were grouped into five categories providing results in the following graph (Specific data regarding these results may be found in **Appendix D**):



- A. Identify levels of acceptable performance
- B. Identify areas of needed improvement.
- C. Maintain skill proficiency.
- D. Enhance the training program.
- E. Improve company performance.

The majority of similar departments surveyed indicated maintenance of skill proficiency as the major benefit to company performance evaluations. However, despite the advantages listed, only 25 of the 42 departments surveyed actively used a CPE program at the time of this research. A chart depicting these results follows (Specific data regarding these results may be found in **Appendix D**):

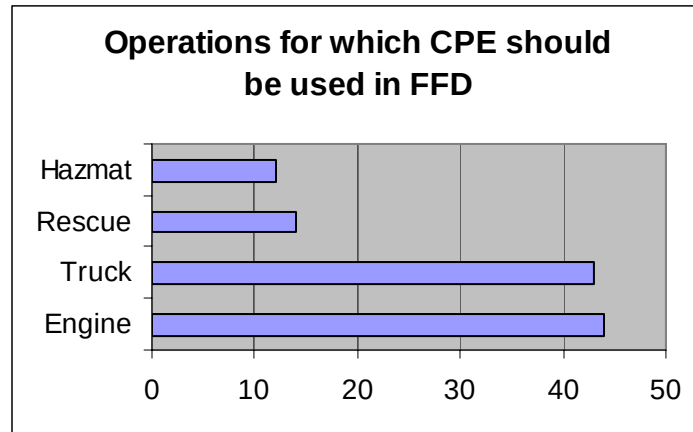


Research Question 3. What procedures should be included in a successful company performance evaluation program?

The literature review analyzed NFPA 1410, the National Fire Protection Association standard on training for initial emergency operations. The requirements pertaining specifically to engine company hand line operations were studied in this research. In addition, two surveys were used to determine which procedures are considered most important in a CPE program. The first survey was used to see which procedures of a company performance evaluation program were considered most beneficial by captains of the Fresno Fire Department. The second survey indicated the CPE procedures most often used by departments of similar size. Finally, the literature review provided a step-by-step process in developing a CPE program.

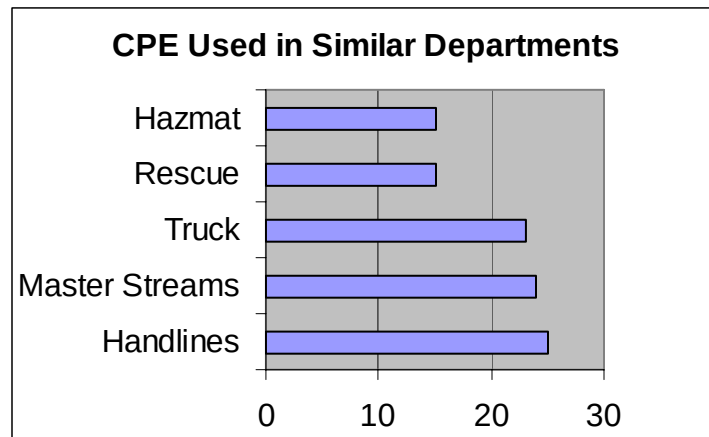
The procedures pertaining specifically to engine company hand line operations were outlined in this research. In addition to hand line operations, NFPA 1410 provides performance standards for master streams, sprinkler system support, and truck company operations. However, the author sought to determine other pertinent operations that should be used in a CPE program. The surveys of Fresno Fire Department captains and outside agencies provided information concerning operations that may also be considered in a CPE program.

Operations for which CPE were recommended by captains of FFD are shown in the following graph (Specific data regarding the captain's survey may be found in **Appendix B**):



The results of the captain's survey revealed that most company officers of FFD considered evolutions pertaining to engine and truck companies to be most appropriate. Company performance evaluations for advanced rescue and hazmat operations were only marginally recommended.

These results were similar to the surveys from similar fire departments that had CPE programs in place. Each of these departments indicated their CPE Program included engine operations, while 96% indicated their program included CPE for truck operations. Only 60% indicated CPE was used for advanced rescue or hazmat operations. These results are depicted in the following graph (Specific data may be found in **Appendix D**):



Identifying company staffing levels was important in order to determine standard levels of performance. NFPA 1410 considers staffing of five personnel to be optimum. However, company staffing may be no more than the number of persons normally assigned. None of the fire departments surveyed maintained minimum engine company staffing levels of 5 personnel. In fact, only 60% maintained minimum levels of 4, while 40% staffed their companies with 3 personnel (Specific results of this survey may be found in **Appendix D**).

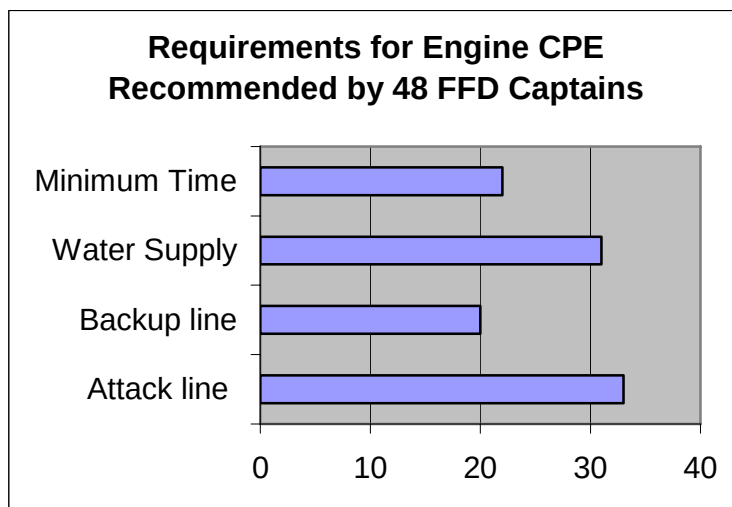
The Fresno Fire Department was similar to those departments in the latter group, as it maintained a minimum staffing level of 3 firefighters for each fire company. To provide flexibility in accomplishing the varied tasks outlined in the standard, NFPA 1410 allows more than one company to complete the evolution. This is allowed, provided the subsequent companies begin the evolution at least 30 seconds after the first company begins.

The literature review found NFPA Standard 1410 to be a supportive document concerning the safety of personnel involved in company training evolutions. The logistics section provided safety guidelines for the training ground, movement of vehicles, and protective clothing.

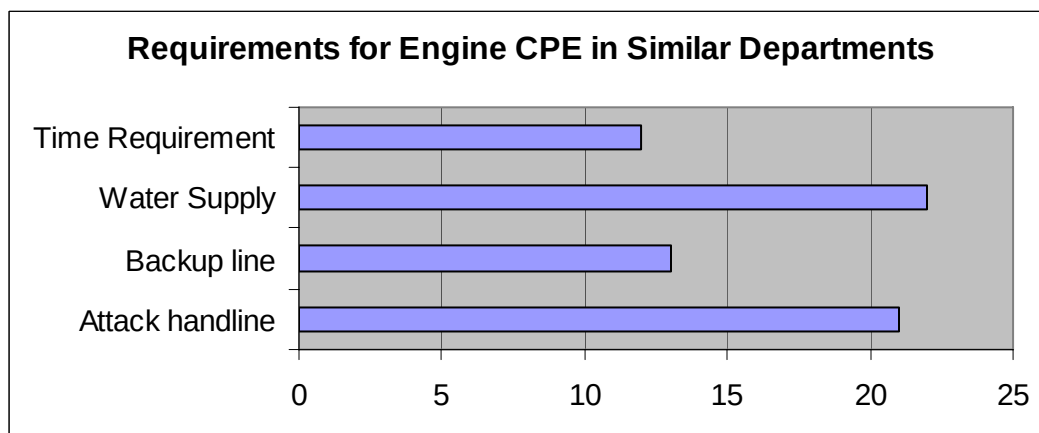
In addition, practicing the hand line evolutions outlined in NFPA 1410 were found to be beneficial in reinforcing sound firefighting practices. In fact, requirements for interior structure firefighting outlined by the Occupational Safety and Health Administration were reinforced through NFPA 1410 hand line evolutions. Specifically, an attack line must be staffed by two firefighters, while a backup line staffed by two additional personnel outside the IDLH atmosphere is also required.

According to NFPA 1410, hose layouts for each evolution must flow a minimum rate of 300 GPM for hand line evolutions. This includes a minimum of 100 GPM for the attack line and 200 GPM for a backup line. Also, NFPA 1410 requires fire departments to use evolutions and hose layouts normally used by the department. Further, a continuous water supply must be established before the backup line may be charged. Lastly, a time limit ranging from three to six minutes is required for each evolution depending on the complexity of the evolution.

The survey of FFD captains revealed mixed support of the NFPA 1410 requirements. Of the 48 officers who responded, only 14 indicated such a program should follow the standards outlined by NFPA 1410. In fact, twenty-one were unaware of the requirements set forth by NFPA 1410. Thirty-three of the 48 company officers surveyed indicated an initial attack line with minimum flow should be required, while 31 indicated a continuous water supply should be required. However, less than half of the company officers felt a backup line and maximum time limit should be included in a CPE program. The following graph shows the requirements FFD captains considered the most beneficial to an engine company performance evaluation program (Specific information to substantiate these findings may be found in **Appendix B**):



The second survey found that 25 of 42 similar fire departments used a CPE program. Only 10 indicated their CPE program followed NFPA Standard 1410 completely. The requirements for engine company performance evaluations used by similar fire departments are depicted in the following graph (Specific data to substantiate these findings can be found in **Appendix D**):

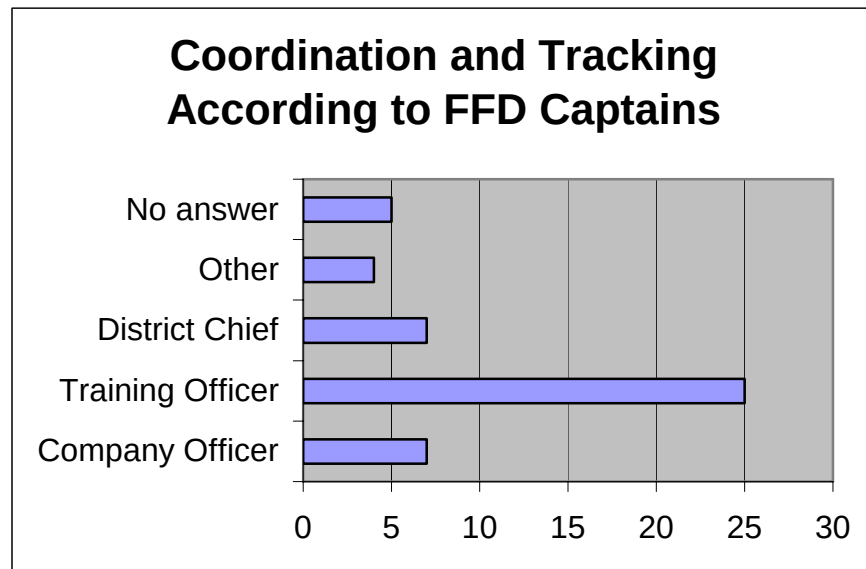


Similar to the procedures recommended in the FFD captain's survey, an attack line with minimum flow and continuous water supply were minimum requirements for the majority of the other fire departments that responded. However, only half the

respondents indicated a backup line and maximum time requirements were part of their CPE programs.

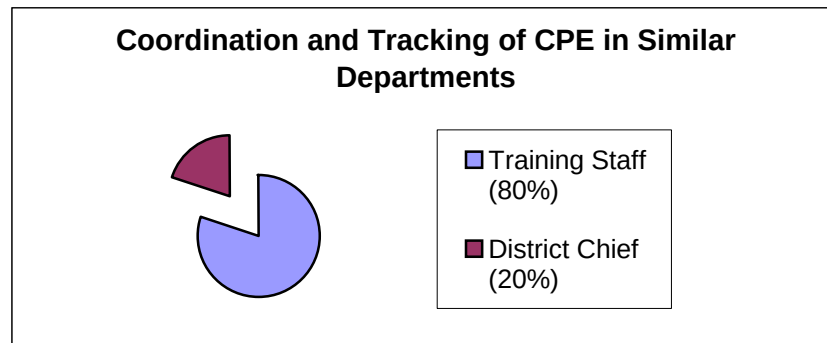
Using the survey instruments, the author sought ideas on how to operate a CPE program. Due to minimum staff officers assigned to the training division, input from FFD captains and similar departments was requested regarding two major responsibilities. The captain's survey asked who should be responsible for coordination and tracking of CPE, and who should actually evaluate company performance. The survey of fire departments similar to FFD asked who accomplished these tasks in their current CPE programs.

The results of the captain's survey on coordination and tracking are depicted in the following graph (Specific data may be found in **Appendix B**):

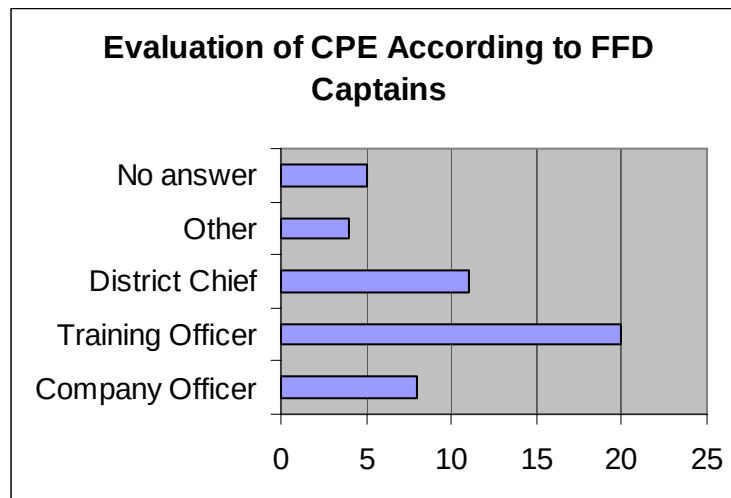


The overwhelming majority of captains answered a training officer should be responsible for the tasks of coordination and tracking. Seven replied that company officers should take this responsibility, while seven thought district chiefs should coordinate and track CPE.

These results coincide with those CPE programs already in place in other fire departments of similar size. Twenty of 25 departments use training staff to coordinate and track CPE, while only 5 use district chiefs to accomplish such activities (See **Appendix D** for complete results).



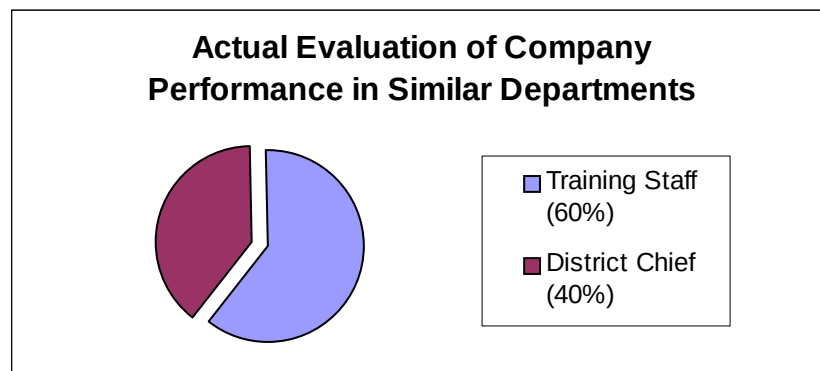
The responses regarding the responsibility of actual evaluation of company performance were similar to those concerning coordination and tracking of CPE. However, each group showed a significant increase in support of using district chiefs in evaluating company performance. The results of the captain's survey on CPE evaluation are as follows (Specific data regarding these results may be found in **Appendix B**):



In the captain's survey 20 of 48 determined a training officer should conduct the CPE, while 11 supported having district chiefs evaluate company performance. Some

provided supporting comments on the benefits of having typical incident commanders (District Chiefs) evaluate performance of fire attack crews. This allows the incident commander to evaluate the time for fire attack set up. Certainly, such information would be valuable when making decisions on the fire ground.

The results from fire departments of similar size on evaluating company performance are depicted in the following graph (Specific data which substantiates these findings may be found in **Appendix D**):



Ten of the 25 fire departments surveyed required district chiefs to evaluate company performance.

The literature review provided procedures for developing standard company evolutions to meet local conditions. These procedures were outlined in seven steps. First, a needs assessment including common calls, special needs, and given equipment is conducted. Next, evolutions are drafted using existing staffing and equipment. Third, evolution functions or task sheets are distributed to firefighters listing individual responsibilities. Company evolutions are then field tested for accuracy, and input from field personnel is requested. Fifth, a final draft of the evolution, including time, is established. Sixth, each company is evaluated. If a company does not meet the performance standard, retraining occurs with subsequent evaluation until satisfactory

performance is established. Finally, a review of the task sheets is done to assure each individual job breakdown supports efficient completion of the company standard.

DISCUSSION

An objective of this research project was to determine whether company performance evaluations were considered an effective management tool. Further, there was a need to identify the benefits of such a program, whether through enhanced training of fire attack crews or increased service delivery to our customers. Finally, the research sought to determine the procedures required of an effective CPE program.

Clearly, the literature review provided strong evidence that a company performance evaluation program remains a sound management process for today's fire service. Coleman (1995) found that effective managers are those who define standards that are appropriate for the community and then evaluate them. Doing so enables the organization to provide quality service (NFA, 1998). The management control process was described as consisting of four steps. These included the need to set performance standards, measure performance, compare results with standards, and take corrective action (Bittel and Newstrom, 1990). Brunacini (1996) emphasized the importance of maintaining a performance management system in order to provide quick, effective performance.

The surveys supported this evidence. The majority of company officers within the Fresno Fire Department (69%) recognized CPE as a beneficial management process. Also, 90% of similar departments surveyed agreed CPE is a sound management tool.

The literature review found benefits from a CPE program extended well beyond management principles. Aside from developing managerial controls, company performance evaluations were found to provide structure to make the organization more

professional and reduce freelancing (Cook, 1999). Such evaluations were found to prepare fire attack crews for actual emergencies, thereby instilling confidence in the crewmembers themselves (Smith, 1996). Davis (1991) argued that documentation, which results from performance evaluations, provides valuable support in the form of a paper trail when legal scrutiny occurs. Graham (1994) discovered fire departments were being sued due to overall distrust of government services. Three ways to reduce liability include selecting quality people, training personnel in every aspect of their work, and documenting good performance (Graham, 1994). The author believes CPE provides training and documentation needed to reduce liability.

Drake (2000) believed CPE strengthened the training program. Accordingly, Strickland (1995) found performance standards to be the core of education and training. Warren (1998) also discussed the benefits of evaluating crew performance. Such evaluation allows for realistic expectations of the fire crew. This information was considered valuable to incident commanders who assign tasks at the emergency scene.

The surveys of Fresno Fire Department captains and similar fire departments supported many of the findings listed above. Benefits were grouped into five categories. These included identification of levels of acceptable performance, identification of areas of needed improvement, maintenance of skill proficiency, enhancement of the training program, and improvement of company performance. The majority of captains listed improvement of company performance as the main benefit to such a program. The majority of similar fire departments felt maintenance of skill proficiency was the major advantage of a CPE program.

The author believes benefits to the fire department may be from top to bottom. After-all, chief officers who better understand the abilities of their crews through evaluation, are able to make better management decisions at emergency scenes. Company officers have the ability to evaluate individual tasks of crewmembers, thereby ensuring coordinated team effort. Finally, individual crewmembers gain confidence by

demonstrating competency in fire ground simulation. Better still, the true benefactors of a CPE program are the public through improved service delivery that is documented and continually refined.

If a CPE program is such a beneficial process, why have 40% of the fire departments surveyed neglected to implement such a program? The answers are probably numerous and may be the subject of future study. The author believes a CPE program takes considerable staff time to establish and maintain. In fire departments such as Fresno, the training division is often seen as a place to cut staffing during fiscal crisis. Therefore, the implementation and maintenance of a new program such as CPE may be difficult.

The author sought other members within the organization who might assist in the CPE process. A substantial number of FFD captains indicated district chiefs should evaluate company performance. Warren (1998) supported this saying incident commanders who have realistic expectations of crew performance are able to make more informed decisions on the fire ground. This was supported by the fact that 40% of departments having a CPE program used district chiefs for this very purpose. Indeed, the use of district chiefs in the evaluation process may be a desirable alternative for a fire department with a limited number of training staff officers.

Another obstacle to CPE is that the fire service is becoming an all-risk public authority. Operations aside from firefighting are demanding attention. Certainly, this is true in the areas of emergency medical services, hazardous materials management, and technical rescue services where extensive training is often required. Such training may be impacting the practice of basic firefighting evolutions. Eleven of 48 Fresno officers agreed, indicating training in special operations or emergency medical services were obstacles to manipulative drills for initial fire attack crews. However, because firefighting operations are becoming low frequency, high-risk events, a case must be made for the importance of training on fire ground evolutions.

An internal problem of implementing a CPE program may be the threat such a program poses to employees who question whether they can meet specified standards. Warren (1998) acknowledged this explaining that few employees like to be tested. In the FFD captains' survey, less than half of the captains surveyed supported implementing time standards for company evaluation.

A solution to this would be to follow the guidelines on developing a CPE program set forth by Litvinchuk (1994). In particular, company evolutions should be field tested for accuracy, and input from personnel must be requested. If a company cannot meet the standard set by the collective efforts of all personnel, retraining must occur with the explicit intent being to establish competency.

An analysis of NFPA Standard 1410 provided insight into the procedures for training evolutions for initial fire attack crews. The procedures for hand line evolutions included minimum flow requirements for attack and backup hose lines through a continuous water supply (NFPA, 2000). Requiring a backup houseline supports sound interior firefighting practices. Yet, only ten fire departments listed in the survey adhered to NFPA Standard 1410.

One reason for this may be the number of tasks outlined in each evolution requiring up to five persons to complete the evolution. None of the fire departments in the survey maintained fire companies with five personnel. In fact, 40% of similar departments surveyed staffed companies with three personnel. A solution to this may be to divide tasks between two companies, which NFPA 1410 allows. With this in mind, fire departments staffed similarly to Fresno may consider dividing hand line evolutions between two companies in order to accomplish all needed tasks and measure company performance based on a national standard.

RECOMMENDATIONS

The problem was the Fresno Fire Department did not measure the effectiveness of its fire attack crews. The purpose of this research project was to determine whether a company performance evaluation program was considered an effective means to evaluate crew abilities. Further, the author sought management principles, benefits, and procedures of such a program when used for initial engine company operations.

Based on the literature review, an internal survey, and an external survey, conclusive evidence exists that supports the implementation of a company performance evaluation program. The following objectives are recommended in developing a CPE program for engine companies of the Fresno Fire Department:

1. The Fresno Fire Department should conduct an internal study of common interior firefighting operations used by the department's engine companies.
2. The guidelines of NFPA Standard 1410 should be adopted along with hand line evolutions that most nearly match the operations used by the Fresno Fire Department. The guidelines should include requirements for fire attack as well as backup hand lines.
3. In order to meet the above standard, engine company evolutions should be drafted so that tasks outlined in NFPA 1410 are divided between two engine companies.
4. The department's individual performance evaluations (Task Sheets) should be updated to support company evolutions. Once done they should be distributed to firefighters for practice.

5. Company evolutions should be field tested for accuracy with input requested from field personnel.
6. A final draft of company performance evolutions should be established including reasonable time requirements. The final document should be maintained in the Fresno Fire Department Standard Operating Procedures.
7. Fire companies should be scheduled for evaluation each month by the training division. Actual evaluation should be conducted by the company's district chief along with an assistant training officer.
8. If a company does not meet the performance standard, retraining and practice should occur with subsequent evaluation until satisfactory performance is established.

In the future, these recommendations should be used in the development of company standards for master stream operations, sprinkler system support, and truck operations. After such time, company standards should be considered for special operations such as hazardous materials response and advanced rescue practices.

It is the author's belief that a company performance evaluation program would better ensure quality service delivery to our customers. Only through commitment from the department's administration and acceptance from line personnel will such a program succeed. Communication among all concerned may be the key to establishing this worthwhile process. Perhaps, by focusing our attention on maintaining and improving company skill levels, the Fresno Fire Department can overcome the obstacles to providing quality emergency services.

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Appendix A
Survey of Fresno Fire Department Captains

January 13, 2001

Name
Affiliation/Position
Address
City, State, Zip Code

Dear Fellow Fire Service Professional:

I am a first-year student in the National Fire Academy's Executive Fire Officer Program. A partial requirement for this four-year course includes the completion of an applied research paper each year. This year I am researching the need for company performance evaluations in today's fire service organizations. Completion of this particular research project will meet the requirements of the Executive Development course I recently completed.

I am randomly surveying captains of this department to determine whether a company performance evaluation program should be established. I would greatly appreciate if you would answer the following ten questions by circling the most correct answer or providing a short answer as indicated. The survey will take about ten minutes to complete. **Please return the completed survey to me using the envelope provided as soon as possible.** The information provided will assist me greatly with my research.

Thank you very much for your time.

Sincerely,

Richard Cabral
Fire Battalion Chief

Executive Fire Officer Program Survey/Questionnaire

1. Does this department conduct adequate manipulative drills for initial fire attack crews?

Yes No

2. Please indicate, in order, the obstacles this department faces in conducting such training.

- a. ☐ Emphasis on special operations training (Hazmat, Rescue)
- b. ☐ Emphasis on EMS training
- c. ☐ Difficulty in coordinating such drills (Time)
- d. ☐ Lack of a fully established program
- e. ☐ Lack of training staff
- f. ☐ Other: _____

3. Would you consider a company performance evaluation (CPE) program a beneficial management process? Yes No

Why? _____

4. Would a CPE program aid this department in providing better service to our customers? Yes No

How? _____

5. Please circle the operations for which CPE should be used in this department:

- a. Engine company evolutions
- b. Truck company evolutions (Please circle those which apply):
 Ladders Ventilation Salvage Lighting Rescue
- c. Advanced Rescue Practices
- d. Hazardous Materials Operations
- e. Other: _____

6. If implemented, how often should CPE be conducted in this department?

Arbitrarily Monthly Annually Other: _____

7. If implemented, should the CPE program follow the NFPA Standard 1410 on training for initial emergency scene operations?

Yes No Unknown

8. If implemented, which of the following minimum requirements should apply for engine company performance evaluations? (Circle as many as are appropriate):

- a. Initial attack hand line to provide a minimum flow.
- b. A backup hand line to provide a minimum flow.
- c. A continuous water supply established through a hydrant, drafting operation, or water supply apparatus.
- d. Hose line evolutions to have minimum time requirements.
- e. Other: _____

9. If implemented, who should be responsible for coordinating and tracking when CPE is accomplished?

Company Officer Training Officer District Chief Other: _____

10. If implemented, who should conduct and evaluate CPE in this fire department?

Company Officer Training Officer District Chief Other: _____

APPENDIX B

Results of Fire Captains Surveyed

1. Does this department conduct adequate manipulative drills for initial fire attack crews?
 Yes 10 No 38

2. Please indicate, in order, the obstacles this department faces in conducting such training.
 - a. (3) Emphasis on special operations training (Hazmat, Rescue)
 - b. (8) Emphasis on EMS training
 - c. (5) Difficulty in coordinating such drills (Time)
 - d. (14) Lack of a fully established program
 - e. (8) Lack of training staff
 - f. (7) Other: Responses included emphasis on mandated training, emphasis on activities other than training on manipulative tasks.

Note: Three respondents did not answer question 2.

3. Would you consider a company performance evaluation (CPE) program a beneficial management process?
 Yes 33 No 15

4. Would a CPE program aid this department in providing better service to our customers? Yes 37 No 11

5. Please circle the operations for which CPE should be used in this department:
 - a. (44) Engine company evolutions
 - b. (43) Truck company evolutions (32 circled tasks which applied):

(27) - Ladders (26) - Ventilation (18) – Salvage

(13) - Lighting (25) - Rescue
 - c. (14) Advanced Rescue Practices
 - d. (12) Hazardous Materials Operations
 - e. Other (Seven responses were given. However, each was unique)

Note: Four respondents did not circle an answer. All four responded “No” to questions 3 and 4.

6. If implemented, how often should CPE be conducted in this department?

(2) Arbitrarily (13) Monthly (7) Annually (16) Other (10-Quarterly, 5-Bi-annually, 1-Biweekly)

Note: 5 did not answer and 5 responded it should not be done.

7. If implemented, should the CPE program follow the NFPA Standard 1410 on training for initial emergency scene operations?

Yes (14) No (8) Unknown (21) Did not respond (5)

8. If implemented, which of the following minimum requirements should apply for engine company performance evaluations? (Circle as many as are appropriate):

- a. (33) Initial attack hand line to provide a minimum flow.
- b. (20) A backup hand line to provide a minimum flow.
- c. (31) A continuous water supply established through a hydrant, drafting operation, or water supply apparatus.
- d. (22) Hose line evolutions to have minimum time requirements.
- e. Other: (3 listed none)

9. If implemented, who should be responsible for coordinating and tracking when CPE is accomplished?

(7) Company Officer (25) Training Officer (7) District Chief
(4) Other: (2 – None, 2 – Field Training Officer) **(5) Did not answer**

10. If implemented, who should conduct and evaluate CPE in this fire department?

8) Company Officer (20) Training Officer (11) District Chief
(4) Other: (2 – None, 2 – Field Training Officer) **(5) Did not answer**

APPENDIX C

Survey of Sixty Similar Cities

- | | |
|-------------------------|------------------------|
| 1. Birmingham, AL | 31. Manchester, NH |
| 2. Anaheim, CA | 32. Providence, RI |
| 3. Bakersfield, CA | 33. Sioux Falls, SD |
| 4. Fremont, CA* | 34. Chattanooga, TN* |
| 5. Oakland, CA | 35. Austin, TX |
| 6. Denver, CO* | 36. Salt Lake City, UT |
| 7. Colorado Springs, CO | 37. Virginia Beach, VA |
| 8. Bridgeport, CT | 38. Spokane, WA |
| 9. Miami, FL | 39. Madison, WI |
| 10. Atlanta, GA*. | 40. Tacoma, WA |
| 11. Naperville, IL | 41. Richmond, VA |
| 12. Huntsville, AL* | 42. Elizabeth, NJ |
| 13. Des Moines, IA* | 43. Chesapeake, VA |
| 14. Wichita, KS* | 44. Norfolk, VA |
| 15. Lexington, KY | 45. Waco, TX* |
| 16. Worcester, MA | 46. Plano, TX |
| 17. Lowell, MA* | 47. Irving, TX |
| 18. Flint, MI* | 48. Fort Worth, TX |
| 19. Minneapolis, MN | 49. Lubbock, TX* |
| 20. Jackson, MS | 50. Laredo, TX* |
| 21. Kansas City, MO* | 51. Santa Ana, CA |
| 22. Omaha, NE | 52. Sacramento, CA* |
| 23. Mobile, AL* | 53. Albuquerque, NM* |
| 24. Las Vegas, NV | 54. Riverside, CA |
| 25. Montgomery, AL | 55. Buffalo, NY |
| 26. Anchorage, AK | 56. Charlotte, NC |
| 27. Glendale, AZ | 57. Akron, OH |
| 28. Mesa, AZ | 58. Tulsa, OK |
| 29. Tucson, AZ | 59. Portland, OR |
| 30. Little Rock, AR* | 60. Pittsburgh, PA |

***Indicates a city that did not return the survey.**

January 13, 2001

Name
Affiliation/Position
Address
City, State, Zip Code

Dear Fellow Fire Service Professional:

I am a first-year student in the National Fire Academy's Executive Fire Officer Program. A partial requirement for this four-year course includes the completion of an applied research paper each year. This year I am researching the need for company performance evaluations in today's fire service organizations. Completion of this particular research project will meet the requirements of the Executive Development course I recently completed.

I would greatly appreciate if you or a member of your staff would answer the following eleven questions by circling the most correct answer or providing a short answer as indicated. **Please return the completed survey to me via fax (559) 498-2862 or mail using the envelope provided.** I hope to receive this by February 10, 2001. The information provided will assist me greatly with my research.

Thank you very much for your time.

Sincerely,

Richard Cabral
Fire Battalion Chief

Executive Fire Officer Program Survey/Questionnaire

Please provide the name of your fire department:

1. By industry standards, what size is your department considered to be?

Small Medium Large

2. What is the minimum staffing level of your engine companies? _____

3. Do you consider a company performance evaluation (CPE) program to be a beneficial management tool for today's fire service?

Yes No

4. If you answered yes, what benefits exist through such a program?

5. Does your fire department regularly use a CPE program?

Yes No

Note: If you answered "Yes," please continue on to Question 6. If you answered "No," please stop and return your results as soon as possible. Thank you.

6. Please circle the operations for which Company Performance Evaluations are used in your department:

- a. Engine company hand line evolutions
- b. Engine company master stream evolutions
- c. Truck company evolutions (Please circle those which apply):

Ladders Ventilation Salvage Lighting Rescue
- d. Advanced Rescue Practices
- e. Hazardous Materials Operations

4. How often are CPE conducted in your department?

Arbitrarily Monthly Annually Other: _____

5. Does your CPE program follow the NFPA Standard 1410 on training for initial emergency scene operations?

Yes No Partially Unknown

6. For CPE involving engine companies, which of the following minimum requirements apply? (Circle as many as are appropriate):

- f. Initial attack hand line provides a minimum flow.
- g. A backup hand line is provided with minimum flow.
- h. A continuous water supply is established through a hydrant, drafting operation, or water supply apparatus.
- i. Hose line evolutions have minimum time requirements.

7. In your CPE program, who accomplishes the following tasks?

- j. Coordination and tracking of CPE: _____
- k. Actual evaluation of company performance: _____

APPENDIX D

Results of Similar Departments Surveyed

1. By industry standards, what size is your department considered to be?
(0) Small (33) Medium (9) Large
2. What is the minimum staffing level of your engine companies? _____
(17) 3 person staffing (25) 4 person staffing
3. Do you consider a company performance evaluation (CPE) program to be a beneficial management tool for today's fire service?
(38) Yes (4) No **(Note: none of the four had a CPE program in place)**
4. If you answered yes, what benefits exist through such a program?
(10) Identifies areas of needed improvement
(2) Documents performance
(18) Determines competency
(5) Enhances training program
(3) Improves overall performance
(4) None
5. Does your fire department regularly use a CPE program?
(25) Yes (17) No

Note: The following five questions were answered by the 25 departments that responded as having a CPE program:

6. Please circle the operations for which Company Performance Evaluations are used in your department:
(25) Engine company hand line evolutions
(24) Engine company master stream evolutions
(23) Truck company evolutions (Please circle those which apply):

(22) Ladders (16) Ventilation

(8) Salvage (8) Lighting (17) Rescue

(15) Advanced Rescue Practices

(15) Hazardous Materials Operations

7. How often are CPE conducted in your department?

(1) Arbitrarily (6) Monthly (14) Annually

(6) Other (4-quarterly, 1-Bi-annually, 1-every 18 months

8. Does your CPE program follow the NFPA Standard 1410 on training for initial emergency scene operations?

(10) Yes (4) No (6) Partially (5) Unknown

9. For CPE involving engine companies, which of the following minimum requirements apply? (Circle as many as are appropriate):

(21) Initial attack hand line provides a minimum flow.

(13) A backup hand line is provided with minimum flow.

(22) A continuous water supply is established through a hydrant, drafting operation, or water supply apparatus.

(12) Hose line evolutions have minimum time requirements.

10. In your CPE program, who accomplishes the following tasks?

Coordination and tracking of CPE

(20) Training Staff (5) District Chief

Actual evaluation of company performance

(15) Training Staff (10) District Chief *

*** Note: Two departments indicated that district chiefs were assisted by training staff in evaluating company performance.**