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Measuring Incident Commander Functions of Initial Arriving Company Officers

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Abstract

Consistent use of Incident Management System (IMS) principles results in more effective strategic control of incidents, fewer injuries and fewer lost lives. Because of the correlation between safety and IMS, Kansas City, Missouri Fire Department (KCFD) policy dictates that IMS be employed from the initial response to every emergency incident. Measurement of consistency of immediate implementation of IMS is critical to the department and to the community it serves. Using data from building fire incidents, this project evaluated whether the department's IMS objectives were being consistently met as defined in the KCFD General Operational Guideline (GOG) (See Appendix A, *infra*) after its implementation.

The evaluative research methodology was employed using data collected from fire incidents prior to and after the establishment of the GOG. Questions were designed to mirror the enumerated goals in the GOG including; establishing as command, providing a size up, initiating an initial action plan and maintaining a strategic position in the warm zone without getting personally involved in the tactics of the operation.

The results of the study revealed the need to improve the IMS training, auditing and evaluation processes in order to meet departmental goals. KCFD responds to 136 building fires per month. The research revealed that between 75% and 83% of the incidents, a company officer arrived prior to a battalion chief. At only 50% of those incidents, a company officer remained outside the structure in a strategic position. Therefore at approximately, 50 building fire incidents per month, firefighters were operating without a strategically positioned Incident Commander.

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Introduction

The Kansas City, Missouri Fire Department (KCFD) reestablished Incident Management System (IMS) expectations for company officers through its General Operational Guideline (GOG) 10-1.1, *IMS Expectations for Company Officers* (see Appendix A for the complete document). The goals of this guideline are to increase strategic management of fire scenes and to prevent injuries. The problem was, that prior to this study, KCFD had not measured company officer utilization of IMS as outlined in KCFD's, GOG and therefore did not know if IMS departmental objectives were being met.

The purpose of this study was to determine if company officers were consistently meeting the department's objectives, with respect to functioning as the incident commander, from the point that they arrive on the scene of an incident, until they were properly relieved of Command. This research uses the evaluative research methodology. The research questions were (a) according to the perception of Executive Fire Officer (EFO) students, of other paid full time fire departments, what is the level of IMS utilization of their departments' company officers, (b) what was the baseline utilization by KCFD company officers of IMS principles prior to the Waldo fire, on February 16, 2007; (c) subsequent to the After Action Review (AAR) of the Waldo fire, and the dissemination of the resulting General Operational Guideline (GOG), which delineates specific IMS expectations; what is the current level of KCFD company officer utilization of IMS principles; and (d) should further efforts be made to enhance company officer utilization of IMS principles?

Background and Significance

The City of Kansas City, Missouri, covers 314 square miles, has a population of 442,000, and is the hub of a diversely populated metropolitan area. As Kansas City, Missouri is relied on for economic stability in the region which overlaps several counties in two states, and is home to 1.8 million people, so too is the fire department relied on to provide region-wide leadership on a host of emergency response protocol. The fire department is very active in the decision-making process on issues such as regional expenditure of Homeland Security grant funding and regional emergency preparedness.

The Kansas City, Missouri Fire Department (KCFD) is a professional, full-service department with an annual operating budget of $97.35 million. The fire department operates 54 fire apparatus from 34 firehouses with 1003 fulltime employees. Kansas City's public safety entities enjoy strong public support as evident by the annual satisfaction surveys. Since the year 2000, an average of 72% of Kansas City citizens who responded to the question of overall satisfaction with police, fire and ambulance services, reported they were either satisfied or very satisfied. (City Auditors Office, 2008).

KCFD responds to more than 53,000 total calls for service per year, nearly 7,000 or 13% of the total calls for service are fire related incidents. Of the 7,000 fire-related incidents, KCFD responded to 1632 building fires in 2007, for an average of 136 building fire incidents per month (Kansas City, Missouri Fire Department, 2007). Fire-related calls for service range in complexity from a low-level automatic alarm, or exterior grass fire to a complex building fire. Dependent on the complexity of the situation, as determined by the 9-1-1 call taker, a pre-specified level of response is dispatched to the incident. All 53,000 calls for service require some level of incident

management and mitigating action, but because of the potential for disaster that can result from unmanaged, complex incidents, the focus of this research, is to evaluate the use of IMS, by company officers when they are the first officer to arrive on the scene of a building fire. Battalion chiefs are the command officers for KCFD and their primary role at an emergency scene is to strategically manage that scene. Because there are only seven battalion chiefs, compared to 55 company officers on duty, at any time, company officers are often first to arrive on the scene. Unless the first arriving company officer functions as the incident commander until relieved by the responding battalion chief, there is a lapse in strategic control of the emergency incident.

As discussed in the literature review section of this paper, it is critical that one person establish and function as the Incident Commander from the very beginning of operations at any incident so that a lapse in control does not occur. Department policy dictates that IMS be employed at every emergency incident. This research analyzed data respecting the use of IMS principles used during building fire incidents, because these incidents provide observable data that illustrate whether the department's overall, IMS objectives are being met. Further, it is at these emotionally charged and complex building fire incidents where the absence of IMS is too often painfully clear.

Structural firefighting operations are interwoven with differing levels of priorities which can create emotionally charged and dangerous conditions. Since the 1990s, the fire service has employed an Incident Management System (IMS) to coordinate efforts to increase effectiveness and to minimize the risk to fire fighters during all emergency operations. It can be argued however, that KCFD company officers have never fully embraced the IMS principle that states,

if they are first fire department officer to arrive at the scene of the incident, they must gain control and manage the emergency until relieved by a higher ranking officer.

From the literature review, we learn the problem is not new or uncommon to the fire service. We also learn, that problem solving models indicate, that before a problem can be solved, it must be well defined and we must have proof that it exists. This evaluative research will determine if KCFD company officers are meeting the department's objectives with respect to IMS expectations for company officers.

While not new, the problem is a current focus of concern for the KCFD. The impetus for this applied research project can be traced back to a specific incident. On February 16, 2007 five firefighters were seriously injured battling a blaze in a historic building in the Waldo area of Kansas City, Missouri. News reports noted that "Fire Chief Smokey Dyer called it a terrible day for the department but said the outcome could have been much worse." (KMBC, 2007).

An After Action Review (AAR) is an assessment conducted after an incident that enables the department to discover what happened and why (Kansas City, Missouri Fire Department, 2008). As a matter of KCFD policy, AARs are conducted following any significant incident so that the department may learn from the experience. The department's after action review of February 16th incident, revealed that while the words "establish command" were announced by the first arriving company officer, that officer did not function as the Incident Commander and did not pass command. The authors of the internal report recommended that to minimize the possibility of similar occurrences, the "department should demand, that from the inception of all incidents, the Incident Commander perform his/her command duties from a position that affords the best overall scene management and supervision" (Kansas Ctiy, Missouri Fire Department,

2007). While not verbatim, the recommendation has been KCFD policy since the 1990s. KCFD IMS policy states “All incidents that KCFD responds to require the first arriving officer to establish and function as Command until such time as the incident is concluded or a transfer of Command takes place” (Kansas City, Missouri Fire Department, 2005, p. 33).

Despite the fact that the policy was longstanding, the recommendation was controversial because of the emphasis on strict adherence to the policy. Critics complained that enforcement of the policy would unnecessarily slow down the tactical actions of the first arriving company. The controversy led to a department-wide safety summit that was facilitated by a professional mediation group. From this safety summit, a new General Operational Guideline was written that includes clear and succinct expectations for company officers with respect to IMS.

General Operational Guideline (GOG) 10-1.1, *IMS Expectation for company officers* delineates five basic functions of the first arriving company officer. The first arriving company officer must 1) establish command, 2) provide a size up of what they find on arrival, 3) provide initial tactical assignments to responding companies, 4) check for safety concerns and 5) consider if the appropriate resources were dispatched. This GOG was the first recent attempt at ensuring IMS is initiated at the beginning of an incident from the first fire officer on the scene. It is important to analyze whether GOG 10-1.1 has affected company officer behavior regarding the use of IMS because of the potential for disaster at unmanaged emergency incidents.

Since 1990, when the first edition of National Fire Protection Association (NFPA) 1561 was issued, KCFD’s policy was written in accordance with the standard. The culture of the Kansas City Fire Department however, maintained the department’s tradition that company officers performed tactics and battalion chiefs provided the strategy. The criticality that the

command function must be initiated by the first arriving officer is regularly published in national standards, trade journals, and technical reports. Notwithstanding the pervasiveness of this information, until the near tragedy of the Waldo fire, the department's top brass tacitly allowed the culture to remain intact. An analysis of why the culture was allowed to resist the necessary change is not germane to this research. Anecdotally however, it may be summed up by recognizing varied reasons for any organization's propensity to resist change. What is important for the background of this problem is that the current administration is committed to ensure that the command function is initiated at the beginning of operations at the scene of each incident.

It is important to distinguish from the act of merely announcing the establishment of command, from affirmatively performing the command function. The first-in company officer at the Waldo fire incident acted as a typical KCFD captain would in that situation. As noted above, he established command but did not remain outside the structure to direct the incident until a battalion chief arrived. To further exacerbate that situation, without the knowledge of the responding companies, the dispatched battalion chief stopped momentarily to investigate a motor vehicle accident. This delayed his response by approximately 5 minutes and left nobody on the outside of the structure to monitor the deteriorating conditions. "An uninterrupted focus on changing conditions, *from arrival*, [italics added] until the incident is brought under control, presents the best opportunity to ensure that warning signs are not missed" (Kansas Ctiy, Missouri Fire Department, 2007, p. 8).

Typically, KCFD company officers who were first to arrive at an incident prior to a battalion chief announced their arrival on the scene, provided a size-up, announced that they were establishing command, and then became involved in tactical action with their company.

Because the company officer became directly involved in firefighting efforts, they were unable to provide a strategic level of command.

The retired fire chief of Phoenix Fire Department, who is one of the founders of IMS, and still a prominent authority on the subject, recently wrote, “Making this transition from action to command is critical because there is no strategic level command present on the fireground until there is a real live IC operating in a strategic position (stationary, remote, inside a vehicle)” (Brunacini, I know it when I see it, 2008). Contrary to this axiom, KCFD’s operational reality was that, not until a Battalion Chief arrived on the scene, did the incident have a real live IC operating from a strategic position.

As discussed in the literature review section of this paper, the National Institute for Occupational Safety and Health, (NIOSH) who conducts independent investigations of fire fighter line of duty deaths; consistently link the absence of utilizing command procedures as a contributing factor in traumatic fire fighter fatalities. Brunacini stated, (2002) “One of the leading causes of incidents getting out of control is simply the absence of anybody being in command” (p. 344). For this reason, this research is significant to the United States Fire Administration’s (USFA) operational objective of reducing the loss of life from fire of firefighters.

This applied research project is related to the National Fire Academy’s (NFA) Leading Community Risk Reduction course in two ways. First, the course introduces that; “Prevention and response (operations) functions within an organization must be integrated into one team” (NFA, 2007, p. 0.16). Second, as a practical matter, KCFD conducts joint training between prevention and operations divisions in a host of areas including IMS expectations and risk

reduction programs. This team effort enhances the success of operations and prevention programs alike.

Literature Review

The current model of the Incident Management System, (IMS) is used to manage all types of emergency incidents. IMS evolved from the Incident Command System, (ICS) which was originally developed in the 1970s, to manage large-scale wild-land fires. While not germane to this research, information about the FIRESCOPE organization's development of ICS and the evolution of IMS is widely available. Through many years of tested application and revision, the IMS is the accepted standard in the fire service for the proper, systematic approach to managing incidents of all size and complexity.

"The purpose of an incident management system shall be to provide structure and coordination to the management of emergency incident operations" (Brunacini, Fire command, 2002). He stated the following:

> Command Function #1 describes in very simple, straightforward terms the standard organizational and personal routine that the command system requires the initial IC [Incident Commander] to perform, in order to establish command. Having the IC call the shots from the point of our initial arrival creates the effective capability for all of our individual and collective efforts to occur inside the overall operational strategy and incident action plan. The approach eliminates the unsafe, uncoordinated, and wasted (sometimes opposing) action that typically emerges out of an uncommanded, free-enterprise incident beginning. (Brunacini, 2002, p. 66)

A fundamental tenet of the incident management system is that the first arriving officer must establish command and function as the Incident Commander to develop a plan of action and manage resources. The national standard on IMS, NFPA 1561, defines the Incident Commander (IC) as "the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources." The standard further delineates that department "SOPs [Standard Operating Procedures] shall provide for one individual to assume the role of incident commander from the beginning of operations at the scene of each incident" (NFPA, 2008). In their book, *Fire and Emergency Services Company Officer*, Stowell and Adams (2007) edited this tenet of IMS in the following manner.

> The safe and efficient management of any emergency incident requires that emergency responders gain control of the scene as quickly as possible and maintain that control throughout the incident. Successfully gaining and maintaining control of an incident scene is critically important to the successful outcome of the incident… The actions of the first-arriving company officer are critical to the success of any emergency incident. That officer establishes the NIMS-ICS and makes decisions and takes actions that will influence the rest of the operation. Whether the company officer maintains command of the incident or transfers command to a senior or more experienced officer, the initial decisions must be reliable and based on the organization's incident scene management procedures (p. 435).

After an exhaustive search; this author was unable to find any literature making a contrary argument to the fundamental principal that says an Incident Commander, functioning from a strategic position, is required from the beginning of every incident. There are numerous

examples of lapses in the use of IMS that illustrate the criticality of a functioning Incident Commander. On October 17, 2003, a fire at the Cook County Administration Building in Chicago resulted in the deaths of six people. An independent investigation into the incident was conducted. One of the report's four major findings that would have changed the outcome of the incident was identified as; "Inadequate incident command procedures that did not allow for effective fire ground management and poor allocation of resources to address life safety demands" (James Lee Witt Associates, 2004). In April of this year, parties named in this case, agreed to a $100 million settlement (Patterson & Spielman, 2008). An independent review of the Sofa Super Store fire that occurred on June 18, 2007 in Charleston, South Carolina, that tragically took the lives of nine firefighters; identified utilization of Incident Management as the number one recommendation to prevent similar occurrences. The following quote precedes the recommendations from the report and illuminates our unwillingness to altar unsafe behaviors.

> Unfortunately, as in many other cases, the lessons do not provide new insight or information and the recommendations are not revolutionary. The situation that occurred in Charleston on June 18, 2007 was predictable and the outcome was preventable. All lessons and recommendations listed below are restatements of lessons that have been identified in previous investigations involving other fire departments and recommendations that have been widely adopted as standard practices with the fire service. (Routley, Chiaramonte, Crawford, Piringer, Roche, & Sendelbach, 2008)

These are only two examples, but there are many more. NIOSH conducts investigations of line-of-duty fire fighter deaths to identify contributing factors and to generate recommendations for prevention. Their report, *Leading recommendations for preventing fire fighter fatalities, 1998-2005* is a synthesis of the 1,286 recommendations from the 335 fire

fighter fatality investigations conducted from 1998 to 2005. The top three incident command recommendations for preventing fatalities related to trauma are:

> Clearly identify the IC as the only person responsible for the overall coordination and direction of all activities at an incident. Ensure that the IC maintains the role of director and does not become involved in fire-fighting operations. Implement the ICS [IMS] for the management of all fires and establish an incident command post (ICP) as needed to facilitate command and control… (Ridenour, Proudfoot, Jackson, Hales, & Baldwin, 2008)

The final example presented here is intended to illustrate that while the reports cited above were conducted by independent parties, the problem is also evident to line personnel. The National Fire Fighter Near Miss Reporting System is an online, voluntary, confidential conduit to exchange incident information with the goal of improving fire fighter safety. This incident had the potential to end in tragedy because there was not a functioning incident commander from the beginning of the incident and the later arriving chief officer assumed a water supply had been established. The report indicated that crews responded to a structure fire and because of call-load in the jurisdiction at that time, the response was fragmented.

> The first engine on the scene reported heavy smoke condition in the area and then found a two-story wood frame dwelling with 50% involvement…On arrival the lieutenant failed to take command, as he thought the shift commander was close to being on location…I arrived as shift commander and took command…With 2 engines on location I assumed a water supply had been established…A review of the radio tapes later found that it took

approximately 22 minutes to establish a water supply. (2008, September 22) Retrieved December 1, 2008, from http://www.firefighternearmiss.com/googlemini/h08-0000460.html

From the literature review, we can see that there are countless examples of incidents that got out of control because there was not an incident commander functioning strategically. Why then, with the pervasiveness of information respecting the dangers of an absent IC does the same recommendation continue to appear on these reports? Analogies to the stubbornness of less than 100% of seatbelt use by car occupants or why the number of smokers continues to grow is descriptive of the stubborn problem of less than 100% use of all IMS principles. Despite laws, and redundant safety and health campaigns, people still fail to use their seatbelt and the number of smokers continues to grow. Similarly, 100% compliance with IMS standard principles is sometimes ignored.

We learn from the literature review that even though the problem is well documented nationally and there is an anecdotal notion that KCFD company officers may not be meeting departmental objectives regarding IMS; evaluation is the first step in solving a problem.

Peter Drucker, the prolific management consultant/writer, who Business Week magazine once called; the man who invented management (Byrne & Gerdes, 2005) wrote that “the most difficult and the most important part [of decision making] is to make sure the decision is about the right problem…Few things can do as much damage as a right decision to wrong problems” (Drucker & Maciaeiello, 1985, p. 295). Drucker delineated a seven step process to minimize the risk of decision making. This research is designed to address the first step which is to; “determine whether a decision is necessary…Unnecessary decisions make all other decisions ineffectual” (1985, p. 296).

In order to determine if KCFD company officers are utilizing IMS principles, the author was interested in observing subjects in natural situations in which they had the opportunity and the responsibility to function as the Incident Commander. A literature review of study design was conducted. “Conducting a study in a natural situation essentially means that you are simply observing your subjects in their ‘real life’ setting” Author, A.A. (2008). Retrieved December 14, 2008 from; http://www.dictionary.babylon.com/OBSERVATIONAL_STUDY.#encyclopedia.

According to the research, there is a multitude of study design methods and techniques that must be considered. To determine the appropriate method and techniques, one must consider the objective of the study, the type of data desired, and available resources. With those considerations in mind, a quasi-experimental, one-group pretest-posttest was selected for this study. Quasi-experimental studies are “experiments that lack random assignment of units to conditions but that otherwise have similar purposes and structural attributes to randomized experiments” (Shadish, Cook, & Campbell, 2002). As the name suggests, the one-group pretest-posttest design is an experiment that studies one group, pre and post treatment. A study implemented using the same subjects receiving both pretest and posttest is called a within-participants design. Shadish, et al (2002) details, in this type of study;

“A single pretest observation is taken on a group of respondents (O_1), treatment (X) then occurs, and a single postest observation in the same measure (O_2) follows: O_1 X O_2” (p. 108).” As will be detailed in the procedures section of this paper, the group is KCFD company officers, what is being studied is the group’s utilization of IMS principles as delineated in GOG 10-1.1 and the treatment is the GOG’s implementation.

To determine which technique to employ to collect the data, further literature review was conducted. The author considered; natural versus contrived setting observation, disguised versus

non-disguised observation, human versus mechanical observation, and structured versus non-structured observation. With the same considerations used to select experiment type; the study's objective, desired data and available resources, the author choose to collect the data in a natural setting, using disguised observation, with recorded audio in a structured format. Natural setting is defined above. A disguised observation is one in which the subjects are not aware they are being observed.

The literature underscored the ethical consideration when deciding between disguised and non-disguised observation. "The primary consideration… is the ethical concern over recording behavioral information that would normally be private.…However, if you are simply observing a subject's behavior in a public setting, then by definition, their behavior is no longer private" (Parasuraman, 1991). Parasuraman (1991) wrote "mechanical observation involves using various types of machines to collect the data, which is then interpreted by researchers". Regarding structured versus non-structured observations, "structured observations are made when the data that is being collected can be organized into clear categories or groups so that the observer can record the data by simply marking off or checking a category on an observation form" (Parasuraman, 1991).

In summary, the literature review supports the criticality of ensuring the use of the Incident Management System from the very beginning of an incident. It is clear from examples provided that KCFD management must be diligent in ensuring that company officers meet the defined departmental objective respecting IMS. It is also clear from the literature that the use of IMS by company officers must be analyzed to determine if KCFD is currently meeting their IMS objective; that every emergency scene has a functioning incident commander from the first fire department unit on the scene.

Procedures

The purpose of this study was to determine if KCFD company officers are meeting departmental objectives respecting IMS principles. A literature review and two quantitative applications were used to answer the four questions that guided the research.

The author began the research with a literature review of previous Executive Fire Officer (EFO) applied research projects accessed from the Learning Resource Center at the National Emergency Training Center in Emmitsburg, Maryland. The literature review continued with material collected from an electronic search of the internet, the Kansas City, Missouri Public Library, internal departmental reports and the author's personal collection of fire service trade journals, text books and technical investigative reports.

Question One: According to the perception of other Executive Fire Officer (EFO) students, of paid, full-time fire departments, what is the level of IMS utilization of their departments' company officers? An electronic external questionnaire was developed on internet site, *surveymonkey.com* and emailed to 507 EFO students. The survey was comprised of five questions (see Appendix B for the full questionnaire). The number of respondents totaled 110. The first question asked how their department was staffed; *paid full-time, volunteer or combination.* Because the author is unfamiliar with volunteer and combination fire departments and felt that the data could be skewed if response protocol differed due to firefighters responding in their personal vehicles, only responses of EFO students who are employed by paid, full time fire departments are included in this research. That number totaled 63.

Question Two: What was the baseline utilization of IMS principles, by KCFD company officers, prior to the Waldo fire, on February 16, 2007? This is the pretest part of the quasi-

experimental, one-group pretest-posttest study. The author listened to audio recordings of radio traffic of building fire incidents, for a seven day period, prior to February, 2007. To determine what incidents to include in the research, an internal report of all building fires from January 1, 2007 through January 8, 2007 was generated. The audio recordings used for this study were captured using a NICE Data Logger that is incorporated into the dispatching system.

The report included the incident number, the date, the time, the address, the companies dispatched and their arrival time. Because the research is interested in the use of IMS principles of company officers, and not battalion chiefs, only incidents at which a company officer arrived more than one minute prior to a battalion chief, were included in the research. The author listened for and tabulated radio traffic for the six specific expectations that were delineated in GOG 10-1.1 *IMS Expectations for Company Officers* (see Appendix C for the observation form used).

Question Three: Subsequent to the After Action Review (AAR) of the Waldo fire, and the dissemination of the resulting General Operational Guideline (GOG) which delineates specific IMS expectations what is the current level of KCFD company officer utilization of IMS principles? To measure the current use of IMS principles by KCFD company officers, the same collection procedure and collection form was used to tabulate the data for a seven day period following GOG 10-1.1's effective date of June 15, 2008. The effective date was subsequent to comprehensive department-wide training on the new guideline. Data was collected from audio of building fire incidents recorded from January 1, 2008 through January 8, 2008.

Question Four: Should further efforts be made to enhance company officer utilization of IMS principles? The data set of IMS use prior to February 16, 2007 and the data set of IMS use

subsequent to June 15, 2008 were analyzed to determine answer this question and to determine what affect the implementation of GOG 10-1.1 had on company officer use of IMS.

One limitation of listening to audio recordings of radio traffic, at building fire incidents, and tabulating use of IMS principles, is that commands could be given through face-to-face communications and consequently, would not be transmitted over the radio. This could skew the results because the author is not aware of all actions of the IC. However, while this is a possibility, it is of minimal concern for this research. To ensure tactics are not duplicated and to lessen the possibility of opposing actions that can be dangerous; orders should be announced over the radio so that all on-scene and responding personnel are aware of the situation.

Results

1. According to the perception of Executive Fire Officer (EFO) students, of other paid full time fire departments, what is the level of IMS utilization of their departments' company officers?

The method of data collection chosen for this research question was an electronic survey emailed to EFO students. The data from the 63 EFO respondents, of career fire departments, was used. The respondents answered three specific questions.

- Does your department have a written SOP regarding IMS that states the first arriving fire department officer should/must establish command?
- In your opinion, when a company officer arrives first on the scene, if he/she establishes command, he/she would be more likely to: a) function strategically as

command by developing an initial action plan, or b) get directly involved with the tactics of the operation.

- In your opinion, what percentage of working incidents, where a command officer is not yet on the scene, does the first arriving company officer get directly involved in operations? a) Never, there is always a functioning IC, b) < 25%, c) between 25% and 50%, or d) between 50% and 100%.

Of the 63 respondents, 93.5% reported their department's policy dictates that the first in fire officer on the scene should/must establish command, yet only 38.1% of the respondents indicated their company officers were more likely to function strategically as command, rather than get directly involved in the tactics of the operations. (See Table D1 in Appendix D for full results.)

2. What was the baseline utilization by KCFD company officers of IMS principles prior to the Waldo fire, on February 16, 2007?

To study this research question, the author listened to audio recordings of 22 building fire incidents from January 1, 2007 to January 8, 2007, and tabulated use of IMS principles on an observation form. The observation form is directly aligned with the expectations delineated in KCFD's, GOG 10-1.1 *IMS, Expectations for Company Officers.* As detailed in the procedures section, the author used only building fire incidents at which a company officer was on the scene for at least one minute prior to a battalion chief. Of the 29 total building fires during that period, a battalion chief arrived prior to or within one minute of a company officer at seven incidents. Therefore, the total number of building fire incidents used to answer this research question is 22. (See Table D2 in Appendix D for full results.)

An unexpected result learned from this observation is that the frequency of incidents where at least one company is on the scene, for at least one minute prior to a battalion chief is higher than anticipated. This study shows that a company officer arrived prior to a battalion chief at 75% of these building fire incidents. This is significant because the sentiment was that while it was known that a functioning IC, from the beginning of operations is critical, the author was not aware that the potential for this to occur was as high as 75%.

The pretest observation yields that nearly 82% of the first arriving company officers established command. As the incident progressed and moved up the scale of IC functions, the percentage of observable actions decreased. For example, as described in the background section, company officers establish command, provide a size up and then get involved in the tactics of the operation. The data indicates that 54% of the company officers assigned a water supply and 36% assigned attack and primary search. Only 5% assigned ventilation or a back-up line. To the question of maintaining an exterior position, this pretest observation yields that only 5% of the company officers remained in an exterior position prior to implementation of GOG 10-1.1.

3. Subsequent to the After Action Review (AAR) of the Waldo fire, and the dissemination of the resulting General Operational Guideline (GOG), which delineates specific IMS expectations; what is the current level of KCFD company officer utilization of IMS principles?

This research question was designed to be the posttest part of the equation. The author listened to audio recordings of 24 building fire incidents from January 1, 2008 to January 8, 2008, and tabulated use of IMS principles on an observation form. The observation form is

directly aligned with the expectations delineated in KCFD's, GOG 10-1.1 *IMS, Expectations for Company Officers*.

As detailed in the procedures section, and identical to the pretest, the author used only building fire incidents at which a company officer was on the scene for at least one minute prior to a battalion chief. Coincidentally, KCFD experienced the same number of building fires for the posttest as it had for the pretest period. However, of the 29 total building fires for the posttest period, a battalion chief arrived prior to or within one minute of a company officer at five incidents. Therefore, the total number of building fire incidents used to answer this research question is 24. (See Table D3 in Appendix D for full results.)

The same unexpected result occurred in the posttest, but to a greater extent. The posttest observation shows that a company officer arrived prior to a battalion chief at 83% of these building fire incidents. This posttest observation yields that 96% of the first arriving company officers established command, 33% named command and 33% announced an initial action plan. The posttest observation revealed that the Incident Commander remained outside the structure, in a strategic position at 50% of the incidents observed.

4. Should further efforts be made to enhance company officer utilization of IMS principles?

This research question was answered by analyzing the data obtained from the observation forms for research questions two and three, against the departmental objectives regarding IMS utilization by company officers. The departmental objective is that the company officer, if first to arrive on the incident scene, must function as the incident commander, from the point that they arrive on the scene of an incident, until they are properly relieved of Command.

Analysis of the data shows that the implementation of GOG 10-1.1 *IMS Expectations for Company Officers* had an effect on nearly every dimension the author observed to determine if KCFD's company officers are meeting the IMS objectives as delineated in the GOG. The establishment of command by first arriving company officers increased from 82% to 96%. As they did prior to the implementation of GOG 10-.1, the percentage of observable IC functions decreased as the incidents progressed, but to a lesser extent. For example, 33% of the company officers named command; this is up from 18% in the pretest observation but still is deficient in meeting the department's objectives. Specific information provided in the size up by the first arriving company officer/IC such as building type, and occupancy also increased, but again, only to approximately 50%. With the exception of ventilation or back up line assignments, the percentage of the assignments given by the company officer/IC remained constant. Regarding resource decisions, these percentages were consistent with the pretest observation. The author observed the largest change in behavior was the location of the IC. The posttest observation revealed that that 50% of company officer/ICs remained on the exterior of the structure. This is up from 4.5%.

While the implementation of the General Operational Guideline had a positive impact on IMS principles used, there is still a gap in meeting the department's IMS objectives. The potential that firefighters will begin operations prior to a strategically functioning Incident Commander is significant.

KCFD responds to an average of 136 building fires per month. The data analyzed that between 75% and 83% of the time, a company officer arrives prior to a battalion chief. At only 50% of the those incident, does a company officer remain outside the structure in a strategic

position, Therefore at approximately, 50 building fire incidents per month, firefighters are operating without a strategically positioned Incident Commander.

Discussion

The results of the study to determine if KCFD company officers utilize IMS are aligned with the perception of surveyed EFO students regarding their departments' utilization of IMS principles. That survey revealed that 93% of departments surveyed have an SOP that states the first arriving company officer should/must establish command, yet only 38% would be likely to function strategically (See Table D1).

It is not just the perception of EFO students that agree that many departments lack in the area of full IMS compliance. This author cited numerous examples of technical reports that illuminate the problem in the fire service. The most descriptive and comprehensive is that of Routley, et al (2008). To paraphrase, he wrote that his recommendations regarding use of IMS are not new and are merely restatements of lessons identified previously. This is illustrative that the fire service must do a better job of demanding that IMS principles are initiated at the beginning of an incident and remain in place until its conclusion.

The serious line of duty injuries that occurred on February 16, 2007 were in part a result of the lack of incident command. The first-in company officer at the Waldo fire incident focused on the tactical measures required for fire suppression, immediately after establishing command. No one was outside the building looking for the warning signs so critical in a rapidly changing situation. As a direct result of that fire, IMS protocols became a priority focus for the department and a catalyst for changing the cultural resistance to adoption of these principles. However, despite the initial progress, this study showed that there is considerable work to be

done to achieve the goal of 100% departmental compliance to the IMS GOG and the corresponding elimination of preventable injuries.

In the fire service, too often change is precipitated by preventable loss. Understanding that cultural imperative is important for sustainable change. The research conducted in this study demonstrated the increase in adherence to the some of the IMS principles after the Waldo incident. With the incident fresh in the minds of the responding company officers, there was a 15% increase of company officers who established command. In addition, formerly only 4.5% of company officer ICs remained on the exterior of the structure, 50% remained on the exterior after the Waldo incident and implementation of GOG 10-1.1.

It is not surprising that the percentage of observable IC functions decreased as the incidents progressed, nor that these lapses occurred to a lesser extent than the IC functions observed at incidents prior to the Waldo fire. As the response to the incidents progressed, company officers yielded to old habits and cultural norms that sacrifice focus on strategic decision making for perceived tactical gains on the fire ground.

Given the initial progress on IMS compliance resulting from these preventable, line of duty injuries, it becomes all the more important to focus resources on additional methods of increasing adherence to IMS principles in the absence of such an event. These strategies are discussed in the recommendations that follow.

Recommendations

It is important for KCFD to continue to measure and monitor compliance with the IMS GOG. The research supports that monitoring actions of company officers, to determine if IMS objectives are being met, is critical to determine what additional means need to be taken to

further increase compliance. To accomplish the monitoring recommendation, KCFD should implement a management systems audit to measure ongoing IMS compliance. The observation forms used in this study should be adapted to be used by battalion chiefs to tabulate the use of IMS by their company officers. At regularly scheduled intervals, forms should be submitted to the respective deputy chief and he/she should determine where training may be needed.

It is also recommended that ongoing IMS training is conducted at two levels in the organization. First, department-wide training that reinforces the department's IMS expectations and second, battalion-level training conducted by battalion chiefs to their company officers. The training curriculum should be centralized, but the delivery should be decentralized. It should be structured and participatory to allow company officers an opportunity to practice in a non-threatening, simulated environment being aware of the department's clear and concise expectations.

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Appendix A

General Operational Guideline

Subject: IMS Expectations for Company Officers	Effective Date: 6/15/2008	GOG: 10-1.1
Applies to: All KCFD Personnel	Supersedes: New	
Responsible Committee: Operations	Review Date: 6/15/2010	Page 1 of 2

PURPOSE:

GOG 10-1 sets for the Incident Management system for KCFD. This GOG is related to GOG 10-1 and is to set forth the expectations of personnel fulfilling the role of a company officer from scene arrival until being properly relieved of "command".

GOG 10-1 remains the guiding document for IMS within the department.

SCOPE:

Applies to all KCFD personnel fulfilling the role of a company officer involving an incident.

GUIDELINES:

1. The first arriving company officer shall establish and name command such as "Oak Command" for an incident that is ongoing on Oak Street. The radio transmission suggested would be "Pumper 8 establishing Oak Command."

2. A size up shall be transmitted that generally includes the following:
   A. Incident situation such as type of building, occupancy, fire and smoke conditions.
   B. Provide a brief incident action plan (IAP) such as "offensive attack-advancing one small through front door" or "defensive attack-initiating turret on the exposure".

3. Provide tactical assignments to other companies and on a single family residence those may be:
   A. Attack
   B. Ventilation
   C. Primary search
   D. Water supply
   E. Backup hose line

4. Check for safety concerns.

5. Consider resources that may or may not be needed, such as:
   A. Working fire response (Request)
   B. First alarm response (Request)
   C. Second alarm response (Request)
   D. Third alarm response (Request)
   E. Not needed resources (Announce to reduce to non-emergency/return to service)

Appendix A

General Operational Guideline

Subject: IMS Expectations for Company Officers	Effective Date: 6/15/2008	GOG: 10-1.1
Applies to: All KCFD Personnel	Supersedes: New	
Responsible Committee: Operations	Review Date: 6/15/2010	Page 2 of 2

6. Establish and maintain "Command" in the "warm zone". This would normally be on the exterior at a structure fire but may be in different locations for special hazard facilities, EMS and other unique incidents.

7. If obvious conditions exist which cause the first arriving company officer to make a judgment decision that significantly deviates from guidelines 1-6, they must transmit a proper size up, and then they have the option to "pass" Command to the next arriving fire officer. Acknowledgment of Command being passed, must be properly transmitted and of assumption of Command must be acknowledged, over the radio, by the officer assuming command. If command is not assumed by the next arriving officer, the dispatcher will prompt the officer that Command has been passed to them.

8. If the first arriving company significantly deviates from guidelines 1-6, and/or passes command as outlined in guideline 7, at the request of the response battalion chief, the company officer or WOC shall submit an "exception email report".

    A. The email shall be sent to the "response B/C" unless none was dispatched and if no B/C responded to the scene and then the report shall be sent to the battalion chief who has administrative authority over that company.
    B. The email will be reviewed by the B/C for appropriate action by the company officer.
    C. The "exception report" shall be forwarded to the deputy chief –shift commander.
    D. If two companies are on the scene and neither established command both company officers may be requested to submit "exception email reports"
    E. The exception reports as a document will not be utilized as an exhibit or evidence in a disciplinary proceeding as it pertains to this GOG.

Appendix B

External Survey

Survey Explanation

The purpose of this survey is to measure if company officers regularly function (strategically) as the Incident Commander, until a command officer arrives, or if they merely establish command and then get directly involved in tactical operations.

A company officer is defined as an individual who supervises 3-5 firefighters assigned to a single immediate-response apparatus.

A command officer/battalion chief is defined as an individual who responds in a separate immediate-response vehicle and supervises 3-7 company officers.

Consider only fire-related incidents when answering.

1. How is your department staffed?
    - Paid full time (career)
    - Volunteer
    - Combination
2. Does your department have a written SOP regarding IMS that states, the first arriving fire department officer should/must establish command.
    - Yes
    - No
3. In your opinion, when a company officer arrives first on the scene, even if he/she established command, he/she would be more likely to:
    - Function strategically as command by developing an initial action plan.
    - Get directly involved with tactics of the operation.

Appendix B

4. In your opinion, what percentage of working incidents where a command officer is not yet on the scene, does the first arriving company officer get directly involved in operations?
    - Never, there is always a functioning Incident Commander
    - Less that 25%
    - Between 25%-50%
    - Between 50% - 100%

This survey was created on *surveymonkey.com.*

Appendix C

Pretest and posttest observation form

Alarm Number: _____ Date: _____ District/Co _____/_____

1. Was a company officer on the scene one minute prior to a BC? Yes, continue. Y N
2. Did the company officer announce that he/she was establishing command? Y N
3. Did the company officer name command? Y N
4. Did the company officer announce a size up that included:
    a. Type of building construction Y N
    b. Type of occupancy Y N
    c. Conditions found on arrival Y N
5. Did the company officer/IC announce a brief action plan? Y N
6. Did the company officer/IC make initial tactical assignments?
    a. Attack Y N
    b. Ventilation Y N
    c. Primary search Y N
    d. Water supply Y N
    e. Back up line Y N
7. Did the IC announce if resources may or may not be needed
    a. Working fire response Y N
    b. First alarm Y N
    c. Second alarm Y N
8. Did the IC maintain command on the exterior of the structure? Y N

Appendix D

Table D1

Utilization of IMS in Other Fire Departments as Reported by EFO Students

		Count	Percentage
1	How is your department staffed?		
	Answer Options:		
	*Paid full time (career)	63	100.0%
	*Volunteer	0	0.0%
	*Combination	0	0.0%
2	Does your department have and SOP dictating the first arrive fire officer on the scene must establish command?		
	Answer Options:		
	*Yes	58	93.5%
	*No	4	6.5%
	Skipped	1	
3	In your opinion, when a company officer is first to arrive on the scene, even if he/she establishes command, he/she would be more likely to:		
	Answer Options:		
	*Function strategically as command by developing an initial action plan.	24	38.1%
	*Get directly involved with the tactics of the operation	39	61.9%
4	In your opinion, what percentage of working incidents, where a command officer is not yet on the scene, does the first arriving company officer get directly involve in operations?		
	Answer Options:		
	Never, there is always a functioning IC	3	4.8%
	*Less that 25%	13	21.0%
	*Between 25% and 50%	8	12.9%
	*Between 50% and 100%	38	61.3%
	Skipped	1	

Appendix D

Table D2

Pretest - Observation of company officer performing IC functions

		Sample	Y	N	Percent
1	Was a company officer on the scene at least one minute prior to a battalion chief?	29	22	7	75.9%
2	Did the company officer announce that he/she was establishing command?	22	18	4	81.8%
3	Did the company officer name command?	22	4	18	18.2%
4	Did the company officer announce a size up that include:				
	a. Type of building	22	12	10	54.5%
	b. Type of occupancy	22	7	15	31.8%
	c. Sufficient Information	22	15	7	68.2%
5	Did IC announce brief Incident Action Plan?	22	5	17	22.7%
6	Did IC make the following initial assignments?				
	a. Attack	22	8	14	36.4%
	b. Ventilation	22	1	21	4.5%
	c. Primary Search	22	8	14	36.4%
	d. Water Supply	22	12	10	54.5%
	e. Back up line	22	1	21	4.5%
7	Did IC announce a decision regarding resources?				
	a. Working fire	22	12		54.5%
	b. First Alarm	22	0		0.0%
	c. Second Alarm	22	2		9.1%
8	Did IC maintain command on the exterior of the structure?	22	1	21	4.5%

Appendix D

Table D3

Posttest IMS use observation results

		Sample	Y	N	Percent
1	Was a company officer on the scene at least one minute prior to a battalion chief?	29	24	5	82.8%
2	Did the company officer announce that he/she was establishing command?	24	23	1	95.8%
3	Did the company officer name command?	24	8	16	33.3%
4	Did the company officer announce a size up that include:				
	a. Type of building	24	14	10	58.3%
	b. Type of occupancy	24	14	10	58.3%
	c. Sufficient Information	24	20	4	83.3%
5	Did IC announce brief Incident Action Plan?	24	8	16	33.3%
6	Did IC make the following initial assignments?				
	a. Attack	24	8	16	33.3%
	b. Ventilation	24	7	15	29.2%
	c. Primary Search	24	8	14	33.3%
	d. Water Supply	24	12	10	50.0%
	e. Back up line	24	5	19	20.8%
7	Did IC announce a decision regarding resources?				
	a. Working fire	24	12		50.0%
	b. First Alarm	24	0		0.0%
	c. Second Alarm	24	1		4.2%
8	Did IC maintain command on the exterior of the structure?	24	12	12	50.0%