Fire Ground-Size Up for the North East Fire Collaborative

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27 May 2011

CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

1. This paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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ABSTRACT

The problem was that officers of the North East Fire Collaborative (NEFC) were not completing standard size up of emergency incidents, which was leading to misunderstanding of the actual and perceived events on the scene. The purpose of this study was to conduct training in using a standardized process for the size-up of emergency incidents and to provide the NEFC training to ensure all NEFC personnel understand and implement the same process.

The research questions this study investigated included: 1) How does using the same standardized size up assist firefighters with their jobs? 2) How does conducting standardized size- up training impact size-up? 3) How can having a standardized process for size up lead to better and safer outcomes at emergency incidents? 4) What are the critical fire ground factors to be addressed during scene size-up?

The action research process included interviews, reviewed audio from fire incidents pre training, during training and post training, and used state of the art simulation programs to evaluate size up skills pre and post training. The results indicated that fire officers had many different priorities and opinions of what should be included in size up and what should and should not be communicated. The results also indicate that initial fire ground size up training to a standard did not exist. The results showed that the training and simulations worked in standardizing size up and addressing all of the critical fire ground factors. After reviewing the results of this study, the recommendation was to ensure that all officers and acting officers complete the Blue Card Training Program and complete the yearly continuing education and three year recertification process. This will assist in assuring that all officers meet the minimum standard training requirement for Size Up of emergency incidents, this, in turn, will result in a reduction of injuries and fatalities on the fire ground.

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INTRODUCTION

Statement of the Problem

In June of 2009, five fire departments joined together to form the North East Fire Collaborative (NEFC). All five are combination departments and have both full and part time staff and many of the same demographics. The five departments collaboratively have thirteen stations and a daily staffing level of eighty personnel. With these departments coming together and working closer together, it was identified that all five departments really had no standard approach of doing fire ground size up and communicating that size up. Now that the NEFC has been formed, all five departments must come together and standardize how fire ground size up is done and communicated. Fire companies from all five fire departments respond and work together at working fire incidents, so training of the same likeness must occur. The importance of size-up is clearly addressed in National Institute of Occupational Safety and Health (NIOSH) reports and Firefighter Near Miss reporting. High profile NIOSH reports from Prince William County, Virginia and Charleston, South Carolina both list the lack of adequate size-up as major contributing factors in the death of firefighters.

The problem this study addressed was that officers of the North East Fire Collaborative (NEFC) were not completing a standard size-up of emergency incidents which was leading to misunderstanding of the actual and perceived events and conditions on scene when multiple units were arriving.

At the time of this study, none of the departments in the collaborative have a system of training personnel on size up and communications. Officers who arrive on the scene first have the responsibility to communicate (by radio) an accurate description of the conditions they observe to subsequent arriving units. An accurate arrival report of incident conditions not only

cues other responding companies of conditions being encountered, but is also the first step in the on scene incident command system. A systematic approach using an acronym or template also seems to assist emergency personnel in remembering all points to be addressed. The fire-ground is a very dynamic environment and is continually changing. When the first due officer reports that they are on the scene of a ”house fire”, it does not communicate nearly as accurate of an image as if they were to report “a medium two story house with a working fire on the second floor A side.”

Purpose of the Study

The purpose of this study was to identify important factors to be addressed, evaluate current size up actions, conduct formal training in using a standardized process for the size-up of emergency incidents and, provide the NEFC training to ensure all NEFC personnel understand and implement the same on scene report size-up.

Research Questions

The research questions this study investigated were:

1. What are the critical fire ground factors to be addressed during scene size-up?
2. How can having a standardized process for size up lead to better and safer outcomes at emergency incidents?
3. How does using the same standardized size up assist firefighters with their jobs?
4. How does conducting standardized size up training impact on-scene size-up?

BACKGROUND AND SIGNIFICANCE

The North East Fire Collaborative is made up of five departments that are located in the north east corner of Hamilton County, the southwest corner of Warren County, and the northwest corner of Clermont County. The North East Fire Collaborative has thirteen stations with eighty personnel on duty daily. The NEFC provides fire and EMS service to four cities and two townships which span an area of seventy-one square miles where 105,000 people live. The day time population of this area increases to 200,000. Occupancy use make- up ranges from middle income to high income residential, high end retail, heavy industry, and manufacturing. Building construction types range from old, ordinary construction from the early 1900's to state of the art buildings that are environmentally conscious or "green". All together, the North East Fire Collaborative has four hundred personnel of which seventy are officers. The rank structure within each of the departments varies. Three of the departments have a Duty Chief who responds on all fire incidents. The other two departments rely on chiefs to respond from home on Fire Incidents. The collaborative also has what is called a "Mini incident Management Team" that is made up of chiefs from the area who respond to fire incidents. The four-hundred personnel are comprised of both full and part time staff. The officer staff has a wide range of experience and training levels. Some officers have thirty years on the job and others have four years on the job, the training levels span from on- the -job training to officers with extensive hours of training and experience.

The departments of the NEFC make approximately 7500 emergency runs integrating the ops procedures of the agency. The size- up and communications standard that currently exists is based on past practice and the experience of each individual officer. The NEFC has trained all of

the personnel on the policies and procedures of the NEFC. One of the missing pieces is the size-up process.

Previously, each of the independent fire departments that make up the NEFC had their own requirements for officers to be promoted. They may or may not have had a system in place to address how they would conduct fire ground size- up and communications. Many of the current requirements are based on National Fire Protection Agency (NFPA) officer development standards and don't include training on strategic and tactical decisions. Hazard zone management and size up are often included in written tests and assessment centers, however, the approach for size- up and communications is evaluated by what was studied in one of the many books on this subject. The data in each of these books is based on the opinions of the author. One department adopted a program that extensively used the national incident management terminology. However, personnel were not familiar with the terminology or what it really meant. This is akin to speaking jibberish and claiming it to be a foreign language. Other departments used bits and pieces from the Fire Command Book and other strategy and tactics books. Either of these two systems worked when the departments responded by themselves, but when other departments responded not everyone else really knew what their size- up meant. The review, evaluation, and revision of the Incident Action Plan starts with the initial size- up and the communication of that size- up over the tactical radio channel. The National Institute of Occupational Safety and Health names inadequate "size-up" in the top two causes of fire ground fatalities.

The Chief Officers of the NEFC have outlined some standard operating procedures for the use of eight critical fire-ground factors from the fire command series, plus, they have added

accountability as a ninth factor to be addressed. Throughout this research paper, the eight critical factors that are referred to are those listed in the fire command book.

Company officers arriving on the scene of an emergency were not completing a thorough size-up and communicating a clear representation of what they saw. Based on reviews of on-scene reports, size-ups, and communications during a two month period, fire officers were not addressing the same points during size-up. The researcher reviewed sixty on scene reports over the two month period and eight out of every ten reports did not address all critical factors or start the command process. Every report was given in a different format. Key communications were given in different order. The other two out of ten reports addressed most critical factors; however, the communications were all in a different order. This haphazard approach to communicating both the initial and the ongoing size-up of critical fire-ground factors created large safety and operational holes in the incident commander's Incident Action Plan. Such safety and operational holes are known to be contributing factors to injuries and firefighter fatalities.

The audio demonstrated that size-up reports differ every time the radio is keyed and a new person is reporting. This showed that there was no set standard or approach to completing a size-up. A situational assessment of the entire scene was not completed or communicated. Strategy and Incident Action Plans are not being communicated to all companies. The eight critical fire ground factors and eight functions of command were not being considered. All of the above components were lacking and were leading to a decreased awareness of what was occurring on the emergency scene. During "after- action" discussions, many of these issues were being brought up by company officers. These company officers also reported that, "if they knew what initial reports were on their arrival, they would have taken different action."

Officers operating at an emergency scene must continually evaluate what is occurring on the fire ground, and have the highest level of situational awareness. In addition to evaluating and recognizing what is occurring on the fire ground company officers must transmit this information to all personnel who may be affected by what is occurring.

The impact this problem had on daily operations was that not all personnel were operating on the same page, thus creating a major safety issue. Poor size-up and communication was leading to confusion on the fire-ground when personnel didn't know what was going on. Fire-ground operations run smoother when the initial size-up accurately reflects the actual incident conditions. This allows officers to apply standard actions to standard conditions to achieve standard outcomes. Bringing together four-hundred personnel to operate under one plan has been a big challenge. A system needed to be in place to address how all departments would do fire ground size up as an organization. There must also be a system to train and evaluate personnel.

The development and training for a standard size up and approach is becoming more critical due to the changing fire environment and economic impacts on fire departments.

The potential impact this study could have on the NEFC is the development of a systematic approach to size-up and communications which can result in a safer, more effective fire ground.

The results of this study will be used to evaluate the current training as it relates to fire ground size up and communications. Developing and implementing a systematic approach to fire ground size-up and communications, then training all officers to that same standard will lead

to a safer and more effective fire ground, resulting in fewer injuries and fatalities due to overlooked hazards and conditions.

This applied research paper contributes to the US Fire Administrations five year operational objective of reducing, by 25 %, the loss of life of firefighters (USFA, 2007).

LITERATURE REVIEW

Nick Brunacini, (2010) emphasized that what was needed was to have a standard approach to standard conditions and firefighters will have a standard outcome. He also stated that the Phoenix Fire Department implemented a system that has now become known as the Blue Card Program for Incident Size-up and Management. The results of this program and training paid off time and time again once the training was completed. Personnel responding to incidents had a much clearer picture of the incident. The Phoenix Fire Department mandated that all officers complete the entire training program and three hours of ongoing training every three months.

Size- up of emergency incidents has been taught in the fire service for many years. The exact origins of fire ground size-up are unknown, but the earliest recorded incident of it appearing was in Fire Fighting Tactics by Layman, (1953.) Layman stated that, "size- up or estimate of the situation is the mental evaluation made by the operational officer in charge of a fire or other emergency which enables him to determine his course of action and to accomplish the mission"(page 37).

Smith (2005) stated that, "upon arrival at the fire scene, it is best to do a 360 – degree walk around of the fire building or incident that enables officers to see what the initial conditions are" (p. 123).

Failure to complete a full 360 – degree walk around of the fire building has led to disastrous results in the fire service, ranging from common injuries up to and including death. Although many problems and situations will be identified while conducting size – up, it is also important for company officers to understand what they are observing and what may happen if the situation is not mitigated.

According to Flatley, “size – up is a honed skill. It is the ability to analyze and determine if a hazard exists” (p. 137).

On April 16, 2007, Technician Kyle Wilson of the Prince William County Department of Fire and Rescue tragically lost his life while operating at a single family structure fire. The investigation that followed, determined that neither wagon 512 nor tower 512’s officer performed a complete 360 survey around the structure. The report also stated that,” if a complete 360 survey had been done of the structure, it would have identified that the rear basement door was open and that the fire had penetrated into the structure on multiple levels to include the basement and attic (Prince William Fire Rescue, 2007).”

On June 18th, 2007, nine emergency responders of various ranks from the City of Charleston, South Carolina Fire Department lost their lives while operating at the Sofa Super Store. A post incident assessment and review team was assembled to review the decisions made on that day and to holistically examine the department’s operations. The team identified that the first arriving unit at the Sofa Super Store was Battalion Chief Four. He performed a rapid visual size-up of the situation on the west side of the building and directed the positioning of the first arriving engine company (City of Charleston, 2008, p. 34). Furthermore, the team stated that, “there was no systematic size up of the situation (360 view) and no one was in a position to view the overall incident scene” (City of Charleston, 2008, p. 39). The National Institute of Occupational Safety and Health (2009) stated that in this incident, “arriving officers concentrated on the A and D sides of the structure and that a complete 360 degree size – up was never conducted (p.17).

The National Firefighter Near-Miss Reporting System tracks incidents where firefighters avoided injuries or near death situations and examines contributing factors. The research search

engine on the National Fire Fighter Near-Miss Reporting System has learned that, of the 1,062 reports filed under the fire emergency event, structure fire, and vehicle fire, 526 of those events included “situational awareness” as a contributing factor. This represents 49.5% of all reports submitted to the Near Miss Reporting System for fire related emergency incidents. Tippet (2002) defines situational awareness as an internal process that goes on constantly, much like size-up, and is the basis for defining the contributing factor of the National Fire Firefighter Near-Miss Reporting System. (Tippet 2002) states that, “like size-up, situational awareness must be updated constantly through the principles of observation and communication” (p. 237).

(Gasaway 2008) stated that, “there seems to be several observable factors that impact commander situation awareness which include: incomplete size-ups, failure to read the smoke, failure to assess deteriorating conditions of the structure and failure to conduct a realistic assessment of savable lives”(p. 196).

Norman (2005) uses thirteen accepted traditional points of size- up outlined in a thirteen point acronym, COAL WAS WEALTH. The COAL WAS WEALTH Acronym includes Construction, Occupancy, Apparatus and Manpower, Life Hazard, Water Supply, Auxiliary Appliances, Street Conditions, Weather, Exposures, Area, Location and Extent of Fire, Time, and Height. This arrangement is in no particular order of priority. All of these points of size up are all critical and must all be addressed during size-up.

Prizborowski (2007) stated that, “No acronym can substitute for common sense and street smarts, but the more tools we use to ensure responder and public safety, the better chance we will go home at the end of the shift” (p. 79). Acronyms act as mind joggers for emergency incidents and their use has become widely accepted within the fire service profession.

Diehl (2008) stated that, “The fire service profession has lost perspective on one of the most basic foundations of our work, which is proactive education based on updated information.” His article was based on tragic deaths that occurred to many fire service personnel during the summer of 2007. Diehl (2008) also stated that, “The emphasis in the fire service appears to be more on the rescue and recovery of firefighters in trouble than in the timely delivery of updated information that can be incorporated into education that may dramatically change decisions during size – up.”(p.109).

Retired Fire Chief Alan Brunacini, along with sons Nick and John have developed and now implemented a hazard zone management program known as Blue Card (Brunacini, 2010). The system was designed specifically to fill the gap in the national incident management system for Type Four and Type Five incidents. Type Four and Type Five incidents are those incidents that are handled by a single agency or by single source mutual aid companies. The system is based on hazard zone management and how to apply the eight functions of command and eight critical fire-ground factors. The program is made up of fifty hours of cognitive online training that has online direction, notes, video, chief’s review, simulations, and best practices. Once the online portion is completed, the student is eligible to complete a twenty four hour classroom and check off session. During the classroom and check off session students will review the online program and then start being evaluated using a program called Digital Combustion. Throughout the online program, the check off and classroom session repetition is a key component to standardizing hazard zone management and size up. The blue card hazard zone management program has been adopted and or endorsed by such agencies as the International Association of Fire Chiefs, The Great Lakes Division of the International Association of Fire Chiefs, The Great Lakes Mabas Division, the entire Phoenix Arizona valley area consisting of twenty-seven fire

departments, the Washington DC Fire Department and an array of other agencies. The program is also being used in many Canadian and Australian Fire Brigades.

Coleman (1997) stated that "The Incident Management System is a standard method of operating at all incidents to which fire departments respond. It is a management tool that defines the roles and responsibilities of all units responding to an incident.

IFSTA Essentials Fifth Edition suggests that size up be done at all emergency incidents. A standard approach should also be taken to size up emergency incidents. IFSTA Essentials is a basic recruit fire training series for initial fire fighter training. Fire personnel are taught some limited information regarding size up in basic training.

Fire Department Company Officer, Fourth Edition IFSTA addresses size up and points out the importance of size-up at emergency incidents.

Fire Officer Principles and Practices (Jones and Bartlett) use an acronym known as WALLACE WAS HOT. This acronym addresses all of the same issues as the COAL WAS WEALTH acronym just in a different order. This acronym is not designed to be used in any particular order. It just reminds the user of the thirteen points to be addressed according to the book.

After taking a look at all of the literature reviews it was determined that many other departments were facing the same issues. All of the literature points towards the importance of on scene size up. Several of the documents outlined the same topics to be addressed during size up. All of the documents lined up with the Blue Card/ Fire Command curriculum. The Blue Card System puts a system in place to actually teach personnel what is expected, it also gives instruction on how to evaluate the skills of personnel.

Literature Review Findings:

- Size- up or estimate of the situation is the mental evaluation made by the operational officer in charge of a fire or emergency which enables him to determine his course of action and to accomplish the mission.
- Size-up is a honed skill. It is the ability to analyze and determine if a hazard exists.
- Size-up, situational awareness must be updated constantly through the principles of observation and communications.
- All of the points of size-up are all critical and must be addressed during size-up.
- No acronym can substitute for common sense and street smarts, but the more tools we use to ensure responder and public safety, the better chance we will go home at the end of the shift. Acronyms act as a mind jogger for emergency incidents and their use has become widely accepted within the fire service profession.
- The incident management system is a standard method of operating at all incidents to which fire departments respond. It is a management tool that defines the roles and responsibilities of all units responding to an incident.

The literature review provided a different perspective to the same issues that were being addressed in this research project. It was also determined that the size up and communications issues are a global problem for the fire service. Size up and communications have been a topic of concern in the fire industry since its inception. The literature review also influenced me to evaluate how other high risk industries train personnel in controlled environments.

PROCEDURES

The first step of the research was to continue to review audio tapes from emergency incidents and determine what is and is not being addressed during size up. This researcher did this through the communications center by requesting audio to review from emergency incidents. This researcher based research on reviewing this audio on the eight Critical Fire-ground Factors of the Fire Command Book. The eight Critical Factors are the eight points to be addressed during initial size up. Accountability will also be added as factor due the adoption of it as a factor by the NEFC Chiefs.

The research and information that this project gathered was done through a recording device and check off sheets.

The process that was used involved using the NEFC command training center which consists of a computer lab where fire simulations are run. Twenty personnel from within the NEFC were evaluated. These personnel were randomly picked and had not been involved in any of the command training that had been done in the simulation room. The fire simulation program operates on a system called Digital Combustion. This system allows the controller to put pictures into the program and add fire and smoke conditions. The system is set up in such a way that eight separate companies can respond to the same incident. Based on arrival sequence, they will be assigned different tasks by the Incident Commander. The system puts the most emphasis on the first arriving company and the Incident Commander. Each of the 20 personnel was evaluated in the 1st arriving and the strategic command position using the critical factor evaluation sheet.

The researcher specifically looked at the process that the first arriving company used to complete size up compared to the process that is the standard. The standard was drawn from the

Fire Command Book and the NEFC guidelines. The researcher used a check sheet to evaluate if the following components were included in the size up: building size, height, and occupancy, what is visible, 360 views, strategy, incident action plan, establish command and accountability.

Once all personnel had been evaluated, then training began. The training was done over a 75 hour period. Personnel completed a 50 hour online cognitive learning session followed by 3 8 hour days of classroom and simulation. The same simulations were run to determine if the training was effective and successful in standardizing size-up. All of the same size up components was evaluated as listed above in the pre-training list. The personnel that this study evaluated were all company officers or acting officers from the NEFC.

The training component consisted of a 50 hour online cognitive learning session that is a component of the Blue Card program. This cognitive learning session covers all of the functions of command as well as the critical fire ground factors that this research is addressing.

This researcher is heavily involved in the Blue Card Hazard Zone Management project. The researcher did search for other training programs for scene size up and found few results. Many of the key points of scene size up were found in many of the documents, however not a single other training package was found that was all inclusive like the Blue Card Hazard Zone management program.

RESULTS

Figure 1 below shows the results pre training and post training.

Residential Simulation

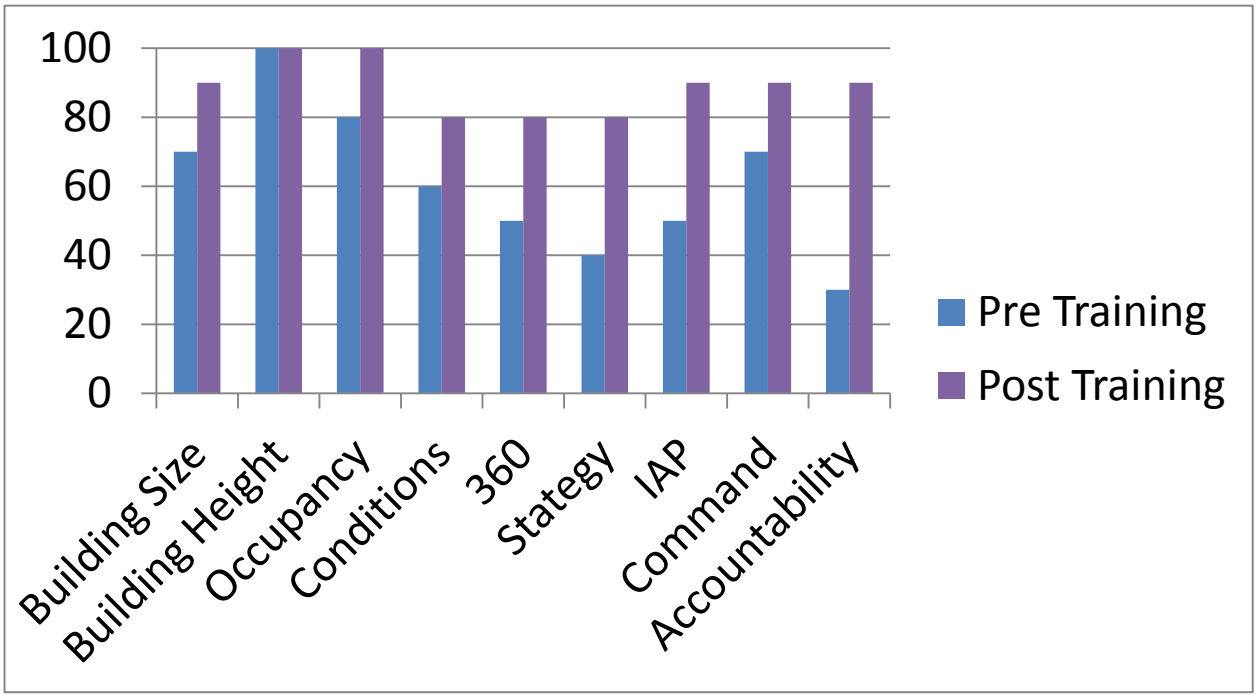

Figure 1 n=20

The results in Figure 1 show the impact of the Blue Card Training on addressing the nine critical fire-ground factors for residential buildings. Building size, building heights, and occupancy type, were being address correctly, most of the time the other critical factors were being addressed sporadically. The 360 view strategy and incident action plan were seldom being addressed prior to the training.

Figure two below shows the results pre training and post training.

Multifamily Simulation

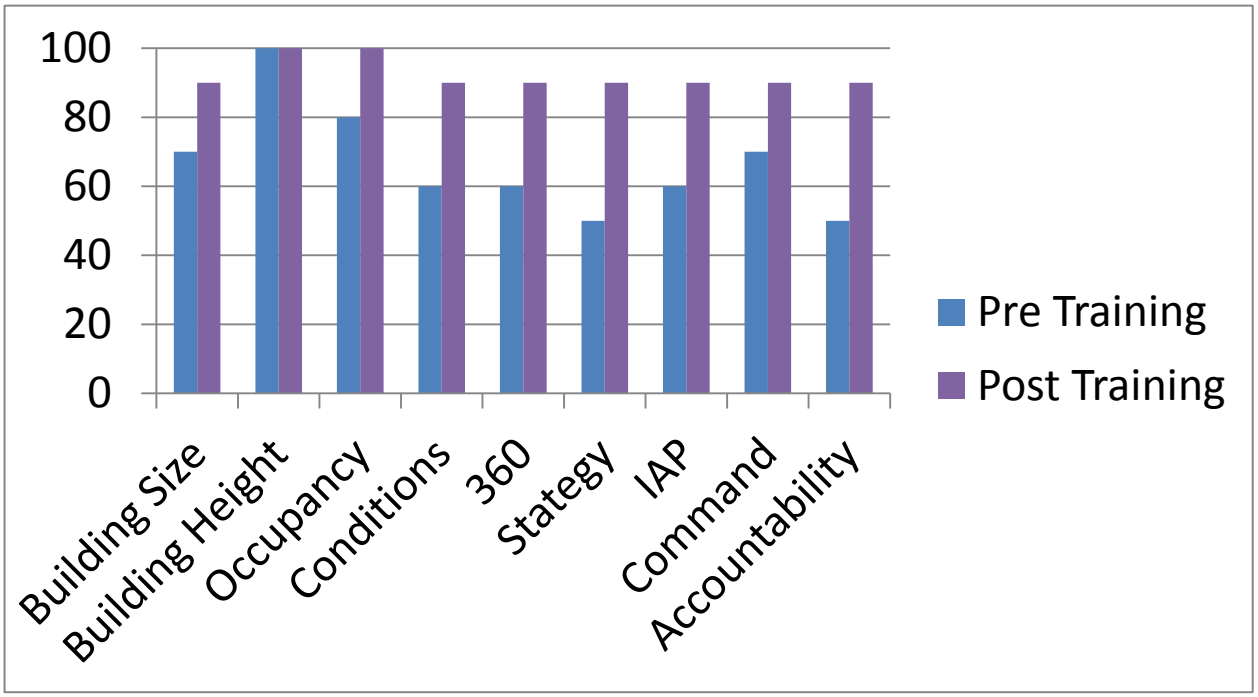

Figure II **n=20**

The results in Figure II are for multifamily residential simulation size ups. Several of the points that were addressed correctly during the pre training in the residential simulations were not addressed as well in the multifamily residential simulations. This is due, in part, to the overwhelming real life experience that personnel were feeling when filling the initial incident command position. The post training results for the multifamily simulations are significantly better than the post training results for the single family residential buildings. The importance and value of the repetitive portion of the training is proven after just two simulations. The more the personnel do the size ups using the standard model, the more they hit all of the critical

factors. Throughout the training personnel continually commented on how the simulations were giving them a real life feeling of managing an incident.

Figure III below shows the results pre training and post training.

Strip Mall Simulations

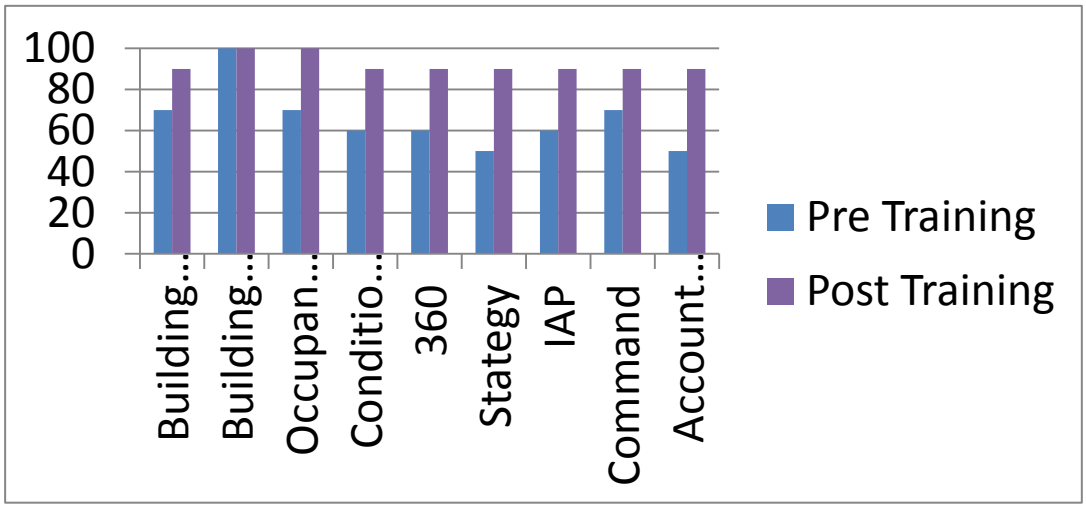

Figure III n=20

The results in Figure III are for strip mall simulations. The results for these simulations are very similar to the multi family simulations. Each person had been involved in twenty simulations by the time they began the strip mall simulations. This chart, too, shows that the repetitive training increases the quality of the size up and therefore more critical factors are addressed with more practice. While participants were being tested they were truly still learning.

Figure IV below shows the results pre training and post training.

Commercial Simulations

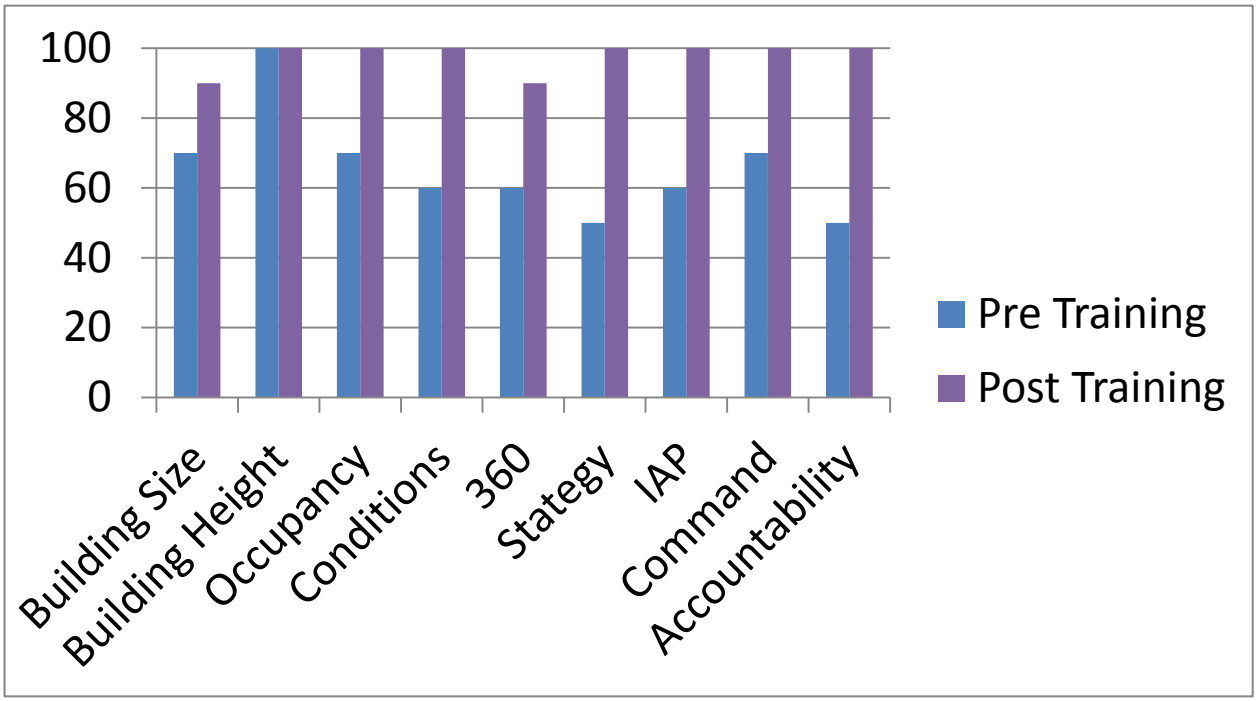

Figure IV **n=20**

The results in Figure IV are for commercial simulations. The pre- training results are all similar to all of the other pre training simulations. The post training results are the best results of any of the simulations. Personnel had been involved in forty simulations by the time they did the commercial simulations. All twenty personnel addressed correctly six of the eight critical factors. The two that were not addressed correctly by all twenty personnel were building size and 360 completions. The results are still a great improvement over the pre- training results.

1. **What are the critical fire ground factors to be addressed during scene size-up?**

The critical fire-ground factors to be addressed during scene size up will be those addressed in the Fire Command Book/Blue Card Hazard Zone Management Program, these are strongly supported by many of the other documents reviewed in the literature review. These factors are building size, building height, occupancy, conditions and location, 360 report/situational report, strategy, incident action plan, and establish command.

2. How can having a standardized process for size up lead to better and safer outcomes at emergency incidents?

The testing and evaluation that was done in the simulation lab proved that having everyone on the same page with communications and size up led to better managed incidents resulting in positive outcomes.

Standardized size up will lead to better and safer outcomes due to a clear picture being painted by the initial on scene commander addressing the eight critical fire-ground factors. This will give all personnel operating at the incident a better understanding of what they are responding to and allow for later responding personnel to compare initial standard reports to what they see when they arrive. This component would be the review of incident compared to the initial picture painted resulting in a revision of the incident action plan which will lead back to evaluating again the picture of the incident.

3. How does conducting standardized size up training impact size-up?

The results in Figures I – Figure IV show clearly that standardized size up training has a significant effect on how well personnel address the critical fire-

ground factors. In several cases, there was a good improvement in personnel addressing fire-ground factors during size up. The more simulations that personnel were involved in, the better their size- ups became. Personnel began addressing every point of the process.

4. How does using the same standardized size up assist firefighters with their jobs?

Standardized Size Up and size up training assists firefighters in having a common system to complete fire-ground size up and size up training. The lack of size up and situational awareness is listed in a number of recent fire-ground fatalities. Firefighters who have a standard system of size up and complete a training program will give a standard report which will satisfy the issue of size up in NIOSH reports this should result in decreased firefighter injuries and fatalities. Firefighter situational awareness and communications will be increased. Command functions may also be enhanced by the initial standard size- up.

DISCUSSION

The majority of company officers are completing some sort of fire-ground size- up, but they are not completing it in a standardized way addressing all of the factors. NEFC personnel have not been completing standardized size up addressing critical factors, and is lacking in ways which may be dangerous to occupants and firefighters alike.

A simple sticker with the key points of size up are posted in all NEFC apparatus to serve as a reminder for initial incident commanders. This is just to simply jog their memories and reminds them to address all of the factors.

The findings of the pre training evaluation show that personnel are missing the mark on addressing the critical factors during size up in the simulation environment and on actual fire incidents. Personnel give different levels of size up information depending type of dispatch and visible findings. The data that was collected showed that personnel have all different levels of trainings and opinions of what should and should not be addressed during size up. Once personnel had completed the 50 hours of online training, several of the critical fire ground factors began being addressed. The 50 hour cognitive learning session works to train personnel to address all the critical fire ground factors during size up. As personnel completed each round of simulations, more and more of the critical factors were being addressed. It was also recognized that after personnel had completed the training and simulations that they were addressing all of the critical fire ground factors on actual fire incidents. The training process worked to ensure that critical fire-ground factors were being addressed. With personnel addressing these factors the NEFC will have a lower risk of personnel being injured or killed due to lack of situational awareness and changing conditions.

The training and testing that was done during this research will help in standardizing policy, procedures and guidelines for the NEFC. Other things that were discovered during this research is the lack of standardized tactical priorities and lack of understanding of fire-ground risk management.

RECOMMENDATIONS

Training classes such as NFPA 1021, Standard for Fire Officer Level I and/or II training classes do not cover all of the matters concerning fire-ground size-up, strategies, tactics, and action planning needed for personnel that are making command decisions. Simply having standard operating guidelines regarding size-up without training does not ensure that personnel understand the expectation. Referencing fire command books such as Fire Command, Company Officer Development and others fighting major fires does not ensure that personnel understand what is expected. Standard operating guidelines and books may be interpreted differently by all personnel. Training incident commanders in live incident situations is a risk to all personnel involved.

1. It is recommended that the NEFC will ensure that all personnel who will be in the position to give initial Size-up reports complete the Blue Card Hazard Zone Management Program. This initial training will set a standard for size up and communication for all NEFC personnel. Throughout the literature review it is recommended that a standard size up occur at all emergency incidents. The literature review also points out many times the importance of everyone being on the same page and seeing the same picture. The use of a standardized approach of size up and communications also will assist with best practice hazard zone management. The training will be implemented by the NEFC fire board and training group. The online training should be done by all personnel who may be in the position to be in command.
2. It is recommended that once NEFC personnel have completed the fifty hours of cognitive training and the twenty-four hours of simulation evaluation sessions, they

shall be required to complete a minimum of three hours per quarter of Hazard Zone Management Training. Retention of fire ground size-up can be achieved by practicing size-up on every incident, whether it is a structural fire emergency or not. By conditioning company officers to complete size-up on every incident, techniques identified in the Blue Card Program can be constantly applied; this will help achieve perfection. The literature review of training of personnel who operate in high hazard low frequency incidents recommends that continuous ongoing training occur to ensure skills are maintained. This ongoing training should be done through the NEFC training officers group on a quarterly basis. All personnel who complete the training will be required to have three hours of continuing education training each quarter.

3. It is recommended that personnel from the NEFC perform size up and communicate just as they were taught in the Blue Card Training Program. This practice shall be done on all incidents no matter the severity or risk. This standard should be implemented through the operations work group of the NEFC. The work group should draft and deliver operating procedures to all personnel regarding size up and communications. The accepted practice for size up and communications will be outlined in the procedures and guidelines. The operations and training work group should monitor radio traffic and address issues where the procedures and guidelines are not being followed.

Future readers of this paper may want to examine further how personnel get initial training at basic fire school regarding communications and situational awareness. During the evaluation of radio traffic it was determined by this researcher that much of the radio traffic was not necessary and was not giving the incident commanders the critical information they needed.

It is recommended that the use of simulator based training continue to be used and updated as necessary to train firefighters on standardized size up procedures.

The number of structural fires has decreased throughout the years and the level of experience is also decreasing. Experience must be replaced with sound competent training which includes practical application. The simulation based program is as real to life as possible. The simulation based training works for many industries such as the US Military Tank Training Simulators, police and fire driving simulators, COPS FATS simulator for fire arms training, and the airline industry which trains pilots using cock pit simulators. The airline industry flies over 90,000 flights per day with very few incidents.

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APPENDIX 1 – EVALUATION SHEET

Fire Ground Size – Up for the North East Fire Collaborative

Evaluation Sheet: Pre – Post Training

Name: _____ Date: _____ Time: _____

Size up should be done in the order listed below and all components addressed

Correct /Incorrect

- Building Size Small - Medium – Large – Mega _____
- Building Height in floors _____
- Building Occupancy or use _____
- What are fire conditions and where is the fire or smoke _____
- Situational awareness report 360 _____
- Strategy Offensive or Defensive _____
- Incident Action Plan of First Company _____
- Establish Command and Location _____
- Establish Accountability and Location _____