

Running head: DEVELOPING A POST INCIDENT ANALYSIS PROCESS

Developing a Post Incident Analysis Process

at the Addison Fire Department

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Appendices Not Included. Please visit the Learning Resource Center on the Web at <http://www.lrc.dhs.gov/> to learn how to obtain this report in its entirety through Interlibrary Loan.

Certification Statement

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

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ABSTRACT

The problem was the Addison Fire Department did not utilize a consistent and standardized post incident analysis process, resulting in missed opportunities to share lessons learned. This problem was identified by officers recognizing that post incident reviews were conducted differently among shifts and that not all significant incidents were reviewed. The purpose of this research was to design a consistent and standardized post incident analysis process that will meet the needs of the Addison Fire Department. Action research was used to answer the following questions: a) what are the standards or recommendations for a post incident analysis? b) What are the components of a post incident analysis? c) How are post incident analyses accomplished at other Texas fire departments? d) How will the Addison Fire Department implement a post incident analysis process? The research incorporated a questionnaire that was sent to members of the Operations Division at the Addison Fire Department as well as interviews with leaders of the organization to better understand how to implement a post incident analysis process at the AFD. Additionally, a questionnaire was sent to the Texas Fire Chief's Association personal contacts to identify how other Texas fire departments accomplish post incident analyses. Uniformity in standards referenced and a variety of useful components of a post incident analysis were recognized in the research. The necessity to share lessons learned and near misses were highlighted. A list of recommendations was established to support the creation and implementation of a standardized and consistent post incident analysis process at the AFD. The recommendations included providing a standard format, regular training and routine evaluation and updates to a post incident analysis program.

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Developing a Post Incident Analysis Process at the Addison Fire Department

Skills and performance are routinely measured during fire academies to help validate success of the candidate or student's comprehension and ability. The skills and ability to perform are delivered and learned through effective training and education. In addition to training and education, a third important element is used to share wisdom from what others have undergone. The third element is experience and is an important component of learning (Barr & Eversole, 2006). The fire service is routinely called to handle a wide variety of incidents and expected to be able to mitigate the problem. As a profession, the fire service strives to maintain and improve on knowledge and practice to perform at its best. Organizations often utilize guidelines or standard operating procedures as an algorithm to communicate expectations and provide direction to members. Well defined rules, instructions, guidelines, policies and procedures help to improve safety and formalize processes to improve training, education and experience from lessons learned (Barr & Eversole, 2006). These things are vital to the health and safety of every member of the fire service (Graner, 2006). The problem is the Addison Fire Department (AFD) does not utilize a consistent and standardized post incident analysis process, resulting in missed opportunities to share lessons learned. The purpose of this research is to design a consistent and standardized post incident analysis process that will meet the needs of the organization. Action research was utilized to answer the following research questions: (a) what are the standards or recommendations for a post incident analysis process? (b) What are the components of a post incident analysis process? (c) How are post incident analyses accomplished at other fire departments in Texas? (d) How will the Addison Fire Department implement a post incident analysis process?

BACKGROUND AND SIGNIFICANCE

The late 1800's brought about the railroad in north Texas. At that time, a small community was established with a depot and was named Peters Colony (Eads, 2001). The name was changed in 1902 to Addison in honor of the postmaster and former Civil War veteran, Addison Roberts. In 1982 the name was changed and is currently called the Town of Addison (O'Neal, 2012a). The town is located in Dallas County in Texas and borders the City of Dallas, the City of Farmers Branch and the City of Carrollton (O'Neal, 2012b). Although the physical boundary of the town is only 4.35 square miles, it is a busy urban community with significant commercial presence, housing over 40 mid to high rise buildings, nearly 200 restaurants and 22 hotels. Target hazards include the Addison Airport, a fuel farm and a sixteen hundred foot traffic tunnel. The residential population approaches 15,000 however the daily population with business and commuters is often well over 100,000 (O'Neal, 2012a).

The Addison Fire Department (AFD) protects and serves the town with fifty-seven uniformed personnel. The department operates on a shift schedule in which fifty-four personnel work a shift schedule of twenty-four hour tours every third day. The AFD is a full-time career department, providing the community with fire suppression, advanced life support (ALS) medical care and transport, aircraft rescue firefighting (ARFF), rescue, fire prevention and public education (O'Neal, 2012a).

The front line response at the AFD includes two engine companies staffed at a minimum with three personnel, one truck company staffed with three personnel, two mobile intensive care units staffed with two personnel, and a battalion with one person. The truck company also cross staffs an Aircraft Rescue Fire Fighting apparatus as needed. The department responds to approximately two thousand five hundred calls per year including fire and EMS related incidents

(O'Neal, 2012b). Following significant working fires, the on duty Battalion Chief typically conducts a post incident analysis or after action review with the responding personnel. Although the Battalion Chiefs make an effort to review the incident with the responders, there is no consistency in format or delivery. This is largely due to a lack of guideline or policy provided by the organization. Critical information from the first arriving units and including all other accounts are not always shared as a benefit to the other shifts. In addition, any full response or simultaneous call requires the use of automatic or mutual aid from the surrounding communities. After a significant event, the information shared by AFD crews and incident commander is not always made available to those responding crews from the other agencies. The designated safety officer at an incident is often an officer from one of automatic aid departments. This person is rarely, if ever, present for any type of incident review.

Occasionally, the incident commander or a designee will send out an e-mail to the other AFD officers with some information regarding lessons learned following a fire. This effort is valuable but not consistent among the shifts. There have been no templates or standardized documents provided to assist with passing along vital information to all members. The initial responders are sometimes the only ones that benefit from the shared information. Firefighters tend to protect themselves psychologically by focusing on how things turned out rather than what may have happened (Brennan, 2011). Information is not routinely shared with the Training Division to incorporate into future training plans. If everything seemed to go right, there are still opportunities to provide for improvement and share information or perform mental rehearsals of what actions were taken or could have been taken (Brennan, 2011).

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

problem presented in this paper was linked to Unit 2 of the Executive Leadership student manual (NFA, 2013, p.2-1). The unit identified the elements of providing feedback. This included behavior, observations, descriptions and sharing ideas (NFA, 2013). Also, the paper was linked to Unit 6 on decision making (NFA, 2013, p. 6-1). This unit discussed the authority figure's role in decision making, different decision styles, rules for a variety of situations and potential pitfalls that may occur during group decisions (NFA, 2013). Finally, Unit 12 relates to the paper in regards to leaders managing multiple roles (NFA, 2013, p.12-1). Differences in application of leadership using interpersonal, informational, decisional, internal and external roles were discussed in this unit (NFA, 2013). All of these helped the researcher understand leadership and the group dynamics involving a post incident analysis where several people come together to share information regarding significant incidents.

The United States Fire Administration (USFA) (2010) has established five operational goals that are noted in a strategic plan for fiscal years (2010-2014). The problem addressed in this paper was related to three of the goals: "Improve local planning and preparedness. Improve the fire and emergency services' capability for response to and recover from all hazards. Improve the fire and emergency services' professional status" (USFA, 2010, p.13).

LITERATURE REVIEW

A literature review was completed to obtain a perspective on how other published authors have approached similar research on post incident analysis. The review was initiated at the Learning Resource Center (LRC) on the campus at the National Fire Academy (NFA) in Emmitsburg, Maryland in May, 2014. Supplementary information was gathered from a personal collection of resources, visits to a local library at Collin College in McKinney, Texas, on-line library searches through the Dallas Public Library, internet searches and by studying information

available on the common computer drive at the AFD. Search terms used on internet searches included post incident analysis, after action reviews, implementing post incident analysis programs, lesson learned and problems with post incident analysis. National Fire Academy Executive Fire Officer Applied Research Projects were also researched at the LRC and on-line to see how other authors conducted research and developed recommendations for post incident analyses. Post incident analysis (PIA) is a title used to describe formal and informal incident reviews. The fire service has also created several other labels for this that include after action report (AAR), critique, incident review, slam session, Monday morning quarterbacking and incident review (Dodson, 2007). Some of these labels have negative connotations and may inhibit organization members from engaging due to fear of being blamed for something. The word critique was actually derived from a Latin word for critical (Poulin, 2006). For this research, post incident analysis and after action reviews are terms that are used as they were the most common.

Standards and Recommendations on Post Incident Analysis

There is not a national standard that is currently titled specific to post incident analysis, however there are standards and recommendations that describe and recommend utilizing the process. Unit leaders in the United States (U.S.) Army have been using a template for lessons learned in combat situations for over forty years (Whalen, 2010). This is a recommended learning methodology that creates structure that is modeled by other organizations (Feller, 2014). Whalen (2010) explains that U.S. Army leaders conduct after action reviews (AARs) regularly to improve tactics, procedures and to identify combat lessons learned. They are recommended after every mission however they are mandatory following significant incidents. A template is used to communicate through the Center for Army Lesson Learned (CALL) to disseminate information

Army-wide to help save lives and instill best practices. These reviews are recommended to overcome steep learning curves and to enhance cohesion among teams (Whalen, 2010). Training on AARs is supported by the Army in both formal and informal environments. Officers are trained how to conduct reviews in a classroom setting, but are also provided a training circular as a documented guideline for leaders to use following an incident (Whalen, 2010).

Business models incorporate post incident analyses to turn information into knowledge and improve results. Feller (2014) states that sales organizations struggle with the inability to learn from experience until they begin to utilize these reviews or analyses to identify mistakes, learn from them, and make necessary adjustments instead of blaming someone or something else. It is recommended to provide a climate of openness that commits to learning. It is also suggested that the review not be included as an annual performance review (Feller, 2014). A facilitator is necessary to keep the conversations factual and to provide leadership. Feller (2014) encourages that each member of the discussion be on equal footing and allowed to participate without fear of being accused or blamed for any problems that arise. Four questions that are recommended to address are: “what was supposed to happen? What actually happened? Why was there a difference? What have we learned?” (Feller, 2014, p. 5). The results are documented and incorporated into standards and best practices for the organization (Feller, 2014).

In the fire service, the National Fire Protection Association (NFPA) has standards that require the assigned Incident Safety Officer (ISO) be involved with the PIA. Dodson (2007) explains that NFPA 1500 (Standard on Fire Department Occupational Safety and Health Program) and NFPA 1521 (Standard for Fire Department Safety Officer Professional Qualifications) both recommend utilization of a PIA program (NFPA, 2013b; NFPA, 2015). Furthermore, NFPA 1521 specifies that the ISO create written documentation to include in the

PIA that is relative to any health or safety concerns (Dodson, 2007; NFPA, 2015). Another recommendation is for the PIA to include all other players involved in addition to the ISO (National Fire Academy [NFA], 2003). NFA (2003) emphasizes the importance of making all PIA information available to the entire department once completed. The lessons learned are vital to the entire organization and not just those in attendance. It is also just as important to pass along the things that went well and carry those things over to future incidents (NFA, 2003). Viscuso and Terpak (2011) stress that if each member is allowed to provide positive feedback and constructive criticism, they will have an opportunity to use the information as a learning tool. It is recommended that the overall goals for the PIA include rewarding actions where possible, discussing ineffective actions, modifying policies and identifying budgetary needs such as staffing and training (Viscuso and Terpak, 2011). Poulin (2006) communicates that the focus needs to be on emergency service delivery improvement. A successful PIA will focus on the lessons learned and how to improve emergency response and mitigation. The PIA should not be done to tell everyone they did great when they did not, or to condemn personnel for bad decisions (Viscuso and Terpak, 2011).

Poulin (2006) explains that learning can still occur without a formal written process or program however the ability to learn and share information is limited without official documentation and perspectives of all involved. Viscuso & Terpak (2011) recommend utilizing a worksheet or template that may be filled out following the incident by the incident commander or a designee to record things while they are fresh. This worksheet or template would then be used when delivering a formal PIA. The final page with lessons learned is intended to be completed following the PIA and then forwarded throughout the organization to make changes in policy or procedure where necessary (Viscuso and Terpak, 2011). Poulin (2006) reminds leaders

to try and understand why decisions were made on scene based on the information that was available along with considering the adherence to policies and procedures. Dodson (2007) advises to collect information quickly following the incident. It is recommended that the ISO document a summary that includes any health and safety hazards or actions of concern. The ISO, incident commander or designee should also contact the dispatch center to obtain a chronological report of times and radio traffic (Dodson, 2007). The extra effort taken to collect information early on will help to better prepare for the PIA. It is important to prepare for the review in advance (Bingham, 2005). Brunacini (2009) explains that the organization notices when management and leadership displays investment in the organization and is prepared for the review, providing thorough follow-up. A structured, written report of lessons learned should become a permanent document for the organization. Bingham (2005) recommends using a standard format for PIAs to provide consistency. The report is most effective when it includes information on conditions, actions, outcome, lessons learned and reinforced, and an action plan for improvement (Brunacini, 2009). Bingham (2005) states that sharing the lessons learned with the organization in a retrievable and visible format demonstrates progressiveness and interest in the well-being of the membership. Conversely, avoiding the PIA sends the wrong message to the troops and is indicative of a poorly run department that is not interested in learning from its mistakes (Bingham, 2005).

Edmond Rodriguez (2009) researched the post incident analysis process for use in the Stockton Fire Department. Rodriguez's research questioned the models and criteria used for PIAs. The research found that National Standards require that incidents must be reviewed if they involve hazardous materials, injuries, fatalities or are considered significant incidents (Rodriguez, 2009).

Joseph G. Knitter (2009) conducted research to develop a post incident analysis for the South Milwaukee Fire Department. Knitter explained that the NFPA mentions the PIA process in many of the standards. In addition to NFPA 1500 and NFPA 1521, there are other NFPA standards that refer to the process (Knitter, 2009). The research referenced that the post incident analysis process is called for in NFPA 1006, the Standard for Technical Rescuer Professional Qualifications and NFPA 1021, the Standard for Fire Officer Professional Qualifications. NFPA 1006 (2013) requires that a technical rescuer provide a post incident analysis at the termination of an operation or incident. NFPA 1021(2014) requires that an officer understand the components and be able to conduct a post incident analysis.

John V. Kinsley (2010) conducted research on organization learning from PIAs. In regards to standards and recommendations, he found that there was some unanimity in the NFPA standards and that they convey what is considered to be best practice. Kinsley conducted a literature review and determined that the NFPA standards providing instruction or recommendation on post incident analyses are largely concerned with issues involving firefighter safety, conditions and actions plans (Kinsley, 2010). Kinsley suggests that the NFPA be lobbied to initiate the creation of a new NFPA standard for conducting a post incident analysis.

William H. Quinlan (2011) conducted research on examining the AAR process for the Kaua'i Fire Department. The literature review revealed the same references to NFPA standards. His research also explained that the standards clearly support the implementation and use of the AAR or PIA process to analyze incidents in the interest of safety and health of responders. (Quinlan, 2011). The research supported the importance of standardization and consistency of sharing information and identifying potential improvements that could contribute to improved responder safety.

Components of Post Incident Analysis

Basic demographics regarding the incident are used to recall the date, location and incident numbers; however the PIA should serve as a comprehensive record (Viscuso and Terpak, 2011). Viscuso and Terpak (2011) advise that the PIA should document how the initial call was dispatched. They also recommend assessments of response times, safety concerns, the actions taken by fire personnel, company assignments, strategy and tactics, tools or equipment utilized, potential training needs of the organization, agency interoperability, command, and customer service. A good way to account for what occurred on the fire ground, and to prepare for a formal PIA, is to interview the firefighters independently (Bingham, 2005). The information gathered from these interviews should be utilized to give an overall picture of the events that unfolded on scene. Bingham (2005) also stressed the importance of including audio tapes to show the flow of the incident. This allows the participants to hear things that they may not have heard on scene due to the work being done. Allowing the incident commander and the individual companies to listen to the audio independently prior to the PIA helps to generate cooperation and interest (Bingham, 2005).

Brunacini (2009) conveys that the critique should be structured and contain information about the conditions that were encountered on scene. Descriptions of actions taken, how those actions affected the outcome, lessons learned and an action plan for any improvements needed are all important elements of the PIA (Brunacini, 2009). Information should be included in regards to safety and health issues at the incident. This provides opportunities to discover deficiencies or highlight problem areas (International Fire Service Training Association [IFSTA], 2004). The PIA should include components such as use of personal protective clothing, accountability system discipline, incident rehabilitation and any other hazardous

conditions (IFSTA, 2009). This information may be broken down during the PIA or included in a summary of lessons learned to be retained as documentation of the critique.

Dodson (2007) explains that it is important to include the adherence to accountability and identify any freelancing that may have occurred. In addition to rehabilitation effectiveness and personal protective equipment usage, a component of the PIA that is essential to all is the notation or mention of any injuries that were reported. It is also equally important to emphasize incidents in which no injuries were reported.

In 2008, Mission-Centered Solutions (MCS) created guidelines for the after action review and explained that the content may vary depending on the events. It is recommended to include any environmental impacts, equipment performance, procedure adherence, and lessons learned. The PIA should also inquire of any unanticipated barriers and communication issues. Additional components to include in the review are the roles and responsibilities of the personnel on scene, attitude impacts and any organizational issues that may have impacted the team (MCS, 2008).

Rodriguez (2009) compiled information from research on an applied research project and proposed using a cover sheet, response questionnaire and checklist to include components of a PIA. This includes information related the incident, conditions, weather, building specifics and apparatus that responded. Rodriguez also includes any information regarding injuries, fatalities and close calls. The questionnaire provides prompts for what could be improved and is followed by checklist that provides a record of specific tasks completed at the incident (Rodriguez, 2009).

Knitter (2009) includes a report for the first due officer to fill out. This form provides numerous opportunities and prompts for the officer to demonstrate what was observed on arrival and would help to demonstrate to other participants in the PIA how the chosen strategy was decided. Information is meant to be collected regarding exterior observations, building entry,

interior conditions, fire alarm system information, and provides room for the narrative (Knitter, 2009). A generalization of the components of a PIA is to provide an opportunity for the responders to identify what really happened and how the process may be improved on (Quinlan, 2011).

Implementation of a Post Incident Analysis Process

Procedures specific to developing and conducting a PIA should be created and available to fire personnel in a procedures manual (Texas A&M Engineering Extension Service [TEEX], 2014). Implementation of a PIA process should include participation from the membership of the organization with clearly defined goals. The organization should provide the materials for the PIA and explain how they are to be used. TEEX (2014) also emphasizes that there must be methods for record keeping, monitoring, evaluating and revision procedures for the program. Revisions are necessary over time as standards and requirements may change. Rodriguez (2009) found the need to modify an existing standard operating procedure to update the amount of detail and outline a process for implementing a post incident analysis. A thorough checklist should be provided to ensure important information is covered and able to be conveyed during the analysis (Rodriguez, 2009). Analyses or reviews should be done for routine incidents as well. In Rodriguez's research, it is pointed out that formal PIA's are effective for significant incidents, injuries or fatalities, but informal reviews may be done following every day incidents (Rodriguez, 2009). Personnel should be aware of how to do formal and informal reviews of the incident.

Knitter (2009) found through research that it is not only important to provide some guidance through policy, but to provide for a way to re-evaluate the effectiveness of the policy. Due to the fact that the process does not take place until an event or incident occurs, it is difficult

to pin down a timeline for a review. Knitter suggested the safety officer work with the training officer to evaluate the effectiveness of the policy once implemented. A review panel may also help to reduce any bias and allow for an objective view and possible trial run of the program before it is locked into a policy. Also, to successfully complete the implementation process, a method of sharing the information is suggested to be chosen and established by the department for future reference (Knitter, 2009). As the PIA process is implemented, leaders of the organization should allow secondary supervisors to participate as the lead occasionally because the more practice they have at it, the more effective the outcome (MCS, 2008).

Ockershausen (2008) states that it may be advisable for some fire departments to utilize other department's policies and simply modify them to fit their needs. In order to implement the program, the organizational leadership must foster an environment that encourages personnel to be open and honest without fear of being embarrassed or getting in trouble. Execution of the PIA program or policy should be a collaborative effort and allow for input from several members of the organization. A policy committee is encouraged in the research (Ockershausen, 2008).

Summary

The literature review done for this research supports that there are administrative and operational modifications that could be made to provide for a consistent and standardized post incident analysis process to increase opportunities to share lessons learned. The severity and frequency of incidents are not predictable and it is important to provide a method to learn from experience following the mitigation of these incidents. The literature was consistent in providing supportive recommendations and standards to use as a foundation for a post incident analysis process. Significant components were identified and guidance to assist in the implementation of a process was identified. The necessity of providing an open and honest environment in support

of learning as opposed to blaming was apparent. It was recommended that the process be standardized, familiar and part of the organizational practice.

PROCEDURES

The research was conducted as a result of a recognized lack of utilization of a consistent and standardized post incident analysis process at the AFD. A problem statement, purpose and research questions were developed to initiate the research. A literature review, questionnaires, document analysis, interviews and personal communication were used during the research. To address question one regarding the standards or recommendations for post incident analysis, a literature review and document analysis of discovered applicable standards was done and compared to the current practice at the AFD.

To address question number two on the components of a post incident analysis, an internal questionnaire (Appendix B) was used. The questionnaire also contributed to question number four on how a process may be implemented at the AFD. An internal questionnaire (Appendix B) was generated and distributed via e-mail (Appendix A) to the operational members of the AFD. The internal questionnaire (Appendix B) was created by means of an on-line survey constructing engine named surveymonkey.com (SurveyMonkey, 2014). This was done to gather the perspective of the organization and to serve as a form of situational analysis. The internal questionnaire was distributed to fifty three members (Appendix B) and was closed on July 25, 2014 at 12:00 pm with forty-five AFD members having completed it. The internal questionnaire (Appendix B) was made up of ten questions that asked about the frequency and consistency of post incident analysis. The respondents were also asked who the information should be shared with and given an opportunity to provide feedback.

An external questionnaire to Texas Fire Departments (Appendix E) was also generated by utilizing the on-line surveymonkey.com (SurveyMonkey, 2014). This questionnaire was done to address research question number three on how other fire departments in Texas use the PIA. In order to solicit participation, a request for survey assistance was sent out via an e-mail newsletter titled “The Friday Report” (Appendix D) through the Texas Fire Chief’s Association (TFCA). The TFCA is a dynamic organization with an active membership of nearly nine hundred fire department leaders and administrators that work to improve and demonstrate leadership and ethics throughout their organization. “The Friday Report” (Appendix D) is a bulletin that provides weekly updates on current events, training and resources are distributed via e-mail to its membership. In the July 11th, 2014 edition of “The Friday Report” (Appendix D), a request to help an Executive Fire Officer (EFO) candidate with an applied research project (ARP) was posted with a link to the questionnaire titled “How Texas Fire Departments Conduct Post-Incident Analyses” (Appendix E). This questionnaire was intended to help the researcher understand information regarding research question number three: the post incident analysis process being used by other fire departments in Texas. The external questionnaire (Appendix E) was distributed to fire departments in Texas and was closed on July 25th at 6:19 pm with thirty-four participants having completed it. Question number two (Appendix E) was asked to determine if the participant’s organization conducted post incident analyses or after action reviews. If they answered no, the respondent’s information was eliminated. The external questionnaire (Appendix E) consisted of ten questions about post incident analysis, frequency, consistency, components and any potential problems encountered. These questions were asked in an effort to analyze and better understand current practices at the AFD as compared with other

departments in the State. The audience was targeted to give a reflection of the current practices being done by fire departments in the State of Texas.

The fourth research question was to help determine how to implement a consistent and standardized PIA program at the AFD. To address this, interviews were conducted with organizational leaders at the AFD that have the most influence over operational performance and program management. A template was designed and utilized for each interview to provide consistency (Appendix G). Responses were documented in written format (Appendix G). Interviews with Will Hamilton, AFD Battalion Chief (personal communication, July 26, 2014), Jeff Patterson, AFD Battalion Chief (personal communication, July 27, 2014), Scott Wigley, AFD Captain and Acting Battalion Chief (personal communication, August 1, 2014) and John O'Neal, AFD Fire Chief (personal communication, July 29, 2014) were completed to acquire further understanding of the leadership's thoughts and concerns regarding the implementation of a successful standardized and consistent post incident analysis process at the AFD.

Limitations were associated with the research. The internal questionnaire that was distributed via e-mail to the department members of the AFD (Appendix B), did not reach all the members in during the two week time period it was available. Operations personnel work a shift schedule and have leave time available to use when approved. Two members of the organization were out due to medical reasons. One member of was off on administrative duties. During the timeframe allotted, one person resigned and did not complete the questionnaire. Additionally, two members were on leave. Finally, two AFD members did not take the survey because they were brand new to the organization and it is possible that did not have any input or did not feel comfortable participating. Also, not all new hires have as much access to e-mail during the day as they are assigned new hire tasks to complete.

The external questionnaire was distributed via e-mail through the Texas Fire Chief's Academy (Appendix E) and the exact number that actually received it is unable to be determined. It is possible that the questionnaire was closed by the time some of the potential respondents returned from any leave or summer vacation. The questionnaire was intended for all Fire Departments in Texas. It is possible that the Texas Fire Chief's Friday Report (Appendix D) did not reach all of the intended recipients. Inquiring of other Texas fire departments could potentially be a limitation as other fire department organizations across the county may have been able to contribute to a better understanding of how processes are implemented.

Interviews with Addison Fire Officers may also present limitations. If the officer being interviewed had limited experience in this area he may have not had much input. If the officer truly did not see the importance or significance in the topic, he may have withheld information or lacked the willingness to contribute constructively to the interview, causing possible limitation.

RESULTS

The action research method was utilized to help create a consistent and standardized post incident analysis program for the AFD. The literature review helped the researcher learn how others approached three of the research questions. The first research question was: a) what are the standards or recommendations for post incident analysis? It was learned that there are a number of national standards that include recommendations for the practice of performing a post incident analysis (Dodson, 2007). NFPA 1500 (2013b) provides direction and requires that PIAs be conducted anytime there is a severe injury or fatality at an incident. NFPA 1521 (2015) requires that the safety officer be an integral part of the PIA process and should have the role of identifying any need to implement changes in the safety and health program to improve operational safety. The military utilizes AARs on a regular basis (Feller, 2014). Whalen (2010)

identified the need for training on a regular basis to keep performance consistent and standardized in the military. NFPA 1021 (2014) provides standards for fire officers and requires that an officer candidate be able to perform a PIA effectively. Finally, one author recommended that the NFPA be lobbied in an effort to develop a standard specific to post incident analysis that would help improve consistency and standardization (Kinsley, 2010).

The document analysis revealed that the AFD should establish requirements and standard operating procedures for post incident analysis of incidents involving death or serious injury to a firefighter as stated in NFPA 1500 (NFPA, 2013b). Currently there are no standard operating procedures at the AFD specific to this requirement. NFPA 1500 (2013b) and NFPA 1521 (2015) state that the incident safety officer is to be involved in the post incident analysis. The incident commander at AFD incidents assigns automatic aid officers as safety officers on large incidents. They are not always involved or included in any after action or post incident analysis due to lack of availability or because they are from another jurisdiction. The other recommendations of the standard are to identify and take any action necessary to provide for the safety and health of responders as a result of information provided by post incident analysis (NFPA, 2013b)(NFPA, 2015). NFPA 1006 (2013) requires the safety officer from any technical rescue be responsible for the post incident analysis. The AFD responds to a limited amount of technical rescues but does not currently comply with this requirement. Finally, the document analysis highlighted that in the fire officer standard qualifications, that all fire department officers are required to have the knowledge, skills and abilities to conduct a post incident analysis (NFPA, 2014). The AFD requires officers to take courses which comply with NFPA 1021 but there is no routine training or standardization on conducting post incident analyses.

The second research question was: b) what are the components of a post incident analysis? It was learned that authors found the need to include times, safety messages, actions taken, strategies used, tactics employed, and the tools used. It was also emphasized to incorporate the audio from the incident into the learning (Bingham, 2005). MCS (2008) pointed out that it is equally important to include comments regarding policy and procedure adherence. Finally, identifying and sharing any training needs that resulted from the incident help to review the lessons learned and improve future performance or operational safety (Brunacini, 2009).

Research question numbers two and four were addressed through the use of a questionnaire. Question four was: d) how will the Addison Fire Department implement a post incident analysis process? The Internal Questionnaire on Post Incident Analysis at the AFD (Appendix B) was sent out to collect the input of the members of the organization to help address components of the PIA that were important, as well as ideas to consider for implementing a program. Of the forty-five responses, approximately fifty percent were from the firefighter rank. Over twenty five percent were officer level responses. Nearly seventeen percent were Drivers that are also acting company officers in the organization. Five percent of the respondents were probationary members with less than one year on the job. Of the forty-five responses, nearly ninety-eight percent of the organization has participated in a post incident analysis or after action review. Fifty percent of the organization believes they have responded to less than ten significant incidents in the past year. When asked how often a PIA or AAR is done after these events, approximately thirty-five percent responded always. Nearly sixty percent indicated sometimes, while the remaining seven percent said that reviews were done rarely or never. It was strongly emphasized by the respondents that the format of the review varies depending on the officer or shift conducting the PIA. Nearly eighty-five percent of the organization

responding to the questionnaire felt that any working fire or alert 3 (plane crash) should include a PIA. Sixty-five percent felt multiple alarm fires should require PIAs or that they should be conducted at the discretion of the incident commander. There was a choice for “other” in question seven (Appendix B). Twenty-two percent included input under this heading and those included: incidents involving firefighter or civilian injury or death, cardio-pulmonary resuscitation (CPR) or critical medical incidents, any low frequency, high risk incidents, hazardous materials (HAZMAT), and anything outside of the norm. One respondent stated that reviews or PIAs should be done after any incident where someone could learn something (Appendix C). When asked how soon after an incident should a review be held, approximately sixty percent of the organization said during the following shift. Over twenty percent said within the following week. Some other responses were depending on the incident but typically as soon as possible. Eighty percent of the respondents believe that the information should be shared with the entire organization. Only one respondent included that the information should be shared with other agencies if it would be of benefit. Finally, the last question included an opportunity for respondents to comment on what would inhibit or assist in a PIA or AAR. They also had an opportunity to provide any comments or suggestions. Common input suggested that there is a fear of being blamed, receiving a demeaning attitude or being criticized in public. There is a desire for a standardized format, learning opportunity and group participation. The ability to communicate openly and honestly without fear of being in trouble was conveyed as well.

Questions two, three and four were addressed through a questionnaire called How Texas Fire Departments Conduct Post-Incident Analysis (Appendix E). Question three was: c) how are post incident analyses accomplished at other Texas fire departments? Of the thirty-four respondents, one did not conduct any type of PIA or AAR and did not continue the

questionnaire. Fifty-five percent of the remaining respondents indicated that they did not have a policy or use standardized template. Over ninety percent believe that they should conduct a PIA or AAR following a significant incident. One of these respondents commented that it should be done anytime there is something to learn. Over fifty percent indicated that the review should be done within a week after the event if possible. Nearly seventy-three percent of the Texas fire departments responding to the questionnaire believed that the incident commander was the best choice for facilitating the PIA. Thirty percent thought that a chief officer would be the best choice. One person commented that the training chief should be responsible for facilitating. When asked about the components that make up a PIA, nearly ninety percent responded that lessons learned need to be included. Nearly eighty percent also indicated that the responding units need to be allowed input and account for actions taken. The majority of the respondents included audio, photos, maps, dry erase boards, computers and policy adherence in their responses. Other responses included individual comments on interviewing the firefighters and inclusion of video or helmet camera footage. Most comments suggested that all the options be used at the discretion of the facilitator or incident commander. The majority of the participants responded that the entire organization benefits from the process. Over eighty percent agreed. Texas fire departments were asked what problems they encountered with conducting a PIA and the responses had common themes. Attendance was one problem that was consistent. Personnel that responded to the incident may not all be on duty when the PIA is being done. Timeliness was another issue that came up. It was noted that it takes work to do it right and it is important to revisit the incident as soon as possible. Several responses indicated a problem with perceived finger pointing, egos and personnel becoming defensive. It is also important to recognize there were comments regarding the lack of consistency and the need for standardization with forms for

documenting the PIA. Finally, the external questionnaire (Appendix E) asked for any additional comments or advice to implement a PIA program. Seventeen of the respondents provided input. Consistency was mentioned as being important as well as having a template for standardization. Three of the respondents re-emphasized that this process is about learning and not finger pointing. It is important to share information with others and allow the company officer to have some discretion as to when to utilize the process. In summary, the overall responses were that this is a valuable process and worth investing the time required to implement it.

The fourth research question was further addressed using interviews and personal communication. The fourth question was: d) how will the Addison Fire Department implement a post incident analysis process? An interview was requested and granted with AFD Battalion Chief, Will Hamilton (personal communication, July 26, 2014) and the answers documented (Appendix G). Chief Hamilton preferred that the AFD call the review an After Action Review rather than a Post Incident Analysis. He went on to explain that a successful process would be standardized and enforced with a standard operating procedure. He said that a policy would be available to review by all personnel and clear up any ambiguity. Chief Hamilton also supported the inclusion of the policy and process into the promotional process. He felt that the best choice to facilitate the AAR would be the incident commander due to the situational awareness about the incident. He indicated that the information would best be shared with the organization in an e-mail format. His only concern with initiating the process was that it may be used to embarrass someone or highlight their mistakes. He also mentioned that some people tend to withhold information and may hesitate to share it. He felt that strong leadership and trust would help to make the process successful.

An interview was requested and granted with AFD Battalion Chief, Jeff Patterson (personal communication, July 27, 2014) and the answers documented (Appendix G). Chief Patterson did not have a preference in what the process is named at the AFD as long as the terms were consistent across the organization. He felt like a successful program would result in everyone having a positive learning experience and not feeling as if they had done everything wrong. He believes that officers should be trained on conducting a PIA once a year or at least prior to doing one. Chief Patterson felt that the best facilitator would be someone removed from the incident that could remain objective. He said most of the time the incident commander would suffice, but that sometimes there are command errors that need to be highlighted and may be overlooked or under emphasized by the incident commander. Chief Patterson felt that the information would best be shared within the agency and with responding agencies utilizing a standardized template via e-mail correspondence. Although the review may be held in one room, sharing the information with other agencies may spur conversation and organizational improvement. His final comments were that we do not have a standardized process for incident reviews and that is important to incorporate some documentation to record the information. Chief Patterson desires a process that is truthful and focused on what occurred and not using it as an effort to discredit or embarrass any responders.

An interview was requested and granted with AFD Captain and Acting Battalion Chief, Scott Wigley (personal communication, August 1, 2014) and the answers documented (Appendix G). Captain Wigley prefers to call the process an After Action Report. He said After Action Review is acceptable but felt that the purpose was to create a report for all to use as reference. Captain Wigley felt that a successful process would be used in consistent manner, following a standardized outline or template that is guided by a standard operating guideline. It is his

opinion that the incident commander would be the best choice as a facilitator, but should also receive help from the company officers. Captain Wigley re-emphasized the use of a standardized report by recommending that it be shared via e-mail. He would like the standard operating guideline to lay out a consistent pattern, but also identify or recommend when the process should be utilized. He also mentioned that it would be nice to have a way to refer to example reports to help in the development of more. Captain Wigley showed concern that the process must not be punitive in nature or it will limit participation. He believes that if there is a policy violation, it should be addressed ahead of time between the officer in charge and those involved. Identifying the policy violation is acceptable during the process but not reprimanding anyone in that setting.

An interview was requested and granted with AFD Fire Chief, John O'Neal (personal communication, July 28, 2014) and the answers documented (Appendix G). Chief O'Neal has no preference as to what the process is named or titled. He believes that a successful PIA includes honesty and truly evaluating the performance. He also stated that if everyone walks away with an increased awareness and lessons learned, it was beneficial. Chief O'Neal would like the process incorporated into a standard operating guideline so that it is easily accessible to all and readily available. He indicated that the incident commander could effectively facilitate in most cases but that the first arriving officer could contribute in the same capacity. To share the information, Chief O'Neal suggested using a formal written document or template and that it be communicated out to others via e-mail. His only additional comment is that the AFD needs this important process. Consistency has been lacking in post incident discussions and the organization will benefit from a more standardized method of sharing information including lessons learned.

DISCUSSION

A lack of consistency and standardization in post incident analysis at the AFD generated the desire to create a process that would allow for opportunities to share lessons learned and improve the organization operationally. The literature review, questionnaires and interviews presented input to consider in the development of a consistent and standardized process. Dodson (2007) suggests that there are many different names used in the fire service to describe a post incident analysis. The term critique has a negative connotation and may be perceived adversely by personnel (Poulin, 2006). Whalen (2010) states that the United States Army calls this process an After Action Review. Feller (2014) agrees with this term as it is frequently used in the business setting. However, NFPA standards refer to utilization of the Post Incident Analysis process (NFPA, 2013b)(NFPA, 2015). In interviews with AFD leaders, half of them preferred to use the term After Action Review or Report and the other half did not have any preference. The implication for the AFD is to determine a name that will be easily identifiable and keep all guidelines, forms and templates consistent with terminology. In summary, there are references to two commonly used headings, Post Incident Action review and After Action Review so either is considered acceptable.

Standardization by use of a template or other organized format is recommended by some of the authors. The standards that mention a PIA do not specify a certain format, but the information to be included is noted (Dodson, 2007)(NFPA, 2015). NFPA 1500 (2013b) indicates the need for a policy especially when debriefing for significant injuries or fatalities. Whalen (2010) explains that the U.S. Army has utilized templates to have a consistent reporting methodology for over forty years. Feller (2014) agrees and recommends the use of templates to support structure in the process. A template for the incident commander should be available to

record information after the incident, while still fresh on the mind (Viscuso and Terpak, 2011). This may help when creating the PIA. Whalen (2010) goes on to say that officers are trained in the use of the templates and the process in classroom and by receiving advisory circulars. The use of a consistent format and following the best practice guidelines provided by the national standards helps to keep the focus largely on the safety of the firefighters and their actions (Kinsley,2010)(Quinlan, 2011). TEEX (2014) explains that procedures should be put into place and available for fire personnel to review regarding PIAs. Knitter (2009) agrees but also shares the importance of providing a way to continually evaluate the effectiveness of the policy. He goes on to suggest that the safety officer and training work together to evaluate the effectiveness of the tool. TEEX (2014) supports this input and says that standards and requirements may change so re-evaluation of the process is necessary. The internal questionnaire analysis (Appendix C) indicated a desire for a standardized format or template for this process at the AFD. The external questionnaire analysis (Appendix F) showed that nearly fifty percent of the respondents utilized a policy or template to provide consistency. The interviews with AFD leaders all supported and agreed on the use of a policy or guideline with the inclusion of a standardized format. The implication at the AFD is that the need for some consistent instruction, training and implementation of a standardized process has been identified. This is needed and desired by the organization and is supported by national standards and other authors. In summary, a standard operating guideline with a clear format will be provided to the organization and a method to train, monitor and improve the process will be put in place.

The specific components or elements of the PIA may vary by the organization or be specific to an incident, however there are several that are recommended throughout. Viscuso and Terpak (2011) recommend that demographic information, type of call, relative response times,

actions taken, tools used and potential training needs be identified. Brunacini (2009) agreed and also emphasized the importance of identifying and sharing the conditions the first arriving companies encountered upon arrival. Bingham (2005) believed the best way to do this was to interview the firefighters to get an overall picture of the events encountered. He also goes on to stress the importance of including the audio from the incident. Knitter (2009) recommends the use of standardized form or checklist for the first arriving officer to fill out prior to the PIA. Much like Brunacini, Knitter recommends gathering intelligence regarding what was encountered upon arrival including entry problems, interior conditions and any fire alarm system information that may be shared. The external questionnaire analysis (Appendix F) indicated that lessons learned are the priority to include. The use of audio, photos, maps, visual aids and responder's actions were all recommended. Additionally, video of the incident was mentioned as being helpful. The implication for the AFD is to determine the information desired by examining existing operating guidelines, procedures or templates and provide a template that is easily retrievable and followed by the officers creating the PIA. In summary, components may vary by organization but there are helpful tools and prompts to include in a PIA in addition to the basic demographic and response data.

Structure is provided for a PIA process by a policy or guideline. It is also recommended to provide an idea of when to perform a PIA and who is responsible for facilitating it. Whalen (2010) explains that the U.S. Army recommends AARs following each mission but that they are mandatory following significant incidents. NFPA 1500 (2013b) mandates the use of a PIA anytime there is a significant injury and/or fatality that occurred. Rodriguez (2009) agrees and his research also revealed that PIAs are necessary for incidents involving hazardous materials. NFPA 1006 (2013) requires that incident involving technical rescue be reviewed at the

conclusion of the incident. NFPA 1521 (2015) advises that the incident safety officer be responsible for creating the PIA but that it is important to include all the players involved in the incident. NFPA 1021(2014) requires that any fire officer have the knowledge, skills and ability to conduct a PIA. The internal questionnaire analysis (Appendix C) showed that over sixty percent of the respondents from the AFD believed that the PIA should be conducted during the following shift. The next preference was to complete it within a week. The external questionnaire analysis (Appendix F) revealed that other Texas fire departments prefer to conduct PIAs after significant or unusual incidents, or at the discretion of any chief officer. The interview with AFD leaders (Appendix G) varied in response as to who should facilitate the PIA. Chief Hamilton and Captain Wigley both believe that the incident commander is the best choice due to the situational awareness of the entire incident. Chief Patterson suggested that the incident commander could facilitate most of the time, but sometimes mistakes have been made by the incident commander and may be glossed over. Chief O'Neal felt that the first arriving officer could either facilitate or help to facilitate as needed. This implies that the AFD agree on a format and determine who will be responsible for leading the formal PIA. Challenges at the AFD include that the safety officer is often from a surrounding jurisdiction and not always readily available to assist the incident commander. In summary, successful PIAs have a strong leader or facilitator that can remain objective and help to convey the lessons learned to the organization by being prepared and professional.

RECOMMENDATIONS

The following recommendations have been created and are imbedded in this research. These recommendations are to be considered by the AFD administrators and company officers in

an effort to implement a standard and consistent method to share lessons learned from incidents at the AFD.

Recommendation one: Present the proposed Standard Operating Guideline draft (Appendix H) to the Fire Chief for review. Pending his approval, share with AFD officers and consider any further input they may provide. Formalize the guideline based on this input. This may include changing the name to an After Action Review if that is preferred.

Recommendation two: Establish a start date for implementing the guideline and incorporate training on the process to all company officers ahead of time. Include this training into future promotional process materials and review with any acting officers. Keep the information available and easily accessible to all members of the organization.

Recommendation three: Monitor the effectiveness of the process by having the Training Division look for repeat lessons learned. If there are patterns or problem areas that are repeated, utilize this information and incorporate into the monthly training agenda. Incorporate training into the planning process.

Recommendation four: Re-evaluate the newly proposed standard operating guideline annually at a minimum. The Training Chief should review the needs of the organization and changes in any standards to be sure the process is being utilized and formatted correctly. Revise the document as needed and distribute any revisions immediately.

Recommendation five: Utilize the Lessons Learned Template (Appendix I) to communicate areas of concern that are identified and share with the entire AFD organization, as well as other fire departments that responded as automatic aid or mutual aid. This may be done by the Training Chief forwarding the completed presentation template to the other agency's Training Officers for distribution.

Future readers of this paper should consider the use of a guideline or template to standardize and provide consistency for the organization to share lessons learned and work to improve the safety and health of responders as well as efficiency of operations on scene.

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