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After Action Reviews: A Valuable Learning Opportunity

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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 the appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

The research problem was that the Johnson City Fire Department (JCFD) did not consistently and systematically conduct reviews and analysis of operational actions which was attributed to the lack of having an established policy. The research purpose was to create a mechanism that would provide a detailed and logical guideline for performing after action reviews (AAR).

Action research was used to answer the following research questions: (a) What techniques exist for effectively conducting AAR's? (b) What are the challenges associated with the process of conducting AAR's? (c) What mechanisms do nationally accredited fire service organizations utilize to review and analyze operational actions? (d) What are key principles and characteristics associated with effective AAR's? and (e) What outcomes can be expected by the JCFD from conducting consistent and systematic AAR's?

The research was carried out through interviews with key representatives of outside agencies who were knowledgeable about techniques employed to evaluate their own organizations' operational actions, the investigation of mechanisms and guidelines used by nationally accredited fire service organizations, and an examination of literature related to after action reviews.

The results showed the importance of, and the need for, establishing a guideline for determining which AAR technique is appropriate for the incident, having a structured and objective review process, allowing for open and candid discussion, obtaining relevant data, documenting the results, communicating and disseminating lessons learned and pertinent information to all personnel as key principles and characteristics of an effective AAR process.

Recommendations were made to develop a JCFD training program paralleling the standardized components of the SOG, create an electronic means of communicating the AAR

report to all personnel, and developing a post assessment instrument to measure the effectiveness of the AAR process.

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Introduction

Fire and emergency scenes are complex events where casual connections between individual performance, equipment operation, and operational outcomes are obscured by the uncertainty, confusion, and stress of the incident (Leader to Leader Institute [LLI], 2004). The Johnson City Fire Department (JCFD) has long acknowledged that command and control of emergency incidents are very demanding tasks which involve individuals and teams working together to save lives and property. Among the complexities of an emergency incident is the constant confrontation with the unexpected where there is little time for appropriate review and analysis. Many times an emergency responder is challenged with a problem or issue that necessitates immediate resolution. The questions of how well the incident action plan worked and what can be done to improve operational actions in the future may not be evident to JCFD on-scene personnel. The fire service has a duty to its members and the community it serves to evaluate problematic incidents, as well as those that go extremely well, and communicate the findings, including lessons learned, to all relevant emergency personnel (Federal Emergency Management Agency, United States Fire Administration [FEMA, USFA], 2008).

The research problem is that the JCFD does not consistently and systematically conduct reviews and analysis of operational actions attributed to the lack of having an established policy. Therefore, the JCFD is not effectively identifying and communicating areas of sustainment, improvement and lessons learned, potentially impacting operations at future emergency incidents. The research purpose is to create a mechanism which will provide a detailed and logical guideline for performing after action reviews (AAR). This mechanism will set a

foundation for maximizing JCFD operational effectiveness and enhancing firefighter safety and health and customer service.

Action research will be used to answer the following research questions through interviews with key representatives of outside agencies who are knowledgeable about techniques employed to evaluate their own organizations' operational actions, the investigation of mechanisms and guidelines used by nationally accredited fire service organizations, and an examination of literature related to after action reviews. The research questions are:

1. What techniques exist for effectively conducting AAR's?
2. What are the challenges associated with the process of conducting AAR's?
3. What mechanisms do nationally accredited fire service organizations utilize to review and analyze operational actions?
4. What are key principles and characteristics associated with effective AAR's?
5. What outcomes can be expected by the JCFD from conducting consistent and systematic AAR's?

Background and Significance

The City of Johnson City is located in Northeast Tennessee covering approximately 40 square miles and has a population of more than 62,000. The JCFD's nine fire stations and support facilities are staffed by 123 career personnel who provide fire suppression, emergency medical services, inspections, fire investigations, code enforcement, public education, hazardous materials response, special rescue operations, training and related functions with an annual budget of $8.1 million.

Johnson City, TN is home to several public assemblies, financial centers, a mid-major university with over 13,000 students and a medical facility that is a comprehensive, acute-care

teaching hospital and a major medical referral center with level one trauma care. The second largest Veteran Administration (VA) Center in the United States is located at Mountain Home, Tennessee which is inside the corporate boundaries of the city of Johnson City. The JCFD has responsibility for fire suppression and emergency medical response on the VA Center property.

The JCFD has evolved in many ways in the last 20 years. The Department's mission goes beyond fire suppression and prevention. This is especially true since emergency medical response was added in 1994 and hazardous materials mitigation was added in 2003. While Department responsibilities continue to expand, the future effectiveness of JCFD operations continues to hinge on the education and development of all personnel.

The mission statement of the JCFD is to provide diversified emergency services through trust, dedication, teamwork, professionalism and pride…pursuing the highest standards of safety for all those who may face the loss of life, property or livelihood (Johnson City Fire Department [JCFD], 2005). It is the responsibility of the JCFD to respond to the dynamic environment in which it finds itself. For the JCFD to successfully accomplish its mission it is imperative that incident operations are appropriately managed.

The JCFD has been in transition during the period of 2004-2008. The combination of the retirement of several senior firefighters, the opening of a new fire station and the budgeting for increased personnel to move towards meeting minimum staffing goals has impacted the average experience level of certified personnel. The department has hired 52 new employees during this time. Currently, 43% of certified personnel have less than five years of experience. The top three personnel in seniority status retired in early 2008. The resulting situation is that as senior personnel leave, their experience goes with them (FEMA, USFA, 2008). These transformations have resulted in promotions at all ranks. The JCFD needs a way to overcome the steep learning

curve that exists with the inexperience of the new and recently promoted personnel. The JCFD is not currently collecting and recording problems encountered and successful actions taken on the emergency scene. A mechanism needs to be created for passing on understanding and knowledge from past operations to ensure mistakes are not repeated and strengths are sustained (DeGrosky, 2005b). Creating a repository of information and lessons learned can assist in improving operational plans and procedures (FEMA, USFA).

From 2000-2007, the JCFD has averaged 104 structure fires per year. With 120 certified personnel distributed among three shifts and nine fire stations, the prospects for individual firefighters and officers to develop and sharpen their skills and abilities through experience are few and far between. The fire stations where personnel are assigned also have a bearing on the likelihood of responding to a structure fire. There is a higher occurrence of fires in the central and older parts of Johnson City. Outlying, less populated and recently annexed areas, where new construction has taken place, have substantially less structure fire and emergency responses. It is critical for the JCFD to take full advantage of the limited opportunities to learn lessons from actual fireground and emergency incidents. Firefighter safety and survivability are paramount. Implementing a standardized review and analysis process can help overcome this lack of opportunity by providing a means for all personnel to learn from the experiences of others and prompt enduring improvement in fire ground operations and other emergencies.

The research is important to the author for several reasons. Having been assigned to the position of Assistant Chief of Operations in mid-2008, the author knows the importance of providing efficient, effective and safe emergency operations. Gaining a better awareness and understanding of reviewing operational actions will allow the author to productively facilitate this process. The knowledge acquired for utilizing operational reviews as an incident commander

will allow clarification of fireground responsibilities, augment communications and prevent duplication of effort. The research will assist the author with integrating an operational review mechanism into an on-going practice for the JCFD.

The author serves on the JCFD Insurance Services Office/Accreditation Committee. This committee has been tasked with researching the benefits of conducting a self assessment program to become a nationally accredited fire service organization through the Commission on Fire Accreditation International (CFAI). One of the benchmarks identified by CFAI, as a generally accepted fire service activity consistent with good practices, is having a policy or procedure for conducting analysis of emergency operations (Commission on Fire Accreditation International, [CFAI], 2006).

For the last five years the author has served as a commissioner on the Tennessee Commission on Firefighting Personnel Standards and Education (TCFF). The mission of the TCFF is to raise the standards of firefighting personnel who participate in its certification and training programs by enabling Tennessee firefighters to be better prepared through training courses that facilitate the skills and knowledge necessary to save lives and property, and by vigorously promoting firefighting safety, efficiency, decorum and ethical considerations throughout the certification process (Tennessee Code Annotated [TCA], 2005). The author serves on the subcommittee for fire officer certification and has the responsibility for reviewing and grading Fire Officer I Practical (FOIP) examinations. One of the scenarios on which candidates for state certification are assessed is their ability to successfully complete an AAR of a fire ground operation. The passing rate for the FOIP for fiscal year 2007-2008 is 48% (Tennessee Commission on Firefighting Personnel Standards and Education [TCFF], 2008). The research will assist the author in developing educational data for how to better conduct AAR’s.

This knowledge will be passed on to the Tennessee Fire Service and Codes Enforcement Academy to augment their lesson plans with the goal of improving the passing rate for future FOIP's.

The leadership of the JCFD is a strong supporter of training and education. The JCFD is headquarters for, and administrator of, the Northeast Tennessee Regional Fire Training Association's (NTRFTA) Basic Fire Fighting School. The philosophy of the NTRFTA is to share knowledge and best practices with its nine member agencies. The JCFD hosts many Tennessee Fire Service and Codes Enforcement Academy (TFACA) classes, National Fire Academy (NFA) handoff courses and has a SOG requiring all fire officers to annually apply for NFA resident courses. The JCFD has a strong annual in-service training program that focuses on firefighter safety through skill development. The Training Division is an advocate of the 16 Firefighter Life Safety Initiatives. Despite these endeavors, the JCFD does not consistently and systematically conduct reviews and analysis of operational actions. The JCFD does not have an established mechanism that requires a review to be performed following an emergency incident. Although formal training does have a role in personnel development, most important learning occurs outside the classroom, in real life (LLI, 2004). In not having a formal review and analysis process, the JCFD is missing out on a fundamental way to scrutinize and recreate the events and actions of an incident and learn from tactics that were successful, identify areas for improvement and ascertain lessons learned. By not reviewing and analyzing incident operations, trends concerning significant safety issues, command and control, equipment performance and communications may not be revealed. Unidentified safety problems have the potential consequence of injury and death. The JCFD has no policy or guideline for facilitating an after action review process. Experts agree that skilled facilitation is essential for an effective review

and analysis practice (DeGrosky, 2005b; Garvin, 2000). This research is, therefore, important to the JCFD because it will identify a mechanism for conducting a consistent and reliable after action review process, maximizing the effectiveness of future incident scene operations and enhancing firefighter safety and health.

The goal of the NFA's Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM) course is to prime executive fire officers (EFO) with abilities to effectively analyze and evaluate situations relative to operational readiness. The Incident Documentation and Planning Cycle Unit of the EAFSOEM course emphasizes the importance of conducting operational reviews "in order to improve future performance" (Federal Emergency Management Agency, United States Fire Administration, National Fire Academy [FEMA, USFA, NFA], 2005, p. SM 8-3). The EAFSOEM course provided a clear example of the importance of obtaining quality, accessible and useable information for effective decision making before, during and after an emergency operation. AAR's were conducted after each of the large-scale multiagency emergency incident simulations highlighting the value of consistently and systematically reviewing operational and command actions. By not routinely conducting reviews and analysis of operational actions, the JCFD lacks a viable way to reveal the strengths and weaknesses of the organization's response to an emergency. The EAFSOM course illustrated that reviewing and analyzing operational and command actions can serve as a beneficial resource to learn from past actions and prepare for future operations. Reviewing and analyzing actions are the keystones for the process of learning from successes and failures (United States Agency for International Development [USAID], 2006). The development and implementation of a mechanism for reviewing and analyzing operational actions needs to happen to secure a way for the JCFD to determine how the organization performed, what exploits should

be sustained and what improvements can be made, resulting in a course of action where this can take place on a consistent and department-wide basis.

Capturing what has been learned so that others can reprocess it in the future may prove important for a dynamic organization. As described by Wright (2004), learning from experience, learning from other organizations' mistakes can help fire and rescue services prevent catastrophic events and disasters by sharing information and using it in a productive fashion. Personnel may be unaware of the potential advantages of conducting AAR's so finding a constructive way to acquire and communicate lessons learned is of the utmost importance to an organization. A particular challenge for the JCFD is keeping proficient through effective planning, training and operational practices. The AAR can be used as a means advancing administrative and operational programs. By comparing the expected outcome to the actual consequences the fire department can make personnel, as well as organizational adjustments, and by providing an assessment of what worked, and what did not, improvements can be made (FEMA, USFA, 2008).

The purpose of this research paper to create a mechanism for providing a detailed and logical guideline for conducting AAR's relates to all five of the United States Fire Administration Operational Objectives. First, it promotes a comprehensive, multi-hazard risk-reduction plan led by a fire service organization within the community. Establishing a policy for conducting AAR's for all types of emergency incidents will enable JCFD personnel to make better incident scene decisions, thereby increasing citizen and firefighter safety. Incorporating lessons learned from AAR's into training classes and future planning is fundamental to reducing risk for the community. Second, reducing the loss of life from fire for all citizens and firefighters can be carried out through the enhanced strategy and tactics produced through consistent

application of a sound review practice. The AAR process should be considered an important tool for improving firefighter safety and health, as well as a means for ensuring that the public is receiving quality services (FEMA, USFA, 2008). Lastly, providing a dependable and consistent AAR process will allow the JCFD to respond appropriately in a timely manner to emerging issues. As the fire service evolves, so must the JCFD in order to address new techniques, technologies, and processes. An AAR process may motivate change in policies and procedures that may be outdated or ineffectual in meeting the current needs of the response area (International Fire Service Training Association [IFSTA], 2007). The reality is that strategies and tactics used today in the fire service have evolved over time due to advances in fire science and technology, but primarily due to lessons learned from both good and bad experiences (Edwards, 2003). It is vital for the JCFD to show that by seeking continuous improvement taxpayer funds are being used wisely.

The results of this research will provide the JCFD with a foundation for strengthening the emergency response activities of the organization. The information gathered will provide for an effective AAR process, channeling information for training programs and guiding future policy development for JCFD personnel. This investigation was achieved using action research, which included interviews of key representatives of outside agencies who are knowledgeable about techniques employed to evaluate their own organizations' operational actions, an investigation of practices and guidelines used by nationally accredited fire service organizations, and an examination of literature related to After Action Reviews.

Literature Review

An examination of relevant literature acknowledged the importance of performing AAR's as a foundation for strengthening the operations and administration of an organization. There are

many learning opportunities which arise directly or indirectly from a major event, activity, project or emergency incident. Each occasion is different and lessons learned can be garnered from every experience. To derive value and organizational learning from incidents and events requires detailed feedback to the fire companies on their individual and collective performance and their relationship to emergency scene outcomes (LLI, 2004). Distinguishing and evaluating the critical elements of an event, activity, proceeding or incident in order to identify and correct errors, ascertain procedures needing modification, and validating and promoting positive actions can prove invaluable to an organization such as the JCFD.

An AAR is a professional discussion of an event that focuses on performance standards and enables development of professionals and colleagues with similar interests to discover for themselves what happened, why it happened, and how to sustain strengths and improve weaknesses (USAID, 2006). LLI (2004) states that an AAR is a problem solving process with the purpose of discovering strengths and weaknesses, proposing solutions and adopting a course of action to correct the problems. Providing opportunities for a team to reflect on a project, incident, activity, event or task so they improve performance the next time is essential to success. An AAR is a simple way for individuals and teams to learn immediately, from both success and failures, regardless of the length of the task in question (Collison & Parcell, 2004). DeGrosky (2005b) explains that many organizations have adopted the AAR as procedure, in many cases adapting it to their own needs. The AAR process can be seen at work in diverse environments including military, government, medical, industrial, retail, service, and not-for-profit organizations. Fundamental to success during an emergency response is having accurate information allowing for safe and proper decision making. The AAR has gained broad

acceptance among organizations operating in high-risk environments; those in which common human error can produce unacceptable outcomes (LLI, 2004).

Best evidence shows that there are several techniques that can be employed for effectively accomplishing an AAR. The size and complexity of the event or incident is usually the determining factor when choosing what type of AAR to perform. Smith (2006) advises AAR's can range from a discussion between company members after a minor fire in a dwelling to a full-blown review that includes all fire officers who respond to a large-scale incident. The National Fire Protection Association ([NFPA], 2006) explains that the format for the AAR depends on the nature and magnitude of the incident. Simply put, AAR's involve the exchange of ideas and observations, and focus on improving proficiency. How leaders conduct a particular AAR determines whether it is formal or informal (LLI, 2004).

An informal AAR is a quick and effective way of capturing knowledge before the team disbands, securing the lessons learned for the benefit of future operations (Collison & Parcell, 2004; IFSTA, 2007). Informal AAR's can be used as on-the-scene training tools while appraising firefighter and fire company performance. Typically, the informal AAR covers a review of how well specific tactics worked and what changes might induce better results (FEMA, USFA, 2008). An informal AAR takes the form of a discussion among team members involved directed by the team leader. The immediate nature of the informal AAR can allow for relevant exchange of information. Ideally, the informal assessment is done while emergency crews and apparatus are still on the scene allowing optimal conditions for retracing the actions of crews and analyzing any tactical or operational problems they may have encountered during the incident (FEMA, USFA).

Once an emergency incident has been brought under control and the scene is stabilized and made safe, the informal AAR can take place. Providing direct feedback while operations are still fresh in the minds of personnel is a significant strength of informal AAR's (Collison & Parcell, 2004; Garvin, 2000; LLI, 2004; USAID, 2006). Capturing information and giving instant feedback can maximize the training value of an AAR. Similarly, Gayk (2007) describes the informal AAR as the most widely used and probably most effective type of review in the fire service because it takes place immediately after the incident, when everything is clear in the minds of the firefighters. Carter (2001) even suggests that informal AAR's occur while attack hoselines are in still in place, before any breakdown or cleanup is initiated.

A common misconception regarding AAR's is that they should only be carried out at the end of a formal project or discrete piece of work (Collison & Parcell, 2004). Robinson and De Brún (2005) offer an alternative to the learning after doing nature of most AAR's. They suggest that informal AAR's can be conducted following a specific event during a wider project or activity that results in learning while doing. Collison and Parcell (2004) affirm that AAR's are designed to aid team and individual learning during the work process and can be conducted after any identifiable event. Events have a beginning and an end, an identifiable purpose and some metrics on which performance can be measured (Collison & Parcell, 2004).

Informal AAR's provide an opportunity for reviewing individual and team performance. During the informal AAR team members discuss problems encountered and solutions for improving their decisions and actions. USAID (2006) and Wade (2003) describe how team or project leaders may use informal AAR's as on-the-spot coaching tools by: (a) Evaluating performance against a desired standard or established performance objective, (b) identifying

strengths and weaknesses, (c) identifying lessons learned, (d) deciding how to improve future performance, and (e) disseminating learning to others who may be embarking on similar actions.

Smith (2006) reported that in addition to the incident scene, informal AAR's can also take place at the kitchen table of the firehouse. However, Dickinson (2006) explains that kitchen table critiques have certain drawbacks in that lessons learned generally don't go beyond the personnel in the room. Gayk (2007) concurs discerning that company officers address mistakes and identify concerns quicker in the privacy of their own stations, however, the problem is that others don't get an opportunity to learn from another's actions, good or bad. It is important for recommendations or discussion points that have considerable merit reach all concerned. The Alabama Fire College (2005) advises that informal AAR's do not need documentation. Kidd (2001) however cites that it is crucial that everything is written down for others who weren't on the scene because reviewing history is essential to improvement. When no documentation is completed the key points from a discussion may not be communicated to outside personnel. Research by FEMA and USFA (2008) on informal AAR's recommends that if a unique situation is encountered that might affect emergency operations in either a positive or negative way; information should be documented and forwarded to the next level in the chain of command for further consideration.

An informal AAR can be used by chief fire officers to meet one-on-one with newly appointed firefighters and other officers to discuss their performance (FEMA, 2008). By focusing on goals and objectives a learning opportunity can be provided to the individual impacting their professional development. AAR's are a useful tool for developing employees by providing constructive, directly actionable feedback in a non-threatening way because they are not linked to employee assessment (Robertson & De Brún, 2005).

The format for an informal AAR can be quick and uncomplicated. Robertson and De Brún (2005) and Collison and Parcell (2004) suggest that during an AAR the participants should answer four simple questions:

1. What was supposed to happen?
2. What actually occurred?
3. What went well, and why?
4. What did we learn?

Having a standard format and questions can provide assistance with guiding the discussion during an informal AAR (USAID, 2006).

A formal AAR is a detailed review and analysis of large-scale and other tactically challenging operations (FEMA, USFA, 2008). Significant events, close calls, and something out of the ordinary can all stimulate a formal AAR. In an organization such as the JCFD, the ability to break down and recreate the occurrences and actions of a major incident is critical for determining if the department had an appropriate incident action plan. During a formal AAR every aspect of the incident is carefully reviewed and analyzed to determine what went well, what could be improved, and why (FEMA, USFA).

Time issues may need to be considered when gathering incident information for a formal AAR. Formal AAR's require more resources and involve more detailed planning, coordination, logistical support, supplies, and time for facilitation and report preparation (USAID, 2006). A facilitator guides the review discussion, and notes are taken. Smith (2006) tells us that selecting a facilitator can ensure that the AAR proceeds without being bogged down with prolonged discussion. The formal AAR should follow an agenda. A planned program can ensure consistency and avert haphazard, arbitrary discussions. An agenda can keep the discussion

focused ensuring important issues are addressed (FEMA, USFA, 2008). Time limits, however, should not be imposed on meaningful discussion (Smith).

The author contacted an associate for an interview to discuss the subject of AAR techniques. Dr. Larry D. Calhoun is the Founding Dean of the East Tennessee State University (ETSU) Bill Gatton College of Pharmacy. Dr. Calhoun indicates that as part of the pharmacy school strategic planning, evaluations of operational actions and programs are performed (personal communication, November 21, 2008). According to Dr. Calhoun, both formative and summative assessments are conducted for educational programs and professional development activities. Both types of assessment are complementary, and one type of the summative assessment involves a formative assessment (IFSTA, 2004).

A formative assessment is the ongoing, repeated checking during course or program development and implementation. Providing feedback such as this can help guide progress. Nan (2003) describes a formative assessment as an evaluation of efforts prior to their completion for the purpose of improving the efforts. Formative assessments strengthen the program being evaluated by doing a needs analysis and process evaluation. IFSTA (2004) points out that if the intent of the assessment is to improve a program, isolate any evident weaknesses, or understand the program's strengths and build on them, then the assessment is formative. Dr. Calhoun (personal communication, November 21, 2008) notes that formative assessment is incorporated into the classroom and provides information needed to modify teaching and learning as they are happening allowing for timely adjustments to be made. Formative assessments help by examining the delivery of a program and the quality of its implementation. Formative assessment is primarily prospective and forward looking (IFSTA, 2004).

Summative assessments are completed at the conclusion of an activity or plan to determine its effectiveness. Power (2008) illustrates that a summative assessment involves judging the worth of a program or project at the end of the development process and following implementation. Summative assessment is primarily retrospective and looks back in time (IFSTA, 2004). By evaluating the outcome of a program or project, a summative assessment can assist in identifying larger patterns and trends in performance and judging these against current standards and policy. As further described by Power, the focus of a summative assessment is on evaluating immediate and long term outcomes and results. Summative assessment is cumulative in nature and is utilized to determine whether the organization achieved the goals set for a particular program (Dr. Calhoun, personal communication, November 21, 2008). A summative assessment can indicate that a particular level of competence is achieved at the end of a course or training program.

IFSTA (2004) offers an example of formative and summative assessments as related to an emergency incident. IFSTA states that during an event or incident, the incident commander continually performs a formative evaluation (size up) of the situation. When the incident is over, a summative evaluation in the form of the AAR takes place.

Fundamental review and examination starts with being truthful with ourselves. A technique that several researchers suggest is the personal AAR. Every person will have a perception of what happened and what their individual experience was during an incident or event. As described by Robertson and De Brún (2005), personal AARs are a simple matter of individual reflection. Asking questions about personal performance can allow one to develop professionally by correcting mistakes and applying proper practices. By completing a personal AAR a person can look at his or her own performance, evaluate it, identify strong areas to

sustain as well as mistakes and shortcomings, and commit to a better way of doing things (LLI, 2004). The personal AAR is also similar to a self assessment process. As explained by Temple (2008) a self assessment can help an individual recognize his or her own strengths and areas of possible improvement. Additionally, Gayk (2007) offers the challenge of changing the culture of one's own department by individually reviewing their own performance before reviewing others. As described by Gayk, when people are willing to criticize their own actions, others tend to follow suit and the real issues can be discussed openly without fear or embarrassment.

There are many challenges with the process of conducting an AAR. An important trait contributing to, or detracting from, the effectiveness of an AAR is the climate in which it is accomplished. The greatest challenge with integrating the AAR process into regular practice is encouraging openness among the people involved; something with which many personnel are uncomfortable (LLI, 2004). Environments that are intimidating, argumentative, adversarial, soft and compromising may cause uninformative answers to be obtained during an AAR. Robertson and De Brún (2005) indicate the ideal climate for an AAR is one of trust, openness and commitment to learning. An open, straight-forward climate can result in effective discussion among personnel. Truthfulness and frankness are important aspects of transparent communications. Fire department leadership must create an environment that promotes trust and encourages personnel to participate openly and honestly in the AAR process without fear of personal attacks or official retribution (FEMA, USFA, 2008). Personnel may feel uncomfortable telling the truth about problems encountered during an emergency incident when truth can come across as condemnation and accusation. For AAR's to be effective, it needs to be established that an AAR is not an opportunity to point blame but to learn about what is and what is not working on the incident scene (IFSTA, 2007; LIL, 2004).

Research revealed AAR's that are adversarial in nature may result in alienation of the participants. Examining what has occurred in an incident can lead to emotional reactions of feeling blamed or criticized. A reaction to blame and criticism may result in the feeling of being attacked. Van Doren (2007) relates that proper AAR's are very difficult to conduct unless all personnel believe the session is not going to be a blame game, a personal fault-finding session, or a finger-pointing free-for-all that just makes matters worse. The intentions of an AAR are not to place blame or punish personnel for perceived infractions of policies or procedures. The goal is not to blame an individual for a mistake; it is to obtain better results the next time. The objective of the AAR is to focus on the activities of the participants, the elements of the emergency, and the decisions made that were intended to control the incident (IFSTA, 2004, 2007). To promote a sense of safety during AAR's, senior leaders need to stay focused on improving performance, not on placing blame, and be the first to acknowledge their own mistakes (Darling, Parry & Moore, 2005). Smith (2006) concurs noting that an environment of sharing can be created by leadership displaying a willingness to discuss problems and failures that they personally encountered.

Schmidt (2007) tells us that completing an AAR is not about who is right but what is right. Conditions for an AAR have to be set for discovering what the problems are and determine what everyone is thinking. The operation must be dissected using a template that focuses on the facts: (a) Find out what each person did, (b) analyze the execution, and (c) identify lessons learned (Schmidt). The environment surrounding an AAR should be one in which personnel, both firefighters and officers, openly and honestly discuss what actually transpired in sufficient detail and clarity allowing everyone to understand what did and did not occur and why. AARs should provide personnel with an opportunity to be heard and to share their views and ideas. Allowing all participants into the discussion allows for a broader perspective. Bringing in a wide

variety of perspectives creates a fuller and more meaningful picture of what happened and why (Compton & Granito, 2002; LLI, 2004; Sexton & McConnan, 2003).

In order to address areas of improvement, accurate information must be obtained during the AAR. Personnel holding back essential details can impact the process. Inhibition of a free exchange of ideas about what happened and why may make the AAR process ineffective. Having a negative atmosphere and placing blame during AAR's can cause some personnel to withhold valuable information that could be beneficial in determining how to improve future operations and enhance the safety of personnel (FEMA, USFA, 2008).

The author contacted a second associate for an interview to discuss this subject of AAR's. David Temple is president of Saratoga Technologies, Inc. in Johnson City, TN. Mr. Temple (personal communication, November 25, 2008) indicates that one of the most important aspects for creating a positive work atmosphere is removing the political environment. When office politics are present where an atmosphere of bias and taking sides exist there may be little trust among employees, according to Mr. Temple. If the negative atmosphere is not managed properly the ability of a company to uncover errors can be impeded. Mr. Temple emphasizes that to create a learning atmosphere a non-hierarchical environment must exist. No one, regardless of rank or position, has all the information or answers. Cutting out politics and getting people together and listening to all sides of the story can assist in identifying and uncovering mistakes so that lessons can be learned from them (D. Temple, personnel communication, November 25, 2008). As described by Collison and Parcell (2004) "there can only be one poor performer in an AAR: the one who is not candid about things that went well and things that did not" (p. 136).

The goal of an AAR should be to learn from each mistake and sustain any successful procedures. Schmidt (2007) explains that the hardest part of the AAR is determining the root

cause of mistakes. It is critical to get to the root cause so that modifications can be integrated back into the process (D. Temple, personal communication, November 25, 2008). Lessons learned come from a pattern of reoccurring root causes (Schmidt). Determining root causes may be difficult since organizational personnel may not be accustomed to having open, honest conversations with leadership. According to Garvin (2000) personnel must be brutally honest and individuals need to face up to their own deficiencies, avoiding the all too common tendency to turn a deaf ear when personal errors or weaknesses are uncovered. As Olzak (2008) describes, using input from multiple perspectives can assist in identifying root causes. It is important to find out the particulars of an incident from key players so others can understand an individual viewpoint or perception without dealing in misinformation, rumors or speculation (Van Doren, 2007).

Olzak (2008) recommends several guidelines for overcoming the challenges associated with conducting a successful AAR process: (a) remain unbiased, (b) keep blame out of the room, (c) ask a lot of questions with the sincere intent to learn as much as possible from every team member about the activity or operation under review, and (d) let team members offer solutions regardless of rank.

Researchers emphasize that AAR's should follow a well-defined path. Garvin (2000) relates that a disciplined structure process is essential in an AAR to ensure coherence and avoid random, rambling discussion. The development and implementation of an SOG can allow for uniformity in the AAR process. Standardization and formal organizational adoption can lend credibility and importance of the AAR in the eyes of the average firefighter (DeGrosky, 2005b). An SOG can keep the AAR process on track and allow for clear communications. Having a standardized course of action in place can simplify the AAR process. A well-structured format

can ensure that the AAR will be objective and impersonal (Collison & Parcell, 2004). Consistency in application conveys integrity to a process. Reviews or analysis performed without guidelines in place are often vague and provide little educational advantage. The key to successfully performing an AAR is having and enforcing a written policy that establishes a systematic and standardized approach for conducting them (FEMA, USFA, 2008). A clear explanation of the purpose and objectives of an AAR process can go a long way in obtaining organizational buy-in from personnel. Collison and Parcell (2004) state that unless there is a clear, well-communicated and unambiguous objective and plan, it is likely that members of a team will have different understandings of what is supposed to happen. In this type of situation, a successful outcome is unlikely. By establishing a policy, the fire department can ensure that every AAR is conducted in a consistent manner and achieves the goals intended (FEMA, USFA). Cook (1998) concurs, revealing that the presence of a written SOG, ideally based on a national standard, indicates that the department is aware of the importance of that activity.

There are several key principles and characteristics that allow for an effective AAR process. To achieve the most benefit, organizational leaders must focus on why they conduct AAR's, consistently communicate that rationale to their personnel and, once an AAR is done, disseminate learning to others who may be embarking on similar actions (DeGrosky, 2005b).

When to conduct an AAR is fundamental to an effective process. Most literature revealed that AAR's should take place immediately after an event or incident. Collison and Parcell (2004) tell us that to minimize memory loss, AAR's must be conducted as soon after the event as practical. A discussion that occurs promptly can make lessons learned more instant and substantial. Deferring an AAR to a later date may cause important elements to be forgotten.

However, according to Lehman (2008), AAR's can be performed after a pre-determined amount of time has gone by to allow for the application of newly learned knowledge and skills.

Allowing time to gather and prepare necessary incident information should be considered. All relevant personnel should be notified of the date, time, and place where the AAR is to be conducted (FEMA, USFA, 2008). Scheduling an AAR when shift work is concerned can complicate the situation. Bringing together personnel who were engaged in an operation can be difficult. The AAR should be held on a day that the same shift is scheduled to work, so that personnel who were involved in the incident will be available (Collison & Parcell, 2004; FEMA, USFA, 2008; Garvin, 2000).

In 2003, Richard Sexton and Isobel McConnan conducted research about the AAR process. The title of their research, *A Comparative Study of After Action Review in the Context of the South Africa Crisis,* attempted to determine the requirements for a successful AAR. They found that although a number of variants of the AAR process exist, all approaches are similar in asking a series of structured questions about the action under review:

1. What was the objective or intent of the action?
2. What went well?
3. What went less well or what could have gone better?
4. What would we do differently next time?

The sequencing of the questions allows a group of people involved in an action to: (a) reflect on what has happened; (b) identify the lessons they have learned; (c) capture learning that could improve on the action a second time around, and; (d) communicate lessons learned to all personnel (Sexton & McConnan, 2003).

As mentioned previously, creating the right climate is an essential aspect of an effective AAR. The ideal climate for personnel to discuss issues is one of trust and openness. Reinforcing the fact that it is permissible to disagree and focusing on learning and encouraging people to give honest opinions are approaches that can create an atmosphere conducive to maximum participation (Collison & Parcell, 2004). If conditions of mutual trust and support are absent, participants are unlikely to attain the level of sincerity that can result in an objective assessment. Providing a non-judgmental environment in which people have trust and feel free to discuss issues without attachment of blame or judgment works best (Sexton & McConnan, 2003).

DeGrosky (2005a) believes in the importance of methodically making AAR practice routine, consistent, and as important as other organizational activities. In his research about wildland firefighting, DeGrosky found that infrequently conducted AAR's were counter-productive. A routine practice builds comfort and acceptance and can provide positive leverage with personnel. Unless reviews are carried out routinely at all levels of the organization, they will never be viewed as more than an interesting diversion (Garvin, 2000). DeGrosky supports this by concluding that AARs contribute to performance best when seen, not as an event, but as an ongoing practice, a disciplined approach to improving performance over time.

Once a determination that an AAR is going to be conducted, a facilitator should be appointed. A facilitator can guide the discussion from beginning to end, ensuring that participants stay on course. The main purposes of the facilitator are to help the team to learn by drawing out answers, insights and previously unspoken issues; to ensure that everyone has an opportunity to contribute; and to help create the right climate and ensure blame is not brought in (Robertson & De Brún, 2005). The facilitator should make a concerted effort to draw in and include all participants in a session. Sound questioning allows for gaining insight into how

people think. Sharing insights can allow a participant to contribute more fully to the AAR process. USAID (2006) offers the following techniques for helping to create an atmosphere that invites and is conducive to maximum participation: (a) Reinforce the fact that it is permissible to disagree, (b) focus on learning, (c) encourage people to give honest opinions, (d) use open-ended questions to guide discussion, (e) paraphrase, re-state, and summarize key discussion points, (f) invite input from an activity or program's leadership, to establish credibility and rapport.

To maintain objectivity, Robertson and De Brún (2005) recommend that the facilitator be someone not closely involved in the project. In their technical report on AAR's FEMA and USFA (2008) initially noted that the incident commander (IC) or safety officer might be a logical choice to assume the facilitator position because of his or her intimate knowledge of the tactical and operational plan, and any problems that may have been encountered during the incident. However, FEMA and USFA later diverged from this discerning that this may not be the best choice, especially if things did not go well during the incident. Because of his or her involvement in the incident, the IC may find it difficult to be objective or to avoid being defensive. In such situations an uninvolved officer might be a preferable choice to lead the review (FEMA, USFA, 2008).

An inclusive process can help with information gathering. Different people are likely to perceive distinctive aspects of a situation. Sexton and McConnan (2003) report that by having a participatory process a picture, reliant on multiple perspectives and based on everyone's experience, can be built. Skill in airing questions that prompt participants to reveal important data and attitudes is important. The use of open-ended questions invites everyone to add their perspective (LLI, 2004). Wade (2003) tells us that the AAR facilitator must ensure specific issues are revealed, both positive and negative. The facilitator should keep the AAR directed at

key factors, including the initial strategy and any changes in strategy that occurred, how the command structure was developed, how resources were allocated, and what special or unusual problems were encountered (FEMA, USFA, 2008).

One of the first things a facilitator should do is develop a checklist of information that should be collected and reviewed (FEMA, USFA, 2008). The information assembled can allow for an analysis of key operations and issues. There are several means for bringing together the relevant facts. Obtaining information from the National Fire Incident Reporting System (NFIRS) report can provide much of the basic information regarding the incident. FEMA and USFA offer the use of an AAR questionnaire as an efficient and consistent way to collect information. The questionnaire is distributed to collect data from individuals involved in the incident. Collecting all the details and information about the incident or event can help establish the facts. Having personnel explain what he or she did, why he or she did it, and what problems, if any, were encountered can add substance to the information gathered. Establishing the flow of what took place on the incident scene can allow participants to see the effects of their actions. Using a standard questionnaire can be of assistance in maintaining consistency. Collison and Parcell (2004) note, however, that the questions need to be open-ended to allow individuals to give their personal opinions and perspectives. Having clear standards and determining the operational goals are critical for an objective discussion of performance (LLI, 2004). Information gathered from the AAR questionnaire can provide the facilitator with a better understanding of what occurred during the incident and the problems encountered during operations. A record of pertinent discussion points regarding the incident can be brought together to make certain that all significant points are addressed satisfactorily.

Monitoring of work performance to identify problems, determine their causes, and implement corrective actions to resolve and prevent recurrence is essential for an emergency service organization. Every emergency response is different; however, many of the tasks and operations performed by on-scene personnel are often repetitive. This can lead to complacency and overconfidence resulting in the possibility that safety issues may be disregarded. Wade (2003) explains that safety should be specifically addressed in every AAR and discussed in detail when it impacts unit effectiveness and firefighter health. An AAR can help an organization identify problems and address them as a way of continuously improving performance and decision making (NFPA, 2007). Generally, the incident safety officer has responsibility for collecting safety-related information for the AAR. IFSTA (2004) advises that critical safety issues usually arise from: (a) violations of organizational SOG's, (b) poorly defined operational procedures, (c) unforeseen situations, and (d) training deficiencies.

Emergency service organizations are always pursuing practices that result in enhanced operations. Nearly every AAR will reveal problems that need to be addressed to improve future operations (FEMA, USFA, 2008). Critical to the success of an AAR is the incorporation of lessons learned into the organization's training and operational procedures. Sims (2003) cites that AAR's drive the development of lessons learned so that all teams in the organization can avoid making the same mistakes over and over again. AAR's also identify successful actions so that positive lessons can be carried forward (Sims). The essence of identifying and sharing good practices is to learn from others experiences and to re-use the knowledge gained. Darling et al. (2005) studied the AAR process at several corporations, nonprofits, and government agencies. They found that even though companies gathered members to share insights and identify mistakes and successes, few were learning lessons in a meaningful way. No effort was made to

employ lessons learned to the next set of actions and decisions during future projects. Darling et al. discovered that the failure to use the lessons learned stemmed from three common misconceptions about the nature of an AAR: (a) that it is a meeting; (b) that it is a report, or (c) that it is a postmortem. If personnel are not committed to the process of an AAR, the possibility exists that they may not learn anything useful. The greatest failure of the AAR is the failure to learn from and apply the results and recommendations (IFSTA, 2007). Management must be willing to act upon lessons learned and correct the problems as quickly as possible; otherwise, subordinate personnel will think the AAR process is a waste of time, and future AAR's could suffer accordingly (FEMA, USFA, 2008). Lessons learned must be explicitly linked to future actions and leaders must hold everyone, especially themselves, accountable for learning (Darling et al.).

An important step in conducting an AAR is to write a report of the incident for department records. Having a clear and interesting account of the AAR and its learning points can assist in sharing the important aspects of the event or incident. The report summarizes the entire incident and provides recommendations for correcting problems based on lessons learned during the AAR (FEMA, USFA, 2008; Coleman, 2003). A standard format to record data can provide for reliable collection of relevant information. Objectivity is a vital element of the report and accuracy can be improved by corroborating events with others, which can be readily accomplished during the AAR discussion (NFPA, 2008). Major sections of the report may include background information, a timeline summary of fireground activities, the incident action plan, the incident safety plan, a statistical summary, a site plan, and an analysis and results section (IFSTA, 2007).

Darling et al. (2005) found that it is important to have a clear and understandable account of the AAR and its learning points, both as a reminder to those involved and in order to effectively share that learning with others. A consideration for who can benefit from the AAR should be made. All aspects of the incident that involved safety issues should be included in the report. The report should be distributed throughout the organization. Smith (2006) recommends that a committee routinely compare AAR reports to previous ones to see if there are recurring problems or patterns developing that need to be addressed. A copy of the report sent to the training division will allow for a training needs assessment to be completed (NFPA, 2006). The report can serve as a blueprint for additional training and the development of better plans and procedures (FEMA, USFA, 2008). Accessibility of the AAR report will allow personnel to acquire the information. Robertson and De Brún (2005) cite that AAR reports need to be collected somewhere they can be easily found and accessed by all personnel.

Having an AAR process that is regular and routine can be essential to its success. As many experts describe, it is important to make AAR practice routine, consistent, and as important as other organizational activity. Unless reviews are carried out routinely at all levels of the organization, they will never be viewed as more than an interesting diversion (Garvin, 2000). AAR's contribute to performance best when seen, not as an event, but as an ongoing practice, a disciplined approach to improving performance over time (DeGrosky, 2005b).

Many experts emphasize that an organization can gain several advantages by making use of the AAR as part of their problem-solving and decision-making processes. Sexton and McConnan (2003) explain that a successful AAR allows for new learning to be quickly translated back into action and improved performance. It is important for an organization to determine why things happened. Discovering which actions sustain good practices and which

actions prove to be ineffective can be of value. By learning from collective experience, organizations can capture and spread knowledge and apply learning so that they may understand events and improve performance (DeGrosky, 2005b).

Van Doren (2007) describes that effective AAR's can help a department grow in many positive directions by helping to identify: (a) the need for reinforcement of and changes in SOG's, (b) training and mentorship issues, (c) equipment limitations, and (d) the grasp that personnel have with strategies and tactics. Olzak (2008) reports the benefits of implementing the AAR process include: (a) Root causes are identified using input from multiple perspectives; (b) assists employee development by examining better ways to achieve goals and objectives; and (c) performing AAR's on both successful and unsuccessful activities results in not only achieving expected outcomes, it can also result in reaching them with greater consistency.

A limitation noted by several researchers is that problems can go unresolved because their existence is not recognized, or they are not seen as being solvable because there is no way to get people involved in applying their thinking to them. In order to find solutions, personnel must be encouraged to surface problems and lessons learned during a discussion. A way for uncovering unresolved problems is through a professional, candid, and complete review discussion allowing managers and staff to compare their performance against a standard and identify specific ways to improve future activities (USAID, 2006). An AAR will assist leaders and their employees in recognizing what actions make them successful in accomplishing their goals and what actions prevent them from meeting their goals (Sims, 2003).

Having a tool that provides proactive feedback can assist in the development of personnel. Feedback is a way of providing corrective action and guidance when incorrect performance is observed. By identifying concrete and actionable recommendations, the AAR

defines necessary steps for improving the process for accomplishing a task or project (USAID, 2006). An AAR not only arms an organization with a useful field-level technique for making learning routine and improving the effectiveness of personnel, but adoption of the AAR process can move the organization toward broader organizational learning (DeGrosky, 2005b).

An organization should take full advantage of learning opportunities in order to reach higher levels of service. Darling et al. (2005) acknowledge that AAR's can develop an organization's ability, at senior, middle, and grassroots levels, to recognize day-to-day events, as well as major crises, as opportunities to learn. There can be benefits to reviewing past actions and applying the results to future situations. AAR's help teams link past and current events, so that lessons from the past can be applied to improving current results (Darling et al.). As an ongoing leadership discipline, implementing an AAR process can substantially improve performance, generate knowledge and increase an organization's confidence around virtually any challenge or opportunity (Signet Consulting Group [SCG], 2008).

USAID (2006) cites that the benefits of an AAR come from applying its results to future situations. AAR's provide a dynamic link between carrying out a task and striving for excellent performance (USAID, 2006).

In summary, an AAR is a discussion of a project, activity or incident that enables the individuals involved to learn for themselves what happened, why it happened, what went well, what needs improvement and what lessons can be learned from the experience (Roberson & De Brún, 2005; Wade, 2003). The literature review highlighted how effective AAR's have a number of significant requirements such as immediacy, broad participation, a disciplined process, consistency, collection of accurate data, skilled facilitation, organizational-wide dissemination of information, and a climate of candidness and truthfulness. Reviewing and

analyzing performance and decision making are critical to integrating learning and improvement in an organization. The vast literature discovered during this review related to how an AAR can provide an organization with an opportunity to evaluate, review, and refine operational procedures, training methods, SOG's, and policies. It has been identified that firefighters and officers, who will be involved in the AAR process, must comprehend the non-hierarchical environment and why it is important. Open discussion was found to be a vital part of the AAR process. The environment and climate surrounding an AAR must be one in which all personnel openly and honestly discuss what actually transpired in sufficient detail and clarity that will allow everyone to understand what did and did not occur and why (LLI, 2004).

The literature promoted the development of organizational AAR policies and procedures. Several resources from the literature review provided pertinent information for the development of an effective SOG for conducting AAR's. The key to successful AAR's is having and enforcing a written policy that establishes a systematic and standardized approach for conducting them and clearly explains the purpose and objectives of evaluating an organization's response to an incident or event (FEMA, 2008).

As conveyed in the literature, the intent of the AAR is to discover which actions sustain good practices and which actions prove to be ineffective. Through not a cure-all for all issues or problems, the AAR provides a starting point for improvements to future activities (USAID, 2006). An AAR, whether informal, formal or personal, offers an important opportunity for constructive feedback. The literature review validates that an AAR can provide significant advantages by allowing an organization to seek out and spread best practices. Such results can be used to enhance the operations and administration of the JCFD.

Procedures

The first part of this research process began in March 2008 with a literature examination in the Learning Resource Center (LRC) at the National Emergency Training Center in Emmitsburg, Maryland. These efforts were made to answer research questions #1, #2, #4 and #5:

1. What techniques exist for effectively conducting an AAR?
2. What are the challenges associated with the process of conducting AAR's?
4. What are key principles and characteristics associated with effective AAR's?
5. What outcomes can be expected by the JCFD from conducting consistent and systematic AAR's?

The author performed a search utilizing the LRC's on-line card catalog focusing on keywords such as: after action reviews, critique, post-incident analysis, lessons learned, and post mortem. The author investigated sources that discussed the significance and advantages of conducting AAR's and the importance of capturing knowledge and lessons learned as way of producing long-term performance improvement. The literature examination included a review of books, journals, magazines, reports, Executive Fire Officer Applied Research Projects, as well as many Internet searches.

A subsequent part of the literature examination, conducted in Tennessee, involved a literature review employing an Internet search for articles, books and previous research of others related specifically to AAR's. The libraries of East Tennessee State University, the City of Johnson City and the City of Jonesborough were visited to obtain additional research and conduct inter-library loans. The Internet search engines, "Google" and "Yahoo" yielded a number of relevant sources dealing with AAR's.

The objective of this literature review was to provide information for gaining a better insight into what the essential techniques, challenges, and elements are for conducting AAR's, as well as potential impacts of this practice. The author assumed all literature sources and authors examined gave accurate information and data, and that they were factual and impartial. Notes taken by the author of research findings were classified by subject. This was done in order to use the information in a logical manner and to record the attributes of successful AAR practices. Based on the information found, these subjects included: types and techniques, process and practice, facilitation, challenges and pitfalls, principles and characteristics, benefits and outcomes, and lessons learned.

Based on a portion of the literature review a survey was developed addressing research question #3: What mechanisms do nationally accredited fire service organizations utilize to review and analyze operational actions? The author utilized the Commission on Fire Accreditation International (CFAI) Web site as a source to list all fire agencies that have achieved national accreditation. It was assumed that all accredited agencies were relevant to the ARP due to the criteria and performance indicators related to policies and procedures for conducting AAR's and post incident analysis contained in the CFAI self-assessment manual. It was assumed that CFAI-accredited agencies would understand the importance of this research and that these agencies were actively conducting AAR's and had formal policies, procedures or guidelines in place.

The CFAI Web site provided a listing of accredited agencies, however, the site did not provide mail or e-mail addresses for member agencies. The *2007 National Directory of Fire Chiefs and EMS Administrators* was utilized in obtaining the mailing addresses. Survey envelopes were generically addressed to each agency's fire chief and accreditation officer. A

cover letter was attached to each survey explaining the purpose of the author's ARP. See *Appendix A* for the cover letter. The author provided the agency with a fax number and e-mail to which responses could be sent. Each agency was given a suggested return timeframe to ensure the response could be included in the research. Prior to distribution, a sample survey was given to several JCFD administrative and training division personnel to help determine ease of completion and confirm understanding of the questions. Based on the sample survey, information was gathered and used to revise ambiguous statements and correct grammar, spelling and clarity issues.

The survey was sent to 121 CFAI-accredited fire service agencies during October, 2008. See *Appendix B* for the survey mailing list. The survey consisted of 15 questions. Twelve close-ended and three open-ended questions were used. Two close-ended questions had follow-up open-ended questions to collect additional information and allow clarification. The author made no differentiation between post-incident analysis (PIA) and AAR in the survey. This was due to the CFAI using PIA as a criteria and performance indicator for the accreditation self assessment process. The main purpose of the survey was to ascertain how accredited agencies conduct PIA/AAR's. The author wanted ideas for developing and implementing an SOG for the JCFD by reviewing what other agencies perceived as important and beneficial to the process. A second purpose was to obtain copies of the agencies' PIA/AAR policies, procedures or guidelines. A specific request for this documentation to be sent to the author, via e-mail attachment, was noted on both the survey document and cover letter. See *Appendix C* for the survey.

The second part of the research process involved interviews held in November, 2008 with two representatives from the community whose executive and management experience related to the author's research. Mr. David Temple is president of Saratoga Technologies, Inc. in

Johnson City, Tennessee. Saratoga Industries is considered the premier technology solutions company in the region. Mr. Temple has seven years in management both in the United States and abroad. Dr. Larry Calhoun is the founding dean of the ETSU Bill Gatton College of Pharmacy in Johnson City. Dr. Calhoun possesses vast management experience having served as a chief executive officer (CEO) for a pharmacy and home health business and president and CEO for a local county hospital. These community representatives were chosen based on their organizations' reputations for achieving excellence in innovative educational and business initiatives. The objective of the interviews was to ascertain perspectives on how non-fire service organizations conduct reviews and analysis of operations as a way of improving future performance.

The interviews were completed following the literature review, which assisted the author in asking meaningful questions based on the study of issues relevant to the problem and related research questions. The interviews were conducted to assist in answering research questions #1, #2, #4 and #5:

1. What techniques exist for effectively conducting an AAR?
2. What are the challenges associated with the process of conducting AAR's?
4. What are key principles and characteristics associated with effective AAR's?
5. What outcomes can be expected by the JCFD from conducting consistent and systematic AAR's?

The request for an interview was initially sent by e-mail to each individual. E-mail addresses were obtained by accessing the Web site of each organization via Google.com. The e-mail explained the nature of the interview request as it related to the EFOP and ARP, and the time frame needed (20-30 minutes). Each interviewee was informed that they would be cited as a

reference in the ARP. Attached to the e-mail was a list of questions to be discussed during the interview to give each person an opportunity to consider the issues beforehand. See *Appendix D* for the e-mail request for interviews. The interviews were arranged three weeks in advance via a telephone call to each individual's administrative assistant. The time, date and location for each interview were set at the convenience of each interviewee.

The questions for each interviewee were as follows:

1. Does your organization review, (evaluate/analyze) programs, processes, actions, projects or operations to identify strengths, areas of sustainment, areas of improvement and lessons learned?
2. Describe how your organization does this. What techniques/methods are utilized?
3. When do you conduct the reviews? (during, after or both)
4. Are there any challenges associated with conducting the reviews?
5. What are the key principles/characteristics of conducting effective reviews?
6. What outcomes do you expect from conducting the reviews, evaluations or analysis?

These interviews were held in each individual's office at the following locations, dates and times:

Dr. Larry Calhoun	ETSU College of Pharmacy	November 21, 2008 at 3:00 p.m.
Mr. David Temple	Saratoga Technologies	November 25, 2008 at 10:30 a.m.

The assumption was made when arranging the interviews that the interviewees would be supportive and helpful in providing relevant discussion. It was also assumed that both interviewees would answer questions and provide information in an honest manner. However, a limitation on this project is that personal interviews during research are subject to interviewee opinions and biases that may not be immediately evident to the researcher.

A second limitation is that the survey sent to accredited fire service agencies was not validated and a potential for error exists in the form of question wording and question order. In addition, the open-ended questions in the survey produced many different responses. The process of sorting and grouping answers into categories was time-consuming.

A final limitation of this ARP is that survey respondents might not have provided straightforward responses. It was assumed that the respondents to the survey were able to effectively represent the views of their organization, however, information collected in the survey was of a self-report nature and may be prone to some inaccuracy as a result of less than accurate recall, lack of information, or discomfort with self-disclosure. This may have occurred for a variety of reasons, including a desire to not reveal an organizational weakness or problems related to conducting AAR's.

Results

Through action research, which included an examination of numerous literature resources, two personal interviews, as well as an analysis of how nationally accredited fire service organizations conduct AAR's, the author found substantial information to answer the five research questions.

Research Question One. What techniques exist for effectively conducting AAR's? The literature reviewed indicated that there are two generally accepted techniques that can be used by an organization to conduct an AAR: (a) informal and (b) formal.

Sources of information reviewed by the author described in detail the mechanisms of each technique. Informal AAR's are commonly reserved for relatively routine or non-complex incidents. USAID (2006) summarized many of the key features of informal AAR's. The summary of features included: (a) usually conducted on-site immediately following an incident

or event, (b) frequently carried out by those responsible for the incident or event, (c) used as an on-the-spot coaching tool, (d) provides instant feedback, (e) ideas and solutions can be immediately put to use, and (f) the team can learn from them for future use or similar application. As FEMA and USFA (2008) reported, the immediate nature of the informal AAR is an important aspect that allows optimal conditions for retracing the actions of crews and analyzing any tactical or operational problems encountered during the incident. The experts reported how important it is to receive direct feedback as close as possible to the action taken. Conducting an informal AAR when everything is clear in the minds of the participants maximizes the training value (Collison & Parcell, 2004; Gayk, 2007; LLI, 2004).

The literature from library and Internet sources expressed that a formal AAR should be held after most major emergencies or significant events. The formal AAR is a detailed review and analysis of large-scale and other complex or tactically-challenging operations (FEMA, USFA, 2008). Due to the comprehensive nature of the formal AAR, scheduling was noted as an important consideration. Formal AAR's require more resources and involve more detailed planning, coordination, logistical support, supplies, and time for facilitation and report preparation (USAID, 2006). It was emphasized that an agenda be developed for conducting formal AAR's. An agenda will help focus the discussion and ensure that important issues are addressed (FEMA, USFA).

Two other AAR techniques were brought forth during an interview conducted with Dr. Larry Calhoun of the ETSU College of Pharmacy. Dr. Calhoun explained the techniques of formative and summative assessments as ways of improving educational and professional development activities (personal communication, November 21, 2008). A formative assessment is an evaluation of efforts prior to their completion for the purpose of improving these efforts

(Nan, 2003). Dr. Calhoun offered that formative assessment provides information that can be utilized to modify teaching and learning as they are happening and adjustments to the curriculum are then made (personal communication, November 21, 2008). Summary statements of the interview with Dr. Calhoun can be found in *Appendix E*.

Summative assessments are completed at the conclusion of an activity or plan to determine effectiveness and to indicate if a particular level of competence has been achieved. Best evidence shows how important it is to identify larger patterns and trends in performance and judge them against current standards and policy. Dr. Calhoun confirmed that summative assessments are cumulative in nature and are utilized to determine whether an organization achieved the goals set for a particular program (personal communication, November 21, 2008).

Several researchers also noted an additional AAR technique that an individual can undertake to improve his or her performance. The personal AAR is simply a matter of individual reflection (Robertson & De Brún, 2005). By completing a personal AAR, a person can look at his or her own performance, evaluate it, identify strong areas to sustain as well as mistakes and shortcomings, and commit to a better way of doing things (LLI, 2004).

Research Question Two. What are the challenges associated with the process of conducting AAR's? Collectively, information obtained from the literature investigation and personal interviews conveyed the importance of open and candid discussion for a successful AAR process. The greatest challenge with integrating the AAR process into regular practice is encouraging openness among the people involved; something with which many personnel are uncomfortable (LLI, 2004). Finding out what problems were encountered and what everyone is thinking can be difficult to facilitate in a negative atmosphere. As described by Van Doren (2007) it is hard to expose personal mistakes in front of your peers, let alone those of your fellow

employees. It was revealed in the literature that AAR's must be inquisitive without causing defensiveness, personal attacks are prohibited during the process and conditions must be set to allow mistakes to be discussed. Research revealed AAR's that are adversarial in nature may result in alienation of the participants. Van Doren (2007) stated that proper AAR's are very difficult to conduct unless all personnel believe the session is not going to be a blame game, personal fault-finding session, or finger-pointing free-for-all that just make matters worse.

One of the challenges with conducting an AAR in a business environment was brought forth in an interview with Mr. David Temple. Mr. Temple advised that office politics can create an environment of bias and cause employees to take sides (personal communication, November 25, 2008). He related that when office politics are present there is little trust among employees. The result is that instead of working together, people will work against each other (D. Temple). Summary statements of the interview with Mr. Temple can be found in *Appendix E*.

The literature review demonstrated how establishing a non-hierarchical climate for an AAR can be a formidable hurdle. Everyone should be regarded as an equal participant with rank left at the door. AAR's engage everyone directly involved in the action, whatever their decision-making authority or level in the organization, making it fundamentally a participatory process (Sexton & McConnan, 2003). It was found that personnel may avoid embarrassing someone or opening themselves up to questions. As Gayk (2007) related, officers and firefighters have to let their guard down to allow honest discussion without taking things personally. Allowing all participants into a discussion provides for a broader perspective. Bringing in a wide variety of perspectives creates a fuller and more meaningful picture of what happened and why (Compton & Granito, 2002; LLI, 2004; Sexton & McConnan, 2003). Accurate information must be obtained in order to address areas of improvement. Personnel may hold back essential details if

they don't believe in the integrity of the AAR process. The literature findings stressed that having a negative atmosphere can prevent a free exchange of ideas about the nature of the event, likely making the AAR ineffective.

Schmidt (2007) cited that the hardest part of the AAR is determining the root cause of mistakes. Research accentuated that determining the root cause may be difficult since organizational personnel may not be accustomed to having open, honest conversations with leadership. Without candid conversations, the ability to reach beyond surface issues to uncover reasons for failure or success may be deterred. Getting to the root cause can be obstructed by defensive reasoning based on a feeling that there will be retribution for being honest (Sexton & McConnan, 2003).

Researchers emphasize that AAR's should follow a well-defined path. Garvin (2000) related that a disciplined structure process is essential in an AAR to ensure coherence and avoid random, rambling discussion. The following challenges were evidenced in the literature as applications to be addressed in a structured process for a successful AAR: uniformity of process, credibility, clear communications, simplicity, objectiveness, integrity, and obtaining buy-in from personnel. The key to successfully performing AAR's is having and enforcing written policies establishing a systematic and standardized approach for conducting them (FEMA, USFA, 2008).

Research Question Three. What mechanisms do nationally accredited fire service organizations utilize to review and analyze operational actions? A survey was developed to answer the third research question. One hundred and twenty-one surveys were mailed to CFAI nationally accredited fire service organizations. An example of the survey can be found in *Appendix C.* In total, 61 fire service organizations replied to the survey for a return rate of 50.4%. A cross section of small and large accredited fire service organizations responded to the

survey. The number of certified personnel these organizations have ranged from 23 to 3,900. The populations served spanned from 8,700 to 2,200,000. Career fire service organizations represented the largest group with 46 responses (75.5%). Volunteer fire organizations represented the second most with 14 responses (22.9%). One combination fire organization responded to the survey (1.6%). A complete listing of fire departments returning the survey can be found in *Appendix F.* The comprehensive analysis of the survey is recorded in the remainder of the section based on both frequency and percentages.

Question number one sought to determine if the department required a PIA's/AAR's to be conducted for emergency events. Forty-five (73.7%) of the respondents indicated that their departments did require a PIA/AAR to be conducted after an emergency event. Sixteen (26.3%) reported that they did not require a PIA/AAR to be performed.

The second question asked the respondents if PIA's/AAR's in their department are conducted in an open and timely manner. Three choices were listed from which to select. Fifty-two (85.3%) respondents thought they conducted PIA's/AAR's in an open and timely manner. Six (9.8%) respondents felt they did not, while three (4.9%) respondents were uncertain if they did. Question two had a follow-up question which asked respondents to explain why they felt their organization did not conduct PIA's/AAR's in an open and timely manner. The following five answers were received from the six respondents: (a) no consistency due to no policy, (b) lack of communication and coordination, (c) sheer call volume causes time constraints and 3,900 personnel make it difficult, (d) finding the time to conduct PIA's/AAR's has been difficult, and (e) they are done quarterly.

The third question was open-ended and required a write-in answer. The respondents were asked what benefits/outcomes their department sustained from conducting PIA's/AAR's. Fifty-

six (91.8%) respondents wrote answers to this question. Multiple answers were permitted. All responses were reviewed by the author and categorized into five prominent themes. The themes that described the responses included: (a) ability to share/communicate lessons learned, (b) identification of training needs, (c) tool to identify strengths, weaknesses and areas of improvement, (d) identification of safety issues, and (e) allows for policy and procedure review and revision. Table 1 details the frequency of these statements.

Table 1

What benefits/outcomes does your department sustain from conducting PIA/AAR?

Response Theme	Frequency
Ability to share/communicate lessons learned	32
Identification of training needs	21
Tool to identify strengths, weaknesses and areas of improvement	20
Identification of safety issues	17
Allows for policy and procedure review and revision	16

The fourth question was open-ended and required a write-in answer. The respondents were asked if there were any limitations or challenges with the process of conducting PIA's/AAR's. Twenty-seven (44.2%) respondents wrote answers to this question. Multiple answers were permitted. All responses were reviewed by the author and were categorized into four prominent themes. The themes that described the responses included: (a) logistics and coordination of getting personnel together, (b) having open/candid discussion allowing identification of areas of improvement, (c) avoiding a negative atmosphere, and (d) avoiding an overly positive atmosphere where root causes of problems and safety issues are not identified.

Respondents to question four provided remarks as to why the logistics and coordination of getting personnel together for a PIA/AAR was such a noteworthy limitation or challenge. Explanations offered were: (a) scheduling conflicts with other events, (b) interruption with emergency responses, (c) concern about not reducing response capabilities, (d) excessive preparation time, and (e) personnel on leave.

The fifth question was open-ended and required a write-in answer. The respondents were asked what they thought are the key principles and characteristics of their PIA/AAR. Thirty-one (50.8%) respondents wrote answers to this question. Multiple answers were permitted for this question. All responses were reviewed by the author and were categorized into six prominent themes. The themes that described the responses included: (a) obtaining accurate thorough information, (b) honest discussion, (c) providing feedback to personnel, (d) allowing input from all ranks, (e) having a no fault, no blame environment, and (f) having a standard format.

The sixth question asked respondents if their department recorded the conclusions drawn from the PIA/AAR. Forty-nine (80.4%) respondents answered yes to this question. Eleven (18.0%) respondents answered no and one (1.6%) respondent was uncertain.

The seventh question asked respondents how the record of the PIA/AAR is distributed. There were four possible selections. The responses and selections were: (a) “to all personnel” was selected by 40 (65.6%) respondents, (b) “to only companies involved in the PIA/AAR” was selected by 8 (13.1%) respondents, (c) “record/documentation not distributed” was selected by 13 (21.3%) of the respondents, and (d) no respondent selected that they had other means of distributing the record of the PIA/AAR different than the first three selections. Table 2 details the frequency and percentage of these statements.

Table 2

How is the PIA/AAR record distributed?

Selection	Frequency	Percentage
To all personnel	40	65.6%
Record/Documentation not distributed	13	21.3%
To only the companies involved in the PIA/AAR	8	13.1%
Other means of distribution	0	0%

The second part of question seven asked the respondents to describe how they distributed the PIA/AAR record. Nine respondents gave details as to how their department distributes the record of the PIA/AAR. Responses centered on use of the Internet to distribute the documentation via a local Web server, shared computer drive or email attachment. One respondent offered that his department provided PIA/AAR information by means of a live television broadcast to all stations.

The eighth question asked the respondents if PIA/AAR conclusions have served as a basis for revising/updating SOG's/SOP's. Of the respondents, 55 (90.2%) indicated that conclusions from PIA/AAR did serve as a basis for revising/updating SOG's/SOP's. Two (3.3%) respondents said that conclusions from PIA/AAR were not used for revising/updating SOG's/SOP's, while four (6.5%) respondents were uncertain.

The ninth question asked the respondents if their department had an SOG/SOP for conducting PIA's/AAR's. Of the respondents, 44 (72.2%) indicated that their organization had a SOG/SOP for PIA's/AAR's. Sixteen (26.2%) signified that their department did not have a SOG/SOP for PIA's/AAR's, while one (1.6%) respondent was uncertain.

The 10th question asked the respondents if they thought that conducting PIA's/AAR's has allowed their department to effectively identify and communicate areas of sustainment,

improvement and lessons learned resulting in a positive impact on future operations. Fifty-nine (96.7%) respondents designated that they felt that by conducting PIA/AAR it allows their department to effectively identify and communicate areas of sustainment, improvement and lessons learned that result in a positive impact on future operations. Two (3.3%) respondents were uncertain if conducting PIA/AAR has had any impact on their departments.

The 11th question asked respondents what types of PIA's/AAR's are conducted in their departments. Thirteen respondents (21.3%) designated that they conducted only formal types of PIA's/AAR's. Nine (14.7%) indicated that they only conducted informal PIA's/AAR's. Thirty-seven (60.7%) respondents signified that they conduct both formal and informal PIA's/AAR's. Two (3.3%) respondents did not answer the question. Table 3 details the frequency and percentage of these statements.

Table 3

What types of PIA/AAR are conducted in your department?

Selection	Frequency	Percentage
Formal	13	21.3%
Informal	9	14.7%
Both Formal and Informal	37	60.7%
No answer provided	2	6.6%

The 12th question asked the respondents to identify the person in their department who conducts and/or facilitates the PIA/AAR process. There were five possible selections and the respondent was able to check more than one selection for this answer. The responses and selections were: (a) "incident commander" was selected by 48 (78.6%) respondents, (b) "training officer" was selected by 18 (29.5%) respondents, (c) "shift commander" was selected by 16

(26.2) respondents, (d) “company officer” was selected by 14 (22.9%) respondents, and (e) “someone not associated with the incident” was selected by 10 (16.3%) respondents. Table 4 details the frequency and percentage of these selections.

Table 4

Who conducts/facilitates the PIA/AAR process?

Selection	Frequency	Percentage
Incident Commander	48	78.6%
Training Officer	18	29.5%
Shift Commander	16	26.2%
Company Officer	14	22.9%
Someone not associated with the incident	10	16.3%

Question 13 asked respondents if they felt the PIA/AAR process was successful in their departments. There were three possible selections on the survey. Fifty-five (90.1%) respondents indicated that they believed their PIA/AAR process to be successful. Two (3.3%) respondents answered that they did not believe their PIA/AAR process to be successful, while four (6.6%) were uncertain.

The 14th question asked the respondents to list what types of emergency incidents receive a PIA/AAR. Six categories were listed for the respondents to select and multiple selections were allowed for answering this question. The selections were: (a) major fires/incidents-52 (85.2%), (b) multifamily residential-51 (83.6%), (c) single residential-49 (80.3%), (d) hazmat incidents -48 (78.6%), (e) special rescue-47 (77.0%), (f) other-2 (3.3%). Of the respondents, 40 (65.6%) selected the first five categories listed above (a thru e). For the two respondents selecting the “other” category, both respondents listed medical calls as a type of

emergency incident that would receive a PIA/AAR. Table 5 details the frequency and percentage of these selections.

Table 5

What types of emergency incidents receive a PIA/AAR?

Selection	Frequency	Percentage
Major fires/incidents	52	85.2%
Multi-family residential	51	83.6%
Single residential	49	80.3%
Hazmat incidents	48	78.6%
Special rescue	47	77.0%
Other	2	3.3%
First five categories selected	40	65.6%

The 15th question asked respondents if their department provided training on how to conduct PIA's/AAR's. There were three possible selections for this question. Twenty-two (36.1%) respondents indicated that their department does provide training on how to conduct PIA's/AAR's. Thirty-eight (62.3%) respondents answered that their department did not provide training, while one (1.6%) respondent was uncertain.

Research Question Four. What are key principles and characteristics associated with effective AAR's? When to conduct an AAR was found to be a fundamental aspect to an effective process. Most literature revealed that AAR's should take place immediately after an event or incident. Collison and Parcell (2004) advised that to minimize memory loss, AAR's must be conducted as soon after the event as practical.

Allowing time to gather and prepare necessary incident information for formal AAR's should be considered. As explained by Collison and Parcell (2004), formal AAR's need to be well planned and coordinated and follow a specific organizational process. All relevant personnel should be notified of the date, time, and place where the AAR is to be conducted (FEMA, USFA, 2008).

Creating the right climate is an essential aspect of an effective AAR. Many sources cited that the ideal climate for personnel to discuss issues is one of trust and openness. Reinforcing the fact that it is permissible to disagree and focusing on learning and encouraging people to give honest opinions are approaches that can create an atmosphere conducive to maximum participation (Collison & Parcell, 2004). If conditions of mutual trust and support are absent, participants are unlikely to attain the level of sincerity that can result in an objective assessment. Providing a non-judgmental environment in which people have trust and feel free to discuss issues without attachment of blame or judgment works best (Sexton & McConnan, 2003).

Both interviewees communicated the importance of actively engaging and listening to all employee ranks and levels. Dr. Calhoun (personal communication, November 21, 2008) noted that it is important to allow front line personnel to have a say in how things are done because they are the ones experiencing the situation and know best how to improve or resolve an issue. D. Temple (personal communication, November 25, 2008) explained that by simply listening to your employees you can create a feeling that they have a personal stake in the company and their input is valued.

DeGrosky (2005a) established the importance of methodically making AAR practice routine, consistent, and as important as other organizational activities. In his research, DeGrosky found that infrequently conducted AAR's were counter-productive. A routine practice builds

comfort and acceptance and can provide positive leverage with personnel. Unless reviews are carried out routinely at all levels of the organization, they will never be viewed as more than an interesting diversion (Garvin, 2000).

The literature recommended that the AAR process be led by a neutral facilitator who did not participate in the decision-making at the incident. To maintain objectivity and avoid defensiveness, Robertson and De Brún (2005) and FEMA and USFA (2008) advocated that the facilitator be someone not closely involved in the project. As further indicated in the literature, a facilitator can guide the discussion from beginning to end, ensuring that participants stay on course. The main purposes of the facilitator are to help the team to learn by drawing out answers, insights and previously unspoken issues, to ensure that everyone has an opportunity to contribute and to help create the right climate and ensure blame is not brought in (Robertson & De Brún, 2005).

A competent facilitator is important for creating an inclusive atmosphere which allows for information gathering. Skill in airing questions that prompt participants to reveal important data and attitudes was found to be important. LLI (2004) recommended the use of open-ended questions as a way of inviting everyone to add their perspective. Sound questioning allows for gaining insight into how people think.

The importance of developing a checklist was suggested by several sources as a way of obtaining as much information as possible about an incident or event. The information assembled can allow for an analysis of key operations and issues. FEMA and USFA (2008) offered the use of an AAR questionnaire as an efficient and consistent way to collect information. Collecting details and information about the incident or event can help establish facts. Using a standard questionnaire can provide consistency. The goals of the questionnaire are to provide the

facilitator with a better understanding of what occurred during the incident and identify problems encountered during the operation (USAID, 2006).

Safety should be specifically addressed in every AAR and discussed in detail when it impacts unit effectiveness and firefighter health (Wade, 2003). IFSTA (2004) suggested the incident safety officer as the individual that would have the responsibility for collecting safety-related information for the AAR.

Incorporation of lessons learned into the organization's training and operational procedures was noted as an important aspect of successful AAR's. Sims (2003) cited that AAR's drive the development of lessons learned so that all teams in the organization can avoid making the same mistakes over and over again. AAR's also identify successful actions so that positive lessons can be carried forward (Sims). The essence of identifying and sharing good practices is to learn from others experiences and to re-use the knowledge gained.

A written report of the incident for departmental records was emphasized as a critical part of the AAR process. The report summarizes the entire incident and provides valuable recommendations for correcting problems based on lessons learned during the AAR (FEMA, USFA, 2008; Coleman, 2003). Sources described the use of a standard format for recording incident data as being a viable way of providing for the reliable collection of relevant information. A standard format will allow objectivity and accuracy which are vital elements of the report (IFSTA, 2008). All aspects of the incident that involved safety issues should be included in the report. The report, identifying problems and recommendations for improvement should be distributed throughout the organization (D. Temple, personal communication, November 25, 2008). Major sections of the report may include background information, a

timeline summary of fireground activities, the incident action plan, the incident safety plan, a statistical summary, a site plan, and an analysis and results section (IFSTA, 2007).

Accessibility of the AAR report allowing all personnel to acquire the information developed was recommended. A committee should routinely compare AAR reports to previous ones to see if there are recurring problems or patterns developing that need to be addressed (Smith, 2006). The NFPA (2006) recommends that a copy of the report be sent to the training division which will allow for a training needs assessment to be completed. Accessibility of the AAR report will also allow personnel to acquire the information of lessons learned. AAR reports need to be collected somewhere they can be easily found and accessed by all personnel (Robertson & De Brún, 2005).

Research Question Five. What outcomes can be expected by the JCFD from conducting consistent and systematic AAR's? Sexton and McConnan (2003) explained that a successful AAR allows for new learning to be quickly translated back into action and improved performance. It is important for an organization to determine why things happened. Discovering which actions sustain good practices and which actions prove to be ineffective can be of value. By learning from collective experience, organizations can capture and spread knowledge and apply learning so that they may understand events and improve performance (DeGrosky, 2005b).

Van Doren (2007) pointed out that effective AAR's can help an organization grow in many positive directions by helping to identify: (a) the need for strengthening of, and changes in, SOG's, (b) training and mentorship issues, (c) equipment limitations, and (d) the grasp that personnel have with strategies and tactics. Olzak (2008) reported the benefits of implementing the AAR process includes: (a) root causes are identified using input from multiple perspectives, (b) assisting employee development by examining better ways to achieve goals and objectives,

and (c) performing AAR's on both successful and unsuccessful activities results in not only achieving expected outcomes, it can also result in reaching them with greater consistency.

Sims (2003) noted that an AAR will assist leaders and their employees in recognizing what actions make them successful in accomplishing their goals and what actions prevent them from meeting their goals.

Dr. Calhoun (personal communication, November 21, 2008) revealed several outcomes that can be expected from an AAR process: (a) improved practices and methods flow back into operations, (b) the ability to gather information resulting in the development of goals and objectives for the next year, and (c) the ability to measure successful outcomes.

Several researchers offered the AAR process as a tool that can assist with development of personnel through proactive feedback. Feedback is a way of providing corrective action and guidance when incorrect performance is observed. By identifying concrete and actionable recommendations, the AAR defines necessary steps for improving the process for accomplishing a task or project (USAID, 2006). An AAR not only arms an organization with a useful field-level technique for making learning routine and improving the effectiveness of personnel, but adoption of the AAR process can move the organization toward broader organizational learning (DeGrosky, 2005b).

Darling et al. (2005) acknowledged that AAR's can develop an organization's ability, at senior, middle, and grassroots levels, to recognize day-to-day events, as well as major crises, as opportunities to learn. There can be benefits to reviewing past actions and applying the results to future situations. AAR's help teams link past and current events, so that lessons from the past can be applied to improving current results (Darling et al.). As an ongoing leadership discipline, implementing an AAR process can substantially improve performance, generate knowledge and

increase an organization's confidence around virtually any challenge or opportunity (Signet Group, 2008).

With the five research questions answered, the development and implementation of a SOG for conducting AAR's follows. The decision on subjects and themes to consider in the development of an effective policy was very important. The author appraised the research of many experts to determine the best ideas that would result in a successful AAR process. The design of the SOG will incorporate the following important elements: (a) departmental goals and objectives, (b) designation of the facilitator, (c) a nonthreatening environment allowing for open and candid discussion, (d) a non-hierarchal environment to allow input from all ranks, (e) a record of the AAR and the conclusions, (f) follow-through to develop training and modify behaviors, (g) follow-through to develop and modify policies and procedures, and (h) a method of distributing the AAR report and lessons learned.

A proposed SOG for conducting AAR's at the JCFD is shown in *Appendix G* and represents the results of this research.

Discussion

Through the review of related literature, interviews with community leaders, and an analysis of survey results from nationally accredited fire service organizations, the author validated the importance of conducting consistent and effective AAR's. It was apparent from the start of this research that discovering and reviewing the critical elements of an event, activity, or incident in order to identify and correct errors, ascertain procedures needing modification, and confirming and promoting positive actions would be valuable to an organization such as the JCFD. The AAR has gained broad acceptance among organizations operating in high-risk

environments; those in which common human error can produce unacceptable outcomes (LLI, 2004).

An AAR can be a very complex and elaborate process or it can be a simple and uncomplicated process. The literature review remained consistent about techniques that can be employed to conduct AAR's. The two AAR techniques cited most often in the literature were informal and formal. It was found that the fundamental approach to both techniques is essentially the same although there is some variation in how and when they are conducted. The size and complexity of the incident or event is usually the determining factor when choosing the type of AAR. The literature established that the immediate nature of the informal AAR was important for the relevant exchange of information because participants will have the experiences fresh on their minds. Ideally, the informal assessment is done while emergency crews and apparatus are still on the scene, allowing optimal conditions for retracing the actions of crews and analyzing any tactical or operational problems they may have encountered during the incident (FEMA, USFA, 2008). One of the key aspects of informal AAR's is that it allows learning to be applied immediately. Providing direct feedback while operations are still fresh in the minds of personnel is a significant strength of informal AAR's (Collison & Parcell, 2004; Garvin, 2000; LLI, 2004; USAID, 2006).

Several experts noted a concern with not documenting and disseminating information and lessons learned from informal AAR's (Dickerson, 2006; Gayk, 2007). It was made clear in the research the importance of communicating the results and recommendations of the AAR. It is recommended, that if during a an informal AAR, a unique situation is encountered that might affect emergency operations in either a positive or negative way; information should be

documented and forwarded to the next level in the chain of command for further consideration (FEMA, USFA, 2008).

The author found that the term “After Action Review” might actually be misleading in that it could direct someone to conclude that an AAR is something that takes place after an event or incident. Collison and Parcell (2004) report that a common misconception regarding AAR's is that they should only be carried out at the end of a formal project or discrete piece of work. In actuality, AAR’s can be conducted at anytime during an event or incident bolstering the positive effect of immediate learning. Informal AAR’s can be conducted following a specific event during a wider project or activity that results in learning while doing (Robertson and De Brún, 2005).

The literature review showed that a formal AAR is a detailed review and analysis of large-scale and other tactically challenging operations (FEMA, USFA, 2008). Formal AAR’s were determined to follow a specified process and require detailed preparation, planning, and coordination. During a formal AAR every aspect of the incident is carefully reviewed and analyzed to determine what went well, what could be improved, and why (FEMA, USFA).

The author found that the AAR techniques provided through the literature review closely paralleled the AAR techniques described by Dr. Calhoun during his interview. Dr. Calhoun identified the use of formative and summative assessments as ways of evaluating educational programs and professional development activities. Interestingly, IFSTA (2004) related formative and summative assessments to an emergency incident. IFSTA affirmed that during an event or incident, the incident commander continually performs a formative evaluation (size up) of the situation. When the incident is over, a summative evaluation in the form of the AAR then takes place.

It became obvious during the research that after each incident or event, time should be made available to review actions and operations. Regardless of the technique utilized, significant findings and lessons learned need to be collected and communicated to all personnel in order to better prepare them for their next assignment, project or emergency response. In addition, it was determined that the JCFD must make the commitment to follow through with the recommendations developed from the AAR. Failing to do so will only lead to future disinterest and distrust in the next AAR session.

Through the review of related literature and the analysis of AAR processes from other fire service organizations, the author established that implementing a successful AAR practice is not an easy task. Every organization has its own culture, traditions, and background. The ability of an organization to effectively implement a process for AAR's can be difficult. The author found that the recommendations provided in the literature review addressed many of the challenges and limitations that organizations encounter when implementing an SOG for conducting AAR's.

The literature review overwhelmingly suggested that an important aspect impacting the quality of an AAR is the willingness of participants to be open and candid during discussions. The greatest challenge with integrating the AAR process into regular practice is encouraging openness among the people involved; something with which many personnel are uncomfortable (LLI, 2004). A successful AAR relies on communication and cooperation among the participants engaged in the process. However, fire service organizations are based on a paramilitary type organization where a hierarchy of rank exists. The traditional management roles of officer/supervisor and firefighter/subordinate are played out on a daily basis. The person in authority provides direction and orders to those in the subordinate role, especially on the

emergency scene. The author initially thought that it would be particularly difficult to shift the basis of this relationship from hierarchical supervision to non-hierarchical cooperation and get the most effective AAR. The research continually pointed to the fact that an organization has to overcome this challenge in order to implement an effective AAR practice. During his interview, D. Temple emphasized that in order to create a learning atmosphere a non-hierarchical environment must exist (personal communication, November 25, 2009). No one, regardless of rank or position, has all the information or answers. Many problems can go unresolved because their existence is not recognized. Fire department leadership must create an environment that promotes trust and encourages personnel to participate openly and honestly in the AAR process without fear of personal attacks or official retribution (FEMA, USFA 2008). For AAR's to be effective, it needs to be established that an AAR is not an opportunity to point blame but to learn about what is and what is not working on the incident scene (IFSTA, 2007; LIL, 2004). The author continues to believe that it will be difficult to for the JCFD to accept a non-hierarchical environment for conducting AAR's. However, armed with the enhanced knowledge and skill developed through this research process, the author is confident that the JCFD will be successful in implementing an effective process through consistent practice.

An orderly, well thought-out process was found to be essential. This factor keeps the AAR discussions focused, emotions under control, and finger pointing to a minimum. A disciplined, structured process is essential in an AAR to ensure coherence and avoid random, rambling discussion (Garvin, 2000). The literature review and research illustrated that a well-structured AAR format can ensure that the review will be objective and impersonal (Collison & Parcell, 2004). Consistency in purpose conveys integrity to a process. Reviews or analysis performed without guidelines in place are often vague and provide little educational advantage.

The key to successfully performing AAR's is having and enforcing a written policy that establishes a systematic and standardized approach for conducting them (FEMA, USFA, 2008).

The author discovered through the review of written sources several key principles and characteristics for an effective AAR process. It initially appeared to the author that AAR's conducted in a timely manner would provide the most value. To minimize memory loss, AAR's must be conducted as soon after the event as practical (Collison and Parcell, 2004). From the results of question two in the survey, the majority of nationally accredited fire service organizations (85.3%) indicated that they conducted AAR's in an open and timely manner. Simply put, the less time between discussing an AAR and applying the lessons learned the more effective the application. However, it was pointed out in the literature review that proper time must be allowed for gathering and preparing the necessary incident information. In the author's opinion, this impacts the ability for conducting an AAR in a timely and suitable fashion. This is especially true for accomplishing formal AAR's. Complicating the time issue is the fact that all relevant personnel should be notified of the date, time, and place where the AAR is to be conducted (FEMA, USFA, 2008). Experts pointed out that the AAR should be held on a day that the same shift is scheduled to work, so that personnel who were involved in the incident will be available (Collison & Parcell, 2004; FEMA, USFA 2008; Garvin, 2000). In contrast, it was found from the results of question four of the survey that bringing together personnel who were engaged in an incident may be easier said than done. One of the main challenges and limitations associated with the process of conducting AAR's was the logistics and coordination of getting personnel together. Obstacles such as schedule conflicts with other events, interruption with emergency responses, personnel on leave, concerns about reducing response capabilities, and

excessive preparation time were pointed out as reasons impacting the ability to conduct timely AAR's.

As cited previously, the demeanor with which an AAR is performed and perceived by the participants is essential to its success. The ideal climate for personnel to discuss issues is one of trust and openness. Reinforcing the fact that it is permissible to disagree and focusing on learning and encouraging people to give honest opinions are approaches that can create an atmosphere conducive to maximum participation (Collison & Parcell, 2004). When personnel are allowed to reveal their perceptions and thoughts, problems and issues can be more clearly defined and identified. By generating alternatives, effective solutions will be made clearer. Providing a non-judgmental environment in which people have trust and feel free to discuss issues without attachment of blame or judgment works best (Sexton & McConnan, 2003). Involvement from all personnel can lead to a better understanding of what the true dynamics of the situation are. Similarly, survey results compared favorably with the literature review. When asked in question five what were the key principles and characteristics of the AAR process prominent themes offered were honest discussion, allowing input from all ranks and having a no fault, no blame environment.

Research pointed to the importance of not only having a competent facilitator but also one who is autonomous and independent from the event or incident. To maintain objectivity it is recommended that the facilitator be someone not closely involved in the project (Robertson and De Brún, 2005). In contrast, the results of survey question 12 found that the majority of responding fire service organizations (78.6%) utilized the incident commander as the main AAR facilitator. In their technical report on AAR's FEMA and USFA (2008) initially noted that the incident commander or safety officer might be a logical choice to assume the facilitator position

because of his or her intimate knowledge of the tactical and operational plan, and any problems that may have been encountered during the incident. However, FEMA and USFA later diverged from this, discerning that this may not be the best choice, especially if things did not go well during the incident. Because of his or her involvement in the incident, the incident commander may find it difficult to be objective or to avoid being defensive. In such situations an uninvolved officer might be a preferable choice to lead the review (FEMA, USFA, 2008). Surprisingly and divergent to the research of FEMA and USFA, the results of survey question 12 also showed that someone not associated with the incident was least utilized as a selection for filling the role of facilitator.

The true benefits of AAR will come from taking outcomes and lessons learned and applying them to future operations and training. By learning from collective experience, organizations can capture and spread knowledge and apply learning so that they may understand events and improve performance (DeGrosky, 2005b). As established from the results from survey question 10, an overwhelming majority (96.7%) of the accredited fire service organizations indicated that by conducting AAR's, it allows their organization to effectively identify and communicate areas of sustainment, improvement, and lessons learned that results in a positive impact on future operations. The AAR provides an opportunity for an organization to reflect on an event or incident to improve on the next experience. As an ongoing leadership discipline, implementing an AAR process can substantially improve performance, generate knowledge and increase an organization's confidence around virtually any challenge or opportunity (Signet Group, 2008).

Prior to this research there was little emphasis by the JCFD on the importance of conducting consistent and systematic reviews and analysis of operational actions. The author

found that many of the recommendations and much of the guidance provided through the literature review and results of the survey closely parallel the need for the JCFD to establish a SOG for conducting AAR's. The implications of this research for the JCFD are many. The development and implementation of a guideline for conducting AAR's will lend consistency and reliability to the process, allowing for a greater chance of achievement and benefit to the organization. A successful AAR practice will put forward up-to-date and valid information, methods and concepts enhancing the safety and well-being of personnel. By increasing opportunities for personnel to make contributions, greater satisfaction and commitment to the mission and goals of the JCFD can be achieved.

Consistent and systematic information gathering via a coherent AAR process can help clarify the organization's future direction and establish JCFD priorities for action. Key issues and challenges can be focused on allowing for informed and clear decision making on what should be done. Future decisions based on lessons learned will enhance the ability of the JCFD to proactively respond to circumstances and demands that it may face.

In today's world, change is constant and the JCFD must grasp the opportunities that are available to stay ahead of the pace. A consistent and effective AAR process can help overcome traditions and past practices. By purging unsound patterns and the effects they bring about the JCFD can build on firm ideas and solutions. Investing the time and energy in the practice of conducting AAR's will assist the JCFD in holding itself accountable for learning. Lessons learned must be explicitly linked to future actions and leaders must hold everyone, especially themselves, accountable for learning (Darling et al., 2005). Linking this learning to future actions and activities, JCFD personnel will be more able to effectively perform their duties, thus increasing positive consequences and advancing the organization's credibility in the community.

Recommendations

Based on the data collected and an examination of this data, the findings of the research have the potential to make a significant impact on JCFD emergency and non-emergency operations. The SOG will provide a platform for continued organizational development. The fundamentals of the information contained in the guideline will allow enhanced firefighter safety and customer service. As a result of providing proven techniques in the form of a SOG, JCFD personnel can initiate positive outcomes during future programs, events and emergency incidents.

By collecting the information from the survey, interviews with community representatives, and the review of the literature, the following recommendations are provided to ensure the JCFD is providing the most optimum AAR's possible.

1. To support the implementation of a guideline for conducting an AAR, a training program, paralleling the standardized components of the SOG, will need to be developed. Preparing a lesson plan and inclusion into the department in-service training program will be accomplished by May 1, 2009. This training and education will allow all personnel to gain a greater insight into AAR methodology and how to apply it correctly. A better idea of the concepts will allow for a more effective participation in the process.
2. Develop a method to communicate the findings and lessons learned to all JCFD personnel. Creation of an AAR data folder on the department Web site accessible by all personnel will be activated by July 1, 2009. AAR reports will be stored in the data folder for review and analysis.

3. Development and inclusion of a comprehensive training module for developing and conducting an AAR into the Tennessee Fire Service and Code Enforcement Academy's lesson plan for Fire Officer I by August 1, 2009. The goal will be to meet the National Fire Protection Association Standard 1021 requirements and improve the statewide passing rate for the Fire Officer I certification practical examination process. This will benefit JCFD personnel completing the Fire Officer I training program.
4. Development and inclusion of a training module on the fundamentals of conducting AAR's into the Northeast Tennessee Regional Fire Training Academy's basic firefighter curriculum by September 1, 2009. The initial education of probationary firefighters on the benefits of AAR's will allow for improved awareness and acceptance, paying dividends in the future.
5. Continuous feedback and evaluation is a necessity to ensure a potent AAR process. Identifying key issues, trends and problems to address is the cornerstone of effective AAR's. The data gathered from the AAR process will be used to revise and update procedures and address any training deficiencies discovered. Such a recommendation potentially prevents the repetition of mistakes and allows for better operational efficiency.
6. Develop a post assessment instrument to measure the effectiveness of the AAR process. The assessment will take place one year after implementation to ensure it continues to serve its purpose as an effective information gathering and review practice. Based on the appraisal, modifications and amendments can be made to keep the course of action well-structured and functional.

7. Examine the potential benefits of developing performance measurements for the JCFD. Data gathered through the AAR process can be analyzed to determine how efficient current resources are being utilized. Performance measures can provide clarity to the mission of the JCFD and allow for a better understanding by citizens of what the organization is accomplishing. The subject of performance measurement is a potential topic for a future applied research project.

The results of this ARP can serve to guide and motivate future research and development of the most efficient and effective strategies to use when conducting AAR's. Education and training for personnel on the proper techniques and key characteristics and principles of an AAR process can demonstrate that an organization is committed to providing the best service possible for all customers. AAR's contribute to performance best when seen, not as an event, but as an ongoing practice, a disciplined approach to improving performance over time (DeGrosky, 2005a).

Continuous research, amplifying the benefits of increased knowledge and improved operations, could promote the development and implementation of policies, procedures and training programs in other emergency serve organizations. Future research can assist in evaluating current practices related to AAR's, helping to advance understanding and knowledge in this valuable learning opportunity.

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Appendix A

National Fire Academy
Executive Fire Officer Program
Executive Analysis of Fire Service Operations in Emergency Management

Dear Fire Chief/Accreditation Officer,

As part of the National Fire Academy's Executive Fire Officer Program, I am completing an Applied Research Project on After Action Reviews (AAR)/Post Incident Analysis (PIA). The purpose of this research is to assess procedures, techniques, and programs for improving the ability of evaluating operational actions through the development and implementation of a Standard Operating Guideline for the Johnson City, TN Fire Department. The attached survey will assist in gathering information about how other fire departments conduct AARs/PIAs. Survey information will be incorporated into the project and will remain confidential.

The reason your organization was selected is because it is one of 127 agencies that have been awarded Accredited Agency Status by the Commission on Fire Accreditation International (CFAI). In the Research and Information Collection Guide section of the 2006 CFAI Fire and Emergency Service Self-Assessment Manual, a criterion question asks if your agency has appropriate policies and procedures in place for conducting post-incident analysis of emergency operations.

The survey should take no longer than 10-15 minutes to complete. Once you complete the survey please fax it to me at 423-975-2846. Target date for completing and faxing the survey is November 24, 2008.

Thank you in advance for your assistance.

Sincerely,

Mark J. Finucane
Assistant Chief
Johnson City Fire Department
505 East Main Street
Johnson City, TN 37601
Office – 423.975.2844
Fax – 423.975.2846
Cell – 423.483.5820
mfinucane@johnsoncitytn.org
firebank@comcast.net

When the survey is complete please fax to Mark J. Finucane at 423.975.2846.

Target Due Date is November 24, 2008

REQUEST: Copies of PIA/AAR policies e-mail attachment to firebank@comcast.net

Appendix B

CFAI Accredited Fire Service Agency Survey Mailing List

DEPARTMENT	CITY	STATE
1. Mobile Fire & Rescue Department	Mobile	Alabama
2. Calgary Fire Department, City of	Calgary	Alberta
3. Apache Junction Fire District	Apache Junction	Arizona
4. Glendale Fire Department	Glendale	Arizona
5. Mesa Fire Department, City of	Mesa	Arizona
6. Yuma Fire Department, City of	Yuma	Arizona
7. Chandler Fire Department	Chandler	Arizona
8. Tempe Fire Department	Tempe	Arizona
9. Central Yavapai Fire District	Prescott Valley	Arizona
10. Northwest Fire/Rescue District	Tucson	Arizona
11. Clovis Fire Department	Clovis	California
12. Roseville Fire Department (CA)	Roseville	California
13. Santa Clara County Fire Department	Los Gatos	California
14. Defense Logistics Agency San Joaquin County	Stockman	California
15. Air Force Academy Fire & Emergency Services	USAF Academy	Colorado
16. Aurora Fire Department	Aurora	Colorado
17. Parker Fire Protection District	Parker	Colorado
18. South Metro Fire Rescue	Centennial	Colorado
19. Pueblo Fire Department	Pueblo	Colorado
20. Coral Gables Fire Department	Coral Gables	Florida
21. Jacksonville N.A.S. Fire Department	Jacksonville	Florida
22. Village of Key Biscayne Fire Rescue	Key Biscayne	Florida
23. Palm Beach Gardens Fire Department	Palm Beach Gardens	Florida
24. Palm Harbor Special Fire Control & Rescue District	Palm Harbor	Florida
25. St. Petersburg Fire & Rescue	St. Petersburg	Florida
26. Temple Terrace Fire Department	Temple Terrace	Florida
27. Winter Park Fire-Rescue Department	Winter Park	Florida
28. Palm Beach County Fire Rescue	West Palm Beach	Florida
29. Bradenton Fire Department, City of	Bradenton	Florida
30. Largo Fire Department	Largo	Florida
31. Miami Beach Fire Rescue Department	Miami Beach	Florida
32. Orange County Fire Rescue Department	Winter Park	Florida
33. City of Seminole Fire Rescue Department	Seminole	Florida
34. Covington Fire Department	Covington	Georgia
35. Atlanta Fire and Rescue Department	Atlanta	Georgia
36. Cobb County Fire & Emergency Services	Marietta	Georgia
37. Columbus Dept. of Fire & Emergency Medical Services	Columbus	Georgia
38. Honolulu Fire Department	Honolulu	Hawaii
39. Pacific Missile Range Facility Fire Department	Kekaha	Hawaii
40. Countryside Fire Protection District	Vernon Hills	Illinois
41. Geneva Fire Department	Geneva	Illinois
42. Glencoe Department of Public Safety	Glencoe	Illinois
43. Mokena Fire Protection District	Mokena	Illinois
44. Naperville Fire Department	Naperville	Illinois
45. Oak Park Fire Department	Oak Park	Illinois

DEPARTMENT	CITY	STATE
46. Park Ridge Fire Department	Park Ridge	Illinois
47. Skokie Fire Department	Skokie	Illinois
48. Westmont Fire Department	Westmont	Illinois
49. Wilmette Fire Department	Wilmette	Illinois
50. Highland Park Fire Department	Highland Park	Illinois
51. Rock Island Arsenal Fire & Emergency Services	Rock Island	Illinois
52. Clay Fire Territory	South Bend	Indiana
53. Fishers Fire Department	Fishers	Indiana
54. West Des Moines Fire Department, City of	West Des Moines	Iowa
55. Iowa City Fire Department	Iowa City	Iowa
56. Lenexa Fire Department	Lenexa	Kansas
57. Sedgwick County Fire District #1	Bel Aire	Kansas
58. Lawrence-Douglas County Fire Medical	Lawrence	Kansas
59. Bowling Green Fire Department	Bowling Green	Kentucky
60. East Side Fire Protection District	Baton Rouge	Louisiana
61. Howard County Fire and Rescue Department	Columbia	Maryland
62. Montgomery County Fire and Rescue Service	Rockville	Maryland
63. Ionia Department of Public Safety	Ionia	Michigan
64. Port Huron Fire Department	Port Huron	Michigan
65. O'Fallon Fire Protection District	O'Fallon	Missouri
66. Central Jackson County Fire Protection District	Blue Springs	Missouri
67. Fenton Fire Protection District	Fenton	Missouri
68. Henderson Fire Department (NV)	Henderson	Nevada
69. Las Vegas Fire and Rescue	Las Vegas	Nevada
70. Navy Lakehurst Fire and Emergency Services	Lakehurst	New Jersey
71. Ridge Road Fire District	Rochester	New York
72. Asheville Fire and Rescue Department	Asheville	North Carolina
73. Cary Fire Department, City of	Cary	North Carolina
74. Gastonia Fire Department, City of	Gastonia	North Carolina
75. Greensboro Fire Department	Greensboro	North Carolina
76. Rocky Mount Fire Department	Rocky Mount	North Carolina
77. Charlotte Fire Department	Charlotte	North Carolina
78. Wilson Fire/Rescue Services	Wilson	North Carolina
79. Jacksonville Fire Department	Jacksonville	North Carolina
80. Shaker Heights Fire Department	Shaker Heights	Ohio
81. Union Township Fire Department	Cincinnati	Ohio
82. Columbus Division of Fire	Columbus	Ohio
83. Washington Township Fire Department	Dublin	Ohio
84. Beachwood Department of Fire-Rescue	Beachwood	Ohio
85. Washington Township Fire Department	Dayton	Ohio
86. Kitchener Fire Department, City of	Kitchener	Ontario
87. Clackamas County Fire District #1	Milwaukie	Oregon
88. Jackson County Fire District #3	White City	Oregon
89. Eugene Fire & EMS Department	Eugene	Oregon
90. Portland Fire and Rescue	Portland	Oregon
91. Tualatin Valley Fire & Rescue	Aloha	Oregon
92. Salem Fire Department	Salem	Oregon
93. King of Prussia Volunteer Fire Company	King of Prussia	Pennsylvania
94. Hilton Head Island Fire & Rescue, Town of	Hilton Head Island	South Carolina

DEPARTMENT	CITY	STATE
95. Mount Pleasant Fire Department, Town of	Mount Pleasant	South Carolina
96. Spartanburg Public Safety Dept. Fire Division	Spartanburg	South Carolina
97. Sioux Falls Fire Rescue	Sioux Falls	South Dakota
98. Kingsport Fire Department	Kingsport	Tennessee
99. Nashville Fire Department	Nashville	Tennessee
100. Maryville Fire Department	Maryville	Tennessee
101. Houston Fire Department	Houston	Texas
102. Plano Fire and Rescue	Plano	Texas
103. Southlake Dept. of Public Service, Fire Services	Southlake	Texas
104. Hartford Fire Department	White River Junction	Vermont
105. Charlottesville Fire Department	Charlottesville	Virginia
106. Fort Lee Fire and Emergency Services	Fort Lee	Virginia
107. Langley Air Force Base Fire Department	Langley AFB	Virginia
108. Virginia Beach Fire Department	Virginia Beach	Virginia
109. Henrico County Division of Fire	Richmond	Virginia
110. Roanoke Fire-EMS Department	Roanoke	Virginia
111. Navy Region Mid-Atlantic Fire & Emergency Services	Norfolk	Virginia
112. Newport News Fire Department	Newport News	Virginia
113. Lynchburg Fire and EMS Department	Lynchburg	Virginia
114. Bellevue Fire Department	Bellevue	Washington
115. South Kitsap Fire Rescue	Port Orchard	Washington
116. Kent Fire Department	Kent	Washington
117. Woodinville Fire & Life Safety District	Woodinville	Washington
118. McChord Fire and Emergency Services	McChord AFB	Washington
119. Navy Region Northwest Fire & Emergency Services	Keyport	Washington
120. Menasha Fire Department, Town of	Neenah	Wisconsin
121. West Allis Fire Department	West Allis	Wisconsin

Appendix C

National Fire Academy
Executive Fire Officer Program
Executive Analysis of Fire Service Operations in Emergency Management

After Action Review/Post Incident Analysis Survey

Department Name: _____

Type: Career _____ Volunteer _____ Combination _____

Number of Certified/Uniform Personnel: _____

Population Served: _____ Square Miles/Coverage: _____

Title/Rank of Person Filling Out Survey Form: _____

1. **Does your department require Post Incident Analysis (PIA)/After Action Reviews (AAR) of emergency incidents to be conducted?**

   YES _____ NO _____ UNCERTAIN _____

2. **Are PIA/AAR conducted in an open and timely manner?**

   YES _____ NO _____ UNCERTAIN _____

   IF NO – WHY NOT? _____

   _____

   _____

3. **What benefits/outcomes does your department sustain from conducting PIA/AAR?**

   _____

   _____

   _____

4. **Are there any limitations or challenges associated with the process of conducting PIA/AAR?**

   _____

   _____

5. **What do you think are the key principles and characteristics of your PIA/AAR process? (Describe)**

   _____

   _____

6. **Does your department record the conclusions drawn from the PIA/AAR?**

   YES _____ NO _____ UNCERTAIN _____

7. **How is the PIA/AAR record distributed?**

   TO ALL PERSONNEL _____

   TO ONLY THE COMPANIES INVOLVED IN THE PIA/AAR _____

   RECORD/DOCUMENTATION NOT DISTRIBUTED _____

   OTHER MEANS _____ DESCRIBE: _____

   _____

8. **Has PIA/AAR conclusions served as a basis for revising/updating Standard Operating Guidelines/Procedures (SOG/SOP)?**

   YES _____ NO _____ UNCERTAIN _____

9. **Does your department have an SOG/SOP for conducting PIA/AAR?**

   YES _____ NO _____ UNCERTAIN _____

10. **Do you think that conducting PIA/AAR has allowed your department to effectively identify and communicate areas of sustainment, improvement and lessons learned resulting in a positive impact on future operations?**

    YES _____ NO _____ UNCERTAIN _____

11. **What types of PIA/AAR are conducted in your department?**

    FORMAL _____ INFORMAL _____

12. Who conducts/facilitates the PIA/AAR process?

INCIDENT COMMANDER _____ SHIFT COMMNADER _____

COMPANY OFFICER _____ TRAINING OFFICER _____

SOMEONE NOT ASSOCIATED WITH THE INCIDENT _____

13. Is the PIA/AAR process successful in your department?

YES _____ NO _____ UNCERTAIN _____

14. What types of emergency incidents receive a PIA/AAR?

RESIDENTIAL FIRES: SINGLE _____ MULTI-FAMILY _____

MAJOR FIRES/INCIDENTS _____ HAZMAT INCIDENTS _____

SPECIAL RESCUE _____

OTHER _____

15. Does your department provide training on how to conduct PIA/AAR?

YES _____ NO _____ UNCERTAIN _____

IF YOUR FIRE DEPARTMENT HAS AN SOG/SOP ON POST INCIDENT ANALYSIS/AFTER ACTION REVIEWS CAN YOU PLEASE SEND ME A COPY VIA E-MAIL ATTACHMENT:

firebank@comcast.net

THANK YOU FOR YOUR TIME AND ATTENTION!

Appendix D

E-Mail Request for Interview

Dear (Dr. Calhoun) (Mr. Temple),

I hope everything is going well for you and (The ETSU School of Pharmacy/Saratoga Technologies). I am sending this email to ask you if you would allow me to interview you for a project I am working on for the National Fire Academy (NFA). I am committed to a four year program at the NFA. It is called the Executive Fire Officer Program (EFOP). I attend a class at the NFA in Maryland for two weeks every year. EFOP students are then required to complete an applied research project (ARP) related to the course they just attended. I have completed two ARP's so far and this is my third endeavor. Going out into the community to investigate what other organizations are doing adds value to the research. Generally, the problems we research are not solely fire service issues. Business, education and the military are excellent resources for information.

The current ARP is on After Action Reviews (AAR)/Post Incident Analysis (PIA). The AAR is a process technique that uses a review of experience to avoid mistakes and reproduce success. The purpose of this research is to assess procedures, techniques, and programs for improving the ability of evaluating operational actions through the development and implementation of a Standard Operating Guideline for the Johnson City, TN Fire Department.

The time frame needed for the interview is 20-30 minutes. The date and location of the interview can be at your convenience; however, I request that, if possible, we do this no later than December 5th. This will assist me in completing the ARP by the due date in February 2009. Some of the information obtained in the interview will be incorporated into the ARP to support the research. You will be cited as the reference. I will be glad to provide you a copy of the ARP once it has been completed and evaluated.

In order to provide you an opportunity to consider the issues beforehand I have also attached the list of questions to be discussed during the interview.

If you are willing to help with this please contact me via email at firebank@comcast.net . I can make arrangements with your Executive Assistant or Office Coordinator to set a date, time, and location that is convenient for you.

Thank you for your assistance and support of this project.

Sincerely,

Mark J. Finucane

Appendix E

Interview Summary Statements

1. **Does your organization review, (evaluate/analyze) programs, processes, actions, projects or operations to identify strengths, areas of sustainment, areas of improvement and lessons learned?**

   Dr. Calhoun:
   - Yes. As part of the strategic planning process, evaluations of operational actions and educational programs are performed.

   Mr. Temple:
   - Yes. We regularly review our work processes looking for ways to identify problems and avoid similar situations in the future.

2. **Can you describe how your organization does this? What techniques or methods are utilized?**

   Dr. Calhoun:
   - Both formative and summative assessments are conducted for educational programs and professional development activities. Formative assessment is incorporated into the classroom and provides information needed to modify teaching and learning as they are happening. This allows for adjustments to be made during the semester. Summative assessment is used to determine if the organization has achieved the goals for a particular program.

   Mr. Temple:
   - Simply attempting to find out what worked and what didn't. Sharing ideas. Discuss frequently found issues. Reviewing and assessing past mistakes and identifying the root cause of a problem. It is critical to get to the root cause of mistakes so that modifications can be integrated back into the process.
   - Immediately start to institute corrective procedures when problems or mistakes are identified. Debriefing customers as a way of finding out how they perceive our service. Mistakes cost money so the idea is to learn quickly from mistakes and move forward to use the knowledge in the next project.
   - We try to be systematic about it and capture lessons from the events as they unfold and not wait until they are done.

3. **When do you conduct the reviews? During? After? Both During and After the program/project?**

   Dr. Calhoun:
   - We conduct a state of the union address on a weekly basis. Student, faculty, and staff are all included in this. We ask for input from all levels. We ask what rumors are circulating that need to be addressed. We also have separate staff and administrative retreats. People are allowed to ask any question they want. They are asked how they think the organization can be improved. The findings are reduced to writing and then reviewed with the organization as a whole.

   Mr. Temple:
   - On a weekly basis, every Monday we have a review of the week's business and developments. Management and employees meet via teleconference.
   - We conduct reviews and analysis both during a project and afterwards. We are constantly looking for clarity on ways to improve our ability to understand and find solutions to problems and road blocks.

4. **Are there any challenges associated with conducting the reviews, evaluations and/or analysis?**

Dr. Calhoun:

- We know we are going to screw up. We try to find out what the problem is and change the process. The quicker we discover the issue the less time it takes, in most cases, to correct it. Probably the biggest challenge is getting people to have frank discussion about issues. Building a environment of trust is key to revealing core issues.
- No matter how good you are there is always somebody that can help you and you need to provide an environment for them to do so.

Mr. Temple:

- One of the challenges is to cut out politics and get people together and listen to all sides of the story. This can assist in uncovering and identifying mistakes so that lessons can be learned from them. Office politics can create an environment of bias and can cause employees to take sides. When this happens there is little trust between employees. Instead of working together, people are working against each other. The goal of our briefings is to do better next time, not to blame the individual.

5. **What do you think are the key principles and characteristics of conducting effective reviews, evaluations or analysis?**

Dr. Calhoun:

- Actively looking for positive lessons in every review or evaluation. Whether the result of a project or event is positive or negative, there is always an opportunity to learn something to improve future performance.
- Allowing front line people to have a say in how things are done because they are the ones experiencing the situation and may know best how to improve it or resolve an issue.

Mr. Temple:

- Simply listening to all your employees. Creating a feeling in the employees that they have a personal stake in the company by valuing their input. It is critical to get feedback. Everything is related to customer service. Find out how mistakes occurred and get the solutions back into the system. Focus should be on making the organization better, not on the mistake that was made.
- Disseminating the lessons learned to all employees or project team members.

6. **What outcomes do you expect from conducting the reviews, evaluations or analysis?**

Dr. Calhoun:

- To have improved practices and methods flow back into the operations and curriculum of the organization.
- Having the ability to gather information resulting in the development of goals and objectives for the next year.
- Having the ability to measure successful outcomes whether they are dramatic or incremental.

Mr. Temple:

- An important outcome would be the improved quality of our work and the resulting enhancement of customer service.
- Development of cost effective solutions to technical problems.
- Increased ability to anticipate customers' changing expectations.
- Apply lessons from past failures and successes towards future business ventures.

Appendix F

CFAI Accredited Fire Service Agencies Completing and Returning Survey

1. Air Force Academy Fire & Emergency Services
2. Asheville Fire and Rescue
3. Atlanta Fire/Rescue Department
4. Aurora Fire Department
5. Bellevue Fire Department
6. Town of Cary Fire/Rescue
7. Central Yavapai Fire District
8. Chandler Fire Department
9. Clay Fire Territory
10. Cobb County Fire and Emergency Services
11. Columbus Fire and EMS (Georgia)
12. Columbus Division of Fire (Ohio)
13. Countryside Fire District
14. Glencoe Department of Public Safety
15. City of Glendale
16. Greensboro Fire Department
17. Hartford Fire Department (Vermont)
18. Henrico County Division of Fire
19. Highland Park Fire Department
20. Howard County Fire and Rescue Services
21. Houston Fire Department
22. Iowa City Fire Department
23. King of Prussia Volunteer Fire Company
24. Kingsport Fire Department
25. Lawrence-Douglas County Fire Medical Department
26. Menasha Fire Department
27. Mokena Fire Protection District
28. Mobile Fire Rescue Department
29. Montgomery County Fire Rescue
30. Mount Pleasant Fire Department
31. Naperville Fire Department
32. Navy Lakehurst Fire and Emergency Services
33. Newport News Fire Department
34. Oak Park Fire Department
35. O'Fallon Fire Protection District
36. Orange County Fire Rescue
37. Palm Beach Gardens Fire Rescue
38. Palm Harbor Fire Rescue
39. Park Ridge Fire Department
40. Parker Fire Protection District
41. Plano Fire and Rescue
42. Portland Fire and Rescue
43. Ridge Road Fire District
44. Rocky Mount Fire Department
45. Roseville Fire Department
46. Salem Fire Department
47. Seminole Fire Rescue Department
48. Shaker Heights Fire Department
49. Sioux Falls Fire Rescue
50. South Kitsap Fire Rescue
51. South Metro Fire Rescue
52. Tempe Fire Department
53. Tualatin Valley Fire and Rescue
54. Virginia Beach Fire Department
55. West Allis Fire Department
56. West Des Moines Fire Department
57. Westmont Fire Department
58. Wilmette Fire Department
59. Winter Park Fire Rescue
60. Woodinville Fire District
61. Yuma Fire Department

Appendix G

Johnson City Fire Department

Standard Operating Guideline

Policy # - 300.25
Section: Emergency Operations
Issued: Draft
Revised: Draft

After Action Reviews

I. Purpose
   A. To provide a formal review process by analyzing the variety of incidents to which the Johnson City Fire Department (JCFD) responds. As incidents become more complex and diversified, it is important to review operations and their overall effectiveness.
   B. Provide an opportunity for participants to objectively review operations in a constructive manner.
   C. Identify effective procedures (areas of sustainment) for future emergency and non-emergency operations.
   D. Identify areas needing improvement and recommend changes to upgrade effectiveness.
   E. Identify and communicate lessons learned to enhance firefighter safety and health and customer service.

II. Policy
   A. The intent of this guideline is to create a positive learning experience through the review and evaluation of what occurred at the incident and how things can be improved upon in the future.
   B. The After Action Review (AAR) process shall not be used to place blame, criticize individuals or as an investigative tool for disciplinary purposes.

III. Procedure
   A. The AAR program will consist of three different levels of review. The three different levels are: Personal, Informal and Formal.
   B. In order for the AAR process to be an effective training tool, an AAR should occur on every incident.
   C. The AAR shall be conducted in a positive and professional manner. The AAR shall not employ blame or criticism of individual or company actions. This requirement shall be explained to all participants prior to initiating an AAR. The facilitator conducting the AAR is responsible to ensure that this is communicated and complied with.
   D. AAR's should be started at the incident scene when practical and safe to do so. An AAR can start while everything is still deployed and in place at the incident scene. This will allow participants to visualize what occurred, what did not occur, and any unusual circumstances or problems encountered while memories are still fresh.
   E. Discussion of operations should be reviewed in chronological order.

      1. Personal AAR
         a. The Personal AAR should occur on every incident. It is a very valuable training tool that allows personnel to review the operation and to determine if his or her performance had an impact on the overall operation.
         b. Asking questions about personal performance can allow one to develop professionally by correcting mistakes and applying proper practices.

c. By completing a personal AAR a person can look at his or her own performance, evaluate it, identify strong areas to sustain as well as mistakes and shortcomings, and commit to a better way of doing things
d. Personal AAR Questions:
    - Did I size up the incident correctly?
    - Was the layout of the structure/grounds what I thought it was?
    - Was the fire or problem where I thought it was?
    - Did we deploy the correct hoseline, tools, or equipment?
    - If I had an opportunity to do it again what would I do differently?
    - Did we experience any safety issues?
    - Did we experience any problems that will require the department to change an operational procedure?

Anytime personnel believe that the department has any type of safety or operational issue(s) that need(s) to be addressed, they should report them to their immediate supervisor. The supervisor should evaluate the issue(s) to see if they have merit. Any issue(s) that have merit should be placed in writing and forwarded to the Shift Captain with a copy forwarded to the Assistant Chief of Operations. If the supervisor determines that the issue(s) does not have merit, the supervisor will provide an explanation to the member as to the reason why.

2. Informal AAR
    a. The Informal AAR should occur on first alarm assignments and single company operations that require deployment of equipment and/or tools.
    b. Location of the AAR can be conducted on the incident scene or at the fire station. The location selected should be based on practicality, time of day, and weather conditions. Consideration should be given to personnel safety, company down time, public perception, and vehicle traffic.
    c. The Incident Commander or Company Officer can act as facilitator for the Informal AAR.
    d. Participants should answer four simple questions:
        - What was supposed to happen?
        - What actually occurred?
        - What went well and why?
        - What did we learn?
    e. Recommended areas for information gathering are listed in *Section IV A thru N.*
    f. The Informal AAR should focus on overall operational improvement.
    g. See *Section VI* for procedures on completing a written report for an Informal AAR.

3. Formal AAR
    a. A Formal AAR will be conducted on the following types of incidents:
        - Major Fire Incidents
        - Major Hazardous Materials Incidents
        - Special Rescue Incidents
        - Mass Casualty Incidents
        - Firefighter Injury Involving Hospitalization or Fatality
        - Unusual Incident/Close Call/Significant Safety issue
        - Disaster Drills
        - Civilian Fire Death(s)
        - Major Public Events
        - At the discretion of the Incident Commander or a Chief Fire Officer

b. The Formal AAR process should begin at the scene to initiate the information gathering process. The informal AAR process can serve as an excellent resource for collecting data about strategies, tactics, problems encountered and any concerns brought forth from discussions and/or observations.
c. Recommended areas for information gathering are listed in *Section IV A thru N.*
d. A Formal AAR should be conducted within 30 days of the incident.
e. The Shift Captain is responsible for notifications of scheduled AAR's. A date and location of the Formal AAR will be emailed to all personnel involved in the incident, the Fire Chief, Operations Assistant Chief, Administrative Assistant Chief, and the Training Division. An email shall also be sent to the lead Fire Marshal that was called out to investigate the fire cause and origin and any other agency involved in the incident.
f. For large incidents the IC should designate a facilitator to ensure the Formal AAR proceeds without getting off track with prolonged discussions. See *Section V* for detailed information on facilitating an AAR.
g. Before starting the Formal AAR all participants shall have the ground rules explained to them. The main rule for conducting an AAR is that it will not be used to place blame or criticize individuals.
h. Unless restricted by a Chief Fire Officer, all off-duty members are welcome to attend Formal presentations on a voluntary basis.

IV. Recommended Areas for Information Gathering

A. Building Structure/Layout
B. Facility Operations
C. Size-up
D. Engine, Ladder, MP29 Operations
E. Support Functions
F. Fire Inspection/Code History
G. Conditions present and actions taken
H. Water Supply
I. Dispatch, Enroute, Response Times
J. Strategy and Tactics
K. Accountability
L. Communications
M. Apparatus Positioning
N. Fire Cause and Origin Determination
O. Safety and Health Issues

V. Facilitator

A. The facilitator, if possible, should be an officer who was not at the incident, or had a minor role.
B. The facilitator shall control the AAR discussion and act as chairperson.
C. The facilitator shall appoint a person to record the results/findings of the AAR. The *After Action Review Worksheet (Supplement B)* shall be utilized when conducting the process.
D. Time management is critical. Keeping the AAR less than 90 minutes is desired. If the complexities and discussion warrant more time, a break should be provided.
E. The facilitator should:
    - Avoid giving a critique or lecture
    - Guide the discussion by asking leading questions
    - Suggest the participants discuss not only what happened, but how it happened, and how it could be done better.
    - Focus the discussion to ensure that important tactical lessons are made explicit.
    - Avoid detailed examination of events not directly related to major training objectives.
F. The goal is to obtain effective feedback from all participants in the AAR. This provides an ample database for key points. The facilitator draws information from each member that becomes an important part of the discussion. This information is the basis for discussing alternate courses of action.

VI. Written Report

A. When the AAR (Informal or Formal) results in lessons learned or recommended changes to policies, procedures or guidelines, the IC or Shift Captain must develop a written report detailing the following information:
   1. Time, date and location of the incident
   2. Brief review of incident operations
   3. Detailed explanation of all recommendations and how they will improve the organization. High importance should be placed on safety and training.
   4. Detailed explanation of Lessons Learned and what members should consider when involved in a similar incident.

   The *After Action Review Questionnaire* will assist in the information gathering process. To be completed by every officer on the scene and any interested sergeant or firefighter with constructive comments or observations. This form is to be completed by the end of the next working shift and forwarded to the Incident Commander or Shift Captain. *(Supplement A)*

B. The written report shall be forwarded to the Fire Chief, Operations Assistant Chief, Administrative Assistant Chief and the Officer-in-Charge of the Training Division in an electronic format within 10 working days following the AAR. Upon reviewing the report, the Operations Assistant Chief will provide a response to the IC or Shift Captain in an electronic format detailing the following:
   1. Review of recommendations and lessons learned determining their merit and overall impact on the department. An explanation will be given to support or reject items listed.
   2. Consideration for revision of SOG's and/ or development of a training program to address issues brought forth.
   3. Schedule a meeting with the IC or Shift Captain to discuss items and obtain clarification.

C. A final report will be developed by the Operations Assistant Chief detailing incident information, incident operations, approved SOG/policy revisions and lessons learned. This report shall be sent to all personnel via email and stored in a data folder on the JCFD Web site.
   1. The *After Action Review Findings Report (Supplement C)* shall be utilized for distribution to department personnel.

References:

- FEMA and USFA Special Report: The After Action Critique, USFA-TR-159
- Eversham Fire-Rescue, SOP 102.10 Post Incident Analysis
- Lawrence-Douglas County Fire and Medical Department, SOP II – 54 Post Incident Analysis
- Lubbock Fire Department, G.O. Post Incident Analysis Program
- Sedgwick County Fire Department, SOG 5.7.1 Post Incident Analysis
- Salem Fire Department, SOG 1.5.1 Post Incident Analysis
- Tempe Fire Department Policies and Procedures, SOP 411.00 Incident Analysis
- West Des Moines Fire Department, SOG 301.09 Post Incident Analysis

Supplement A

JOHNSON CITY FIRE DEPARTMENT
AFTER ACTION REVIEW QUESTIONNAIRE

Incident #: _____ Date of Incident: _____

Incident Location: _____

Type of Incident: _____

Name: _____ Apparatus Assignment: _____

To be completed by every officer on the scene and any interested sergeant or firefighter with constructive comments or observations. This form is to be completed by the end of the next working shift and forwarded to the Incident Commander or Shift Captain. Be prepared to discuss your points at the AAR. Thank you for your assistance in improving our operations.

1. Describe the conditions of the emergency/incident upon your arrival.

2. Describe your company's actions or assignments.

3. If you were assigned to a Division or Group, identify and describe the assigned objectives.

4. Identify and describe any unique problems you may have encountered.

5. Describe any events or actions at the incident that assisted you in accomplishing your objectives or tasks.

6. Describe any events or actions at the incident that may have hindered you in accomplishing your objectives or tasks.

7. Did you encounter any safety problems? If so, identify.

8. Did you experience any equipment failures? List/describe failures.

9. What would you do differently the next time?

10. Any recommended changes in SOG's, training, equipment as a result of this incident?

Supplement B

JOHNSON CITY FIRE DEPARTMENT
AFTER ACTION REVIEW WORKSHEET

Incident #: _____ Date of Incident: _____ Date of AAR: _____

Alarm Time: _____ Responding Apparatus: _____

Response Time (1st Engine or Ladder): _____

Incident Location: _____

Type of Incident: _____

The AAR is an educational and training session. The AAR is not a finger pointing session and is not to be used as a disciplinary tool. Information or lessons learned developed as a result of this incident should be shared with everyone on the JCFD. To help facilitate the AAR process the following general format should be followed when conducting the AAR:

- Alarm Time: Review general conditions such as weather, time of day, dispatch information.
- First arriving unit: Size-up, establishing command, actions taken and problems encountered
- Divisions/Groups: Give report on actions taken and problems encountered
- Open up for questions, answers and comments
- Facilitator concludes AAR by summarizing key points

Alarm and Notification:

1.	Adequate information from WC/JC Communications Center.	Yes O	No O
2.	Communication effective with WC/JC Communications Center.	Yes O	No O
3.	Response time within accepted limits.	Yes O	No O
4.	Any unusual traffic or response problems identified?	Yes O	No O

Arrival:

1.	First in unit size-up accurate/complete.	Yes O	No O
2.	Type of structure identified.	Yes O	No O
3.	Topography of the scene cause problems.	Yes O	No O
4.	Apparatus access to incident scene problematic.	Yes O	No O
5.	First in unit took/passed command.	Yes O	No O
6.	Size-up performed and command named.	Yes O	No O
7.	Action plan developed before taking action.	Yes O	No O
8.	First in unit informed other units of initial actions.	Yes O	No O
9.	Complied with 2 in 2 out.	Yes O	No O
10.	Thermal imager utilized by first in.	Yes O	No O

Incident Command:

1. Vehicles & Apparatus staged in a viable/good location. Yes O No O
2. Face to face communications with command and arriving officer prior to assuming command. Yes O No O
3. Transfer of command clear and smooth. Yes O No O
4. Command location announced and accessible (Green light). Yes O No
5. Divisions/Groups clearly designated. Yes O No O
6. Appropriate span of control maintained. Yes O No O
7. Divisions/Groups provide periodic progress reports. Yes O No O
8. Personnel Accountability System initiated early. Yes O No O
9. RIT established. Yes O No O
10. Rehab established. (Good location?) Yes O No O
11. Fireground communications clear. Yes O No O
12. WC/JC EMS present on standby Yes O No O
13. Safety Officer established. Yes O No O
14. Staff personnel checked in with IC on arrival. Yes O No O
15. Apparatus spotted in best location(s). Yes O No O
16. Pre-incident plan accurate, effective, helpful, up-to-date. Yes O No O
17. Primary search status report given. Yes O No O
18. Secondary search all clear given. Yes O No O
19. Utilities secured: Yes O No O
    O Gas O Water O Electric Power O Generator
20. PIO assigned Yes O No O

Operations:

1. Fire attack initiated in a timely manner. Yes O No O
2. Ventilation completed in a timely manner. Yes O No O
3. Forcible Entry performed in a timely/efficient manner. Yes O No O
4. Ground Ladders deployed effectively. Yes O No O
5. Aerial Ladders deployed effectively. Yes O No O
6. Pump operations effective. Yes O No O
7. Equipment/Tools performed effectively. Yes O No O
8. Radio communications effective and disciplined. Yes O No O
9. Second means of egress established. Yes O No O
10. Exposures considered and protected. Yes O No O

Accountability:

1. Once ICS was established, arriving companies reported to IC with passports. Yes O No O
2. Accountability Officer established. (Location: _____). Yes O No O
3. PAR's conducted properly (Every 10-15 minutes). Yes O No O
4. Divisions/Groups maintained crew accountability. Yes O No O
5. Units reported to IC when assignment completed and requested re-assignment through IC. Yes O No O
6. Crews released from Rehab checked in with Accountability Officer Yes O No O
7. Tool/Equipment drop site established. Yes O No O

RIT:

1. RIT established early. Yes O No O
2. Performed RIT size-up of building/structure. Yes O No O
3. RIT deployed/staged in an effective area/location. Yes O No O
4. Sufficient number of RIT personnel. Yes O No O
5. Assembled appropriate tools/equipment for forcible entry and rescue Yes O No O
6. Ensure all floors of building firefighters were operating on were laddered. Yes O No O
7. If RIT activated for FF rescue, IC established back-up RIT. Yes O No O
8. If RIT activated for FF rescue, IC requested additional engine and ladder. Yes O No O
9. RIT monitored radio communications. Yes O No O

Rehabilitation:

1. Rehab Officer assigned. Yes O No O
2. EMS assigned to medically monitor personnel. Yes O No O
3. Personnel entering rehab have notified Accountability Officer. Yes O No O
4. Personnel entering rehab checked in through Rehab Officer. Yes O No O
5. Personnel entering rehab rested minimum of 15 minutes. Yes O No O
6. Personnel properly nourished in rehab. Yes O No O
7. EMS documented rehab medical monitoring and filed Yes O No O
8. Personnel rotated through rehab via 2-air bottle limit. Yes O No O
9. Personnel exiting rehab check out through Rehab Officer Yes O No O
10. Rehab location adequate. Yes O No O
11. Needs of the victims addressed. (Red Cross, Insurance Carrier). Yes O No O

Staging:

1. Apparatus positioned for easy egress or response to another call. Yes O No O

Ventilation:

1.	Type used: _____	Yes O	No O
2.	Appropriate for the incident.	Yes O	No O
3.	Ventilation effective.	Yes O	No O
4.	Completed in a timely fashion.	Yes O	No O
5.	Personnel removed from roof as soon as possible.	Yes O	No O

Water Supply:

1.	Adequate fire attack lines, flows utilized.	Yes O	No O
2.	Back-up lines utilized.	Yes O	No O
3.	Supply/Relay line required.	Yes O	No O
	Supply line length: _____		
4.	Water supply adequate.	Yes O	No O
5.	Water Department asked to boost pressure.	Yes O	No O
6.	Supply line protected from traffic	Yes O	No O

Loss Control (Salvage and Overhaul):

1.	Personnel in appropriate PPE/SCBA.	Yes O	No O
2.	Salvage operations commenced in a timely manner.	Yes O	No O
3.	Atmosphere monitored prior to loss control measures.	Yes O	No O
	CO monitored before allowing removal of SCBA	Yes O	No O
4.	If an Investigator/Fire Marshal is called to the scene, overhaul limited to that required to extinguish the fire.	Yes O	No O
5.	Occupants not given permission to go inside to retrieve personal items until permission given by Investigator/Fire Marshal.	Yes O	No O

Scene Safety:

1.	No one entered the “hot zone” without proper PPE/SCBA	Yes O	No O
2.	Personnel had tools when approaching the scene.	Yes O	No O
3.	Crews stayed intact, no free lancing.	Yes O	No O
4.	Unusual hazards communicated to IC.	Yes O	No O
5.	Scene lighting effective.	Yes O	No O
6.	Control zones established if needed.	Yes O	No O

Other Agency Services:

1.	Traffic Control by Law Enforcement effective.	Yes O	No O
2.	Crowd control effective.	Yes O	No O
3.	Other agency vehicle placement adequate.	Yes O	No O

Supplement C

JOHNSON CITY FIRE DEPARTMENT
AFTER ACTION REVIEW FINDINGS REPORT

Incident #: _____ Date of Incident: _____ Date of AAR: _____

Alarm Time: _____ Responding Apparatus: _____

Incident Location: _____

Type of Incident: _____

PROBLEMS ENCOUNTERED: _____

AREAS OF SUSTAINMENT: _____

AREAS OF IMPROVEMENT: _____

LESSONS LEARNED: _____

RECOMMENDATIONS: _____