

Coordinating an Effective Police and Fire Response to Active Shooter Incidents for the Cities of

Aberdeen, Cosmopolis, and Hoquiam Washington

Thomas D. Hubbard

Aberdeen Fire Department, Aberdeen, Washington

Certification Statement

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

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Thomas D. Hubbard

Abstract

Active shooter incidents (ASI's) are occurring with greater frequency in the United States. To meet this challenge the fire service must develop coordinated joint response procedures with law enforcement in order to save innocent lives and protect its personnel. The problem addressed by this research was the local Hostile Incident Planning Committee had not identified key components of an active shooter response model that afforded the highest level of protection for emergency responders while increasing the likelihood of saving patient lives. The purpose of this research paper was to identify an effective coordinated law/fire response model for active shooter incidents given the resource limitations of the local emergency response agencies. Descriptive research utilizing external fire department and law enforcement agency questionnaires and interviews with content experts were used to answer the research questions: (a) how were law and fire agencies coordinating an effective response to active shooter incidents, (b) what personal protective equipment were law and fire personnel wearing in the warm zone, and (c) what specialized medical equipment and procedures were fire departments using in the warm zone. The results and recommendations concluded optimal incident outcome is achieved through the use of law/fire Unified Command and the formation of rescue teams to rapidly access, treat, and extract victims within the warm zone. It was also determined that firefighters operating at ASI's should wear clothing that clearly identified them as fire department personnel and be provided ballistic vests when assigned to operations within the warm zone. Tourniquets, simple airway adjuncts, and occlusive chest dressings were identified as the optimal equipment for treating the most common life threatening injuries encountered ASI's.

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Introduction

The information acquired from this research will be used to assist a multi-agency committee consisting of the law and fire agencies from Aberdeen, Cosmopolis, and Hoquiam Washington to develop a coordinated law and fire response to Active Shooter Incidents (ASI). The impetus for forming the Hostile Incident Planning Committee was the Century Cinema shooting in Aurora, CO on July 20, 2012 that resulted in twelve deaths and fifty-eight injured civilians. The members tasked with developing the local response plan first met on December 14, 2012. This date had the unfortunate coincidence of being the same day as the shooting at the Sandy Hook Elementary School in Newtown, CT which resulted in the deaths of twenty children and six adults. These two mass murder events provided the committee with the resolve, determination, and sense of urgency needed to forge new alliances, seek answers, and develop new procedures, all in order to develop an effective ASI response. The guiding philosophy for the committee has been that the problem (ASI) is bigger than any one local agency alone can manage and that the public we serve expects us to manage it effectively.

The problem addressed by this research is the local Hostile Incident Planning Committee has not identified key components of an active shooter response model that affords the highest level of protection for emergency responders while increasing the likelihood of saving patient lives. Case analysis of past ASI's and lessons learned on the battlefield teach us that rapid access to victims and the provision of appropriate medical care is the key to avoiding preventable deaths from uncontrolled hemorrhage, airway compromise, and shock.

The purpose of this research paper is to identify an effective coordinated law/fire response model for active shooter incidents given the resource limitations of the local emergency response agencies.

Descriptive research utilizing external fire department and law enforcement agency questionnaires and interviews with content experts relative to ASI's were used to answer the following research questions: (a) How are law and fire agencies coordinating an effective response to active shooter incidents?, (b) What personal protective equipment are law and fire personnel wearing in the warm zone?, and (c) What specialized medical equipment and procedures are departments using in the warm zone?

The actions taken by law enforcement to neutralize the assailant or assailants in an ASI are beyond the scope of this research paper and are not discussed other than to describe the basic tactical response of law enforcement as it relates to this research.

Background and Significance

National media has brought the stark reality of ASI's into our living rooms. The average person is all too familiar with incidents such as the attack at Virginia Tech, Fort Hood, TX, Aurora, CO, and the Amish school shooting in Lancaster Co. PA. According to a study released by Texas State University, there have been 84 ASI's between 2000 and 2010 and the frequency of ASI's appears to be increasing (Blair & Martindale, 2013). The attack by two students at Columbine High School in April, 1999 included the use of firearms and improvised explosive devices designed to distract emergency responders and inflict great bodily harm. In response to questions generated by the attack and resulting emergency response, the Governor of Colorado formed a Columbine Review Commission to examine and submit recommendations for improvement. The goal of the commission was to answer six questions, two of which relate directly to this research. First, how to improve crisis response to this type of incident, and second, provide recommendations for treating the victims in a timely manner (Erickson, 2001). The law enforcement community will generally concede that Columbine was the catalyst for

changing law enforcements' response to ASI's. In response to Columbine, and based on the findings of the Commission, first arriving officers at an ASI are now trained to enter and neutralize the assailant. The fire service has not been as adept at adjusting to the needs of an ASI. The Columbine Commission recommended that SWAT teams incorporate members who are medically trained to reduce the injury to treatment time. While feasible in larger metropolitan areas where resources are plentiful, SWAT activation is not timely in most areas of the United States considering most ASI's are over in ten to fifteen minutes (U.S. Department of Homeland Security [DHS], 2008). The fire service is now realizing that a cooperative law/fire response to ASI's affords victims the greatest opportunity for survival. The Council of Government Police and Fire Chiefs Committees of the Metropolitan Washington Council of Governments produced a model framework for joint law/fire response which incorporates current law enforcement actions at an ASI while addressing the fire service role of accessing and treating victims (Metropolitan Washington Council of Governments, 2010).

To provide context for this research and to illustrate the resource challenges faced by the local law enforcement and fire agencies involved, the following demographics are provided. According to the 2010 U.S. Census, the cities of Aberdeen, Cosmopolis, and Hoquiam, WA have a combined population of 26,643. This represents 37% of the total Grays Harbor County population. The three cities are similar in composition with a mix of residential, commercial, and industrial occupancies and serves as the retail hub of the county. Within the three city region are three high schools, two junior high schools, nine elementary schools, and one community college. The region also has five theaters that offer either motion pictures or the performing arts. Other occupancies that have the capacity for large numbers of people include retail malls, big box stores, industrial sites, and office complexes.

Providing the primary emergency response to the region are the law enforcement agencies of Aberdeen, Cosmopolis, and Hoquiam, the career fire departments of Aberdeen and Hoquiam, and the volunteer fire department of Cosmopolis. The initial ASI resource response numbers used in this research are based on the initial 20 minutes of an incident. The time frame of 20 minutes was chosen based on the average duration of an ASI and factoring in the response times between the three cities. It is consensus among the local law enforcement agencies involved that during optimum staffing approximately 20 law enforcement officers could respond to an ASI. For the local fire departments, during optimal staffing, a total of 15 to 20 fire department personnel could initially respond. These numbers include the chief officers of both the law enforcement and fire agencies. ASI's require intensive manpower to adequately neutralize the threat, secure the scene, and access, treat, and extract the wounded. The challenge faced by our region is providing these strategic objectives with the limited resources available. This challenge is not unique to our region; according to information released by the Federal Bureau of Investigation, 98% of ASI's occur in areas protected by small to medium sized law enforcement agencies (Schweit, 2013).

Each agency within the three city region routinely interacts with its counterparts to provide law or fire response. There are mutual and automatic aid agreements in place for the fire departments to respond to both fire and medical emergencies. The law enforcement agencies also have mutual aid and automatic response agreements and work in unison to provide for the safety and welfare of the communities.

The significance of this research is addressing the deficiency identified by the Hostile Incident Planning Committee to provide a coordinated multi-agency multi-discipline response to a dynamic incident like an ASI using. The literature indicated that implementation of the

incident command system including establishing unified command, the integration of law and fire personnel to accomplish mission objectives, and the orderly utilization of mutual aid law and fire resources are critical to successful outcome. This research intends to address those issues.

The linkage between this research and the Executive Leadership course, which is part of the Executive Fire Officer Program at the National Fire Academy, relates to the course curriculum of diagnosing the adaptive challenges faced by organizations when they strive to meet new organizational objectives and implement change (Federal Emergency Management Agency [FEMA], 2012). According to Heifetz, Grashow, and Linsky (2009), adaptive challenges are those problems that cannot be solved solely by a technical solution such as implementing a new SOP. Instead, adaptive challenges require new thought processes, new organizational alliances, foregoing traditional solutions, all in order to meet the new organizational challenge. Specifically, Unit 3 of the Executive Leadership Student Manual focused on thinking systemically to solve adaptive challenges by identifying a system's overall structure, social relationships, and the behavior of individuals within the system. Two adaptive challenges identified by this researcher facing the local response agencies with regards to implementing an ASI response are: the change in operational practice by law enforcement to implement ICS during dynamic incidents, and the change in operational practice by fire agency personnel to enter a hostile area that is not 100% secured by law enforcement. To develop a successful ASI response, the Local Hostile Incident Response Committee must adequately address these adaptive challenges.

This research supports two of the five operational objectives of the United States Fire Administration (USFA). USFA Goal #1 is "to reduce risk at the local level through planning

and mitigation” (United States Fire Administration [USFA], 2010, p. 18). USFA Goal #3 is “to improve the fire and emergency services’ capability for response to and recovery from all hazards” (USFA, 2010, p. 20). The Local Hostile Incident Planning Committee was convened to address the local risk of a mass murder event. Interagency cooperation, planning, and training will better prepare our region should such an event occur. While the committee’s response plan does not address prevention of these types of events, the response component is vital to providing timely medical care to potential victims while reducing the risk to responders.

Literature Review

One of the objectives of this literature review is to provide background on the current methodology used by law and fire agencies to coordinate an ASI response. For this research, the definition of ASI used by the Local Hostile Incident Response Committee will be utilized: an individual or group whose actions are immediately causing death and/or serious bodily injury to others. The activity is not contained, is not limited to the use of firearms, and there is immediate ongoing risk of death of potential victims. This definition is consistent with language used by the U.S Department of Homeland Security (DHS, 2008).

As previously noted, the specifics of law enforcement’s tactical response to ASI’s are beyond the scope of this research paper, however, it is important to provide an overview of law enforcement’s response to better evaluate how the fire service can merge their response with law enforcement to provide for improved incident outcome. Ergenbright and Hubbard (2012) as well as Schweit (2013) all referred to the practice of first arriving officers immediately entering a location to neutralize the assailant. This nationally recognized deployment model is the backbone of the curriculum developed at Texas State University’s Advanced Law Enforcement Rapid Response Training (ALERRT) Center. In conjunction with the ALERRT

Center, the FBI and Bureau of Justice Assistance have partnered to assist local law enforcement agencies effectively manage ASI's (Texas State University, n.d.). The ALERRT model identified that the most effective way to prevent further harm to potential victims is to rapidly enter and neutralize the assailant. What these programs do not specifically address is the provision of rapid medical treatment for victims. Conversely, a pamphlet authored by the Department of Homeland Security (DHS) provides the public with direction on how to respond when faced with an ASI. In part, the DHS stated "the first officers to arrive to the scene will not stop to help injured persons. Expect rescue teams comprised of additional officers and emergency medical personnel to follow the initial officers" (DHS, 2008, p. 5).

Unlike ALERRT, which promotes a nationally accepted response model, the U.S. Fire Service does not have a nationally accepted model for responding to ASI's. In an effort to address this deficiency Gaines (2013) published the following general guidelines. Gaines stressed the most important initial action was to identify a lead agency. Also listed, was the need to delineate agency roles, review command, control, and communication operations, standardize the use of NIMS terminology, identify a casualty collection point (CCP), and exercise response plans annually. Gaines made just two references to patient treatment with one being the establishment of a CCP for injured civilians and second, the directive for response agencies to discuss "what steps should be taken at high risk occupancies to mitigate the loss of life and coordinate with first response personnel" (Gaines, 2013, para. 4).

In 2004, the National Fallen Firefighters Foundation (NFFF) convened in Tampa, FL to develop the 16 Firefighter Life Safety Initiatives. The NFFF also recognized that a nationally recognized response model to violent incidents did not exist and in response, developed Life Safety Initiative 12. Life Safety Initiative 12 specifically acknowledged the increasing risk to

firefighters secondary to violence and recommended the development of a national protocol for response to violent incidents (National Fallen Firefighters Foundation [NFFF], 2013).

Recommendations contained within the initiative included the establishment of only one command post, preventing the self-dispatch or self-deployment of individuals, and that emergency response agencies should develop response procedures that are as “inclusive and encompassing as possible while recognizing the resource limitations of each particular agency” (NFFF, 2013, p. 16). In 2013, the final report on Life Safety Initiative 12 was released by the NFFF. As part of the report, nine specific recommendations were developed to further support Initiative 12, of which four related directly to the purpose of this research paper. The four recommendations were: improve dynamic risk management for incidents involving violence, require the use of NIMS ICS, recommend that law and fire command communicate face to face, and that fire department personnel should wear clothing that clearly identifies and differentiates them from law enforcement (NFFF, 2013).

The fire service is learning from past ASI’s that it must change its response to these incidents in order to save lives. The change in operational practice is difficult, however, because firefighters and EMS personnel are instructed and even mandated to delay entry until law enforcement has declared the scene secure. An example of a nationally recognized standard is NFPA 1500, put forth by the National Fire Protection Association. NFPA 1500, Section 8.10, addressed fire department response to hostile incidents and provided the following guidance:

Fire department members shall not become involved in any activities at the scene of domestic disturbance, civil unrest, or similar situations where there is ongoing violence, without the confirmed presence of law enforcement personnel who have deemed the scene secure (NFPA, 2013, p. 1500-28).

In addition to NFPA 1500, Emergency Medical Technician course curriculum for both EMT Basic and Paramedic certification directs EMS personnel to stage a safe distance away from hostile incidents until law enforcement has secured the scene. Bledsoe, Porter, and Cherry (2007), in referencing EMS response to hostile incidents stated “when responding to a call in which the initial dispatch includes words such as shooting, stabbing, or domestic violence, wait for law enforcement personnel to secure the scene before entering” (p. 657). Ludwig (2012) agreed and supported the practice of fire/EMS staging and claimed that EMS personnel should only make entry to an ASI after the shooter has been killed or taken into custody by law enforcement and the scene declared secure. Locally, Grays Harbor County EMS protocols do not address actions to be taken at hostile incidents other than to require fire department personnel stage until law has arrived on-scene (Grays Harbor Emergency Medical Services, 2009).

A lack of preparation for ASI’s appears to be the norm for the U.S. fire service. Davis (2009) found that 88% of the 116 fire departments surveyed as part of an Applied Research Project for the Executive Fire Officer Program indicated their department policy was to stage until the scene was secured by law enforcement. Davis also found the majority of departments did not have written response procedures for ASI, did not conduct training specific to ASI, or provide specialized equipment for personnel during ASI events.

Blair and Martindale (2013) also referenced the standing policy of most fire/EMS agencies to stage until the scene had been declared secure and offered the solution of training and equipping law enforcement officers to deliver immediate life-saving interventions to victims. According to the authors, law enforcement could provide patient care primarily through the application of tourniquets to control massive hemorrhage.

Smith (2009) addressed the impact delayed entry has on patient outcome and asserted that patients are needlessly dying from preventable injuries while waiting for law enforcement to secure the scene. According to Smith (2009), the disconnect between law enforcement's role and the role of the fire service became evident during an active shooter drill in Arlington, Co. VA when EMS units were held in staging for more than one hour prior to deployment. The result was the formation of a law/fire coalition whose goal was to develop a coordinated response that decreased injury to treatment time. The end product was the formation of rescue teams, referred to as a Rescue Task Force, comprised of law enforcement and fire service personnel trained to rapidly enter a hostile incident to treat and extract victims. The Arlington, Co. plan required that all paramedics received training in Tactical Combat Casualty Care (TCCC) and on how to operate as part of a tactical unit in the warm zone at ASI's. Smith (2009) stated that based on daily staffing, their response model allowed them to mobilize seven rescue teams at any given time with each team capable of treating up to fourteen patients. This response model is outlined in the Metropolitan Washington Council of Governments law/fire joint response procedure (Metropolitan Washington Council of Governments [MWCOC], 2010).

Morrissey (2011) concurred with Smith (2009) that the current practice of staging until the scene is secured by law enforcement results in preventable deaths occurring. Morrissey recommended an ASI response procedure be implemented similar to that described by MWCOC. Morrissey claimed the threat phase of an ASI is statistically over very quickly and that once the threat has been neutralized or contained, EMS personnel should be escorted into the warm zone by law enforcement personnel to rapidly triage, treat, and extract victims.

Williams (2013) elaborated on the concept of law and fire coordinating their response and stated

“stopping both processes, the wounding and the subsequent dying of those who can be saved, must be nearly simultaneous priorities, i.e., the police rapidly interdicting the suspect is Priority 1 and the police facilitating fire personnel instituting their MCI protocol is Priority 1A” (p. 35).

The response framework developed by MWCOG may fulfill the requirements of a national response protocol as recommended by the NFFF Life Safety Initiative 12. The purpose of the framework, according to MWCOG is “to facilitate the rapid and effective movement of victims through areas on the incident scene, while also promoting the highest chance of victim and responder survival” (MWCOG, 2010, p. 1). In addition, MWCOG claimed the operational concepts are applicable to other law enforcement incidents such as high risk warrants and civil disturbances. Key components of the framework included law enforcement’s use of the procedures taught in the ALERRT curriculum, the use of NIMS, the formation of unified command, locating a CCP, the formation of rescue teams, and control of the incident through the use of perimeters and the establishment of hot, warm, and cold zones. Throughout the literature reviewed for this research, it was recommended that standard terminology be developed to facilitate effective law/fire joint operations. Terms vital to operational safety and efficiency include using the words hot, warm, and cold to identify threat zones within the incident and standardizing the use of the terms secure, clear, and safe. MWCOG (2010) defined secure as meaning law enforcement has possession or control of an area or subject. The term clear indicates an area has been quickly checked and does not contain an obvious threat, and the term safe indicates an area is free from danger or attack. Under the MWCOG framework, rescue teams comprised of law and fire/EMS personnel enter the warm zone to affect the rescue of injured victims. The warm zone is defined as the area of the incident cleared by the law enforcement contact team deployed to neutralize the assailant.

Atwater (2012) supported the concept of rescue teams operating in the warm zone to manage victims of an ASI. Atwater used the term force protection to define law enforcement's role of providing "escort to support the fire service role by protecting fire fighters as they rescue, provide medical treatment, or mitigate hazards" (p. 45). Atwater also identified three alternative response procedures used to treat and extract victims with those being staging, the use of fire department tactical medics assigned to SWAT, and the use of consolidated fire/law enforcement teams staffed with tactical medics. Atwater (2012) concurred with the findings of Davis (2009) that the majority of fire departments respond to ASI's by staging in the cold zone waiting for law enforcement to secure the scene. Atwater (2012) conceded this may afford a high level of safety for fire personnel but also described the negative impact a department's staging policy may have on victim survival, firefighter self-deployment, and department reputation. In particular, Atwater stressed that if fire departments stage and wait, preventable deaths will occur resulting in the public's loss of confidence in the fire department. Additionally, Atwater claimed there have been instances of staging policy failure, citing incidents where fire personnel self-deployed into the warm zone to affect rescues despite their department's policy to stage. Atwater opined this placed firefighters at increased risk because they were unprotected and operating outside of their department's training and response capabilities. The two other response procedures identified by Atwater involved the use of tactical medics specifically trained to interact as part of a law enforcement SWAT team. Atwater noted the limitations of these deployment models were cost, delays in SWAT mobilization, and the conflicting mission objective of a SWAT medic to move with a SWAT team and bypass civilian victims until the threat has been neutralized.

Williams (2013) described the active shooter model currently in use by the police and

fire departments of Hillsboro, OR. The response model defined the role of law enforcement and fire personnel, communication procedures, the use of ICS, the formation of joint law/fire command, and the medical management of victims. The Hillsboro response model deviated from the model proffered by MWCOG in that law enforcement officers, in addition to neutralizing the assailant, are tasked with locating and extracting victims to the CCP. The law enforcement officers received training in identifying and controlling massive hemorrhage through the use of tourniquets. Once a victim reaches the CCP, personnel from the Hillsboro Fire Department manage the triage, treatment, and transport of patients according to their regional MCI plan. Training released by the Firefighters Support Foundation addressed the Hillsboro model and referred to it as the ASI Rapid Treatment Model (Firefighters Support Foundation [FSF], 2013). According to the FSF, the Rapid Treatment Model afforded the most efficient utilization of resources by having law enforcement operate tactically in the warm zone as they are trained to do, and fire personnel manage patient care at the CCP as they are trained to do. Noted in the Rapid Treatment Model training was the assumption there would be a large law enforcement response and that law enforcement officers would require little training in victim drags and carries or the application of tourniquets (FSF, 2013). Atwater (2013) disagreed with the concept of law enforcement extracting victims to the CCP and stated “officers would prefer to focus on neutralizing the assailant rather than putting away their guns and awkwardly dragging victims over long distances” (p. 72).

The use of Unified Command to coordinate the law/fire response to ASI incidents was referenced throughout the literature reviewed for this research. The ICS Field Operations Guide 420-1 contained the following in recommending the use of Unified Command for managing dynamic multi-agency incidents:

Experience has proven that at incidents involving multi-agencies, there is a critical need for integrating management of resources into one operational organization that is managed and supported by one command structure. This is best established through an integrated multi-disciplined organization. In the ICS, employing what is known as Unified Command fills this critical need (USFA, 2010, p. 6-2).

The recommendation to implement Unified Command is contained in the model response plan developed by MWCOG as well as the recommendations promulgated from case studies conducted by the USFA for the shooting incidents at Columbine High School (USFA, 1999), Northern Illinois University (USFA, 2008), as well as Life Safety Initiative 12 (NFFF, 2013).

The Chandler Fire Department (CFD) located in Chandler, AZ has created a coordinated law/fire response plan similar to MWCOG. Under the CFD response plan, law and fire personnel are combined into Extraction Rescue Teams who deploy into the warm zone to rescue injured civilians. In order to mitigate the risk to the Extraction Rescue Teams, the CFD ASI SOG described critical benchmarks that must be satisfied prior to deploying firefighters into the warm zone. The benchmarks included that law/fire Unified Command be established and jointly located, the assailant or threat neutralized, the location of the CCP designated and protected, and the boundaries of the warm zone defined (Chandler Fire Department, 2012). It should be noted the SOG defined the threat as being neutralized when the assailant is either dead, in custody, fled the scene, or is reasonably contained or barricaded.

The second objective of this research paper was to identify what personal protective equipment should be used by law and fire personnel assigned to rescue teams operating in the warm zone. USFA (1999) and NFFF (2013) recommended that fire personnel wear clothing

that clearly identified them as members of the fire service. This recommendation is based in part on an incident of mistaken identity at the Columbine High School shooting where a fire department officer was ordered to the ground by police because his black turnout coat resembled the black trench coats worn by the suspects (USFA, 1999). The recommendation from USFA (1999) regarding protective equipment also included “determining what ballistic protection the fire/EMS personnel need, given their likely assignments, and securing this equipment in sufficient quantity to ensure that all personnel who will be in harm’s way have appropriate protective equipment” (p. 32). USFA (1999) also recommended that preplanning between law and fire should include deciding what means will be used to identify fire department personnel during ASI’s. One of the recommendations offered was the use of ICS vests.

In order to provide the highest level of safety for personnel, Smith (2009) reported fire department personnel assigned to Rescue Task Force operations in Arlington, Co. are outfitted with ballistic vests and helmets as part of their protective equipment. Davis (2009) supported outfitting fire personnel assigned to operations within the warm zone with ballistic protection, but acknowledged the challenges associated with providing ballistic protection citing procurement costs and service life of the equipment as being the primary deterrents.

Atwater (2012) discussed ballistic protection for fire personnel assigned to operate in the warm zone and stated:

The safety of force-protected firefighters is significantly impacted by the availability of ballistic protection. A force protection policy may permit firefighters to enter the warm zone without, or while waiting for ballistic protection, if immediate action is required. However, exposing firefighters to potential violence in the warm zone of an active

shooter incident without ballistic protection increases the risk of injury and death (p. 71).

Finally, in the model ASI response policy included in NFFF (2013), the operational recommendation for personnel operating in the warm zone included:

Personnel making such an entry would only enter areas previously ‘cleared’, but not ‘secured’ by law enforcement. It is important to remember that the security of these areas cannot be guaranteed and situations can rapidly change. Those personnel making such an entry will be voluntary and shall be provided body armor. Personnel shall only proceed into the non-secured area if accompanied by armed law enforcement officers” (p. 22).

The final objective of this research was to identify the optimal medical equipment and procedures used for patient care in the warm zone. According to the literature, the two primary methods for managing patient care in the warm zone included the military’s Tactical Combat Casualty Care (TCCC) or the civilian use of Tactical Emergency Medical Support (TEMS). This literature review is not intended to compare the core curriculums of these two systems, but instead, identify the equipment and medical procedures necessary to rapidly triage and treat injured victims within the warm zone.

According to Savitsky, Eastridge, Katz, and Cooper (2012), the U.S. Army’s Joint Theater Trauma Registry (JTTR) examined over 40,000 combat injuries and found that “hemorrhage is by far the leading cause of potentially preventable combat-related deaths” (p. 11). The other significant causes of preventable death identified by the JTTR were airway obstructions and tension pneumothorax (Savitsky et al., 2012). As a result, TCCC guidelines for tactical field care of a soldier, which corresponds to civilian care of a patient in the warm zone, included the use of tourniquets for hemorrhage control and the use of basic airway

adjuncts such as oral or nasopharyngeal airways. Needle thoracocentesis was noted as the preferred method of treating respiratory compromise secondary to tension pneumothorax.

Morrissey (2011) suggested medical care in the warm zone should be directed at rapidly identifying and controlling life threatening injuries. This included the use of tourniquets to control hemorrhage, airway adjuncts for airway obstructions, and chest seals for open chest wounds. Biddinger et al., (2013) agreed that rapidly controlling massive hemorrhage is crucial to patient survival and credited the lessons learned on the battlefields of Iraq and Afghanistan for the advances in the treatment of civilian injuries from battlefield type injuries. Biddinger et al., (2013) credited the rapid use of tourniquets by EMS workers and volunteers following the Boston Marathon bombing in 2013 as instrumental in reducing the number of fatalities to just three victims.

Smith (2009) reported the medical procedures utilized by Arlington, Co. Rescue Task Force medics are based on the military's TCCC which alters the traditional primary survey mnemonic of Airway Breathing Circulation (ABC) to Circulation Airway Breathing (CAB). Smith (2009), in describing the order of treatment in the warm zone, emphasized treatment should focus on providing the correct intervention at the correct time and further stated:

Airway control is not the first priority. Not only are exsanguinating extremity wounds far more common than airway injury, but a person can bleed to death from a large arterial wound in two to three minutes, while it may take four to five minutes to die from a compromised airway. Therefore, in TCCC, life-threatening bleeding is addressed first, followed closely by airway control. Open Chest wounds and tension pneumothorax are of concern as well, but generally don't cause mortality for 10 to 15 minutes, so they are addressed third (p. 3).

To summarize, the literature reviewed for this research placed emphasis on the need for preplanning between fire and law enforcement agencies to coordinate an effective response to ASI's. As noted by Morrissey (2011), a Department of Homeland Security expert is credited with saying "you don't want to be exchanging business cards on the day of the event" (p. 3). As a result, this author reached out to the local law enforcement agencies to create a multi-disciplined committee to address ASI response. USFA (2008) reinforced the importance of preplanning by stating the collaboration between emergency response agencies prior to the University of Illinois shooting resulted in "good working relationships, trust, and rapid triage, treatment, and transport of victims" (p. 38).

The literature also cited the use of fire/law Unified Command, located at one Command Post, as a critical component for coordinating an ASI response. To clarify, this is not a fully expanded NIMS ICS structure with assigned Command and General Staff positions, but rather, consists of a representative from law and fire standing side by side to coordinate the objectives of stopping the assailant and saving victims. The MWCOG (2010) framework, Smith (2009), the recommendations of Life Safety Initiative 12 (NFFF, 2013), and the Chandler Fire Department ASI SOG (CFD, 2012) all required that Unified Command be established prior to deploying firefighters into the warm zone.

Based on the literature, this researcher identified three ASI response models applicable to our local region. The first of these response models was staging, which is the current response protocol for violent incidents in our region. The more contemporary models included forming rescue teams assigned to enter the warm zone to triage, treat, and extract victims. There appeared to be disagreement, however, on who should staff the rescue teams, with some claiming rescue teams should consist of law and fire personnel, and others claiming the

responsibility of rescuing victims in the warm zone should fall to law enforcement officers.

If the decision is made to deploy firefighters into the warm zone, the literature identified that fire personnel operating in the warm zone face increased risk. Three methods used to mitigate the risk identified in the literature included law enforcement providing force protection, the provision of ballistic vests for fire personnel, and having fire personnel wear distinctive clothing that clearly identifies them as members of the fire service.

Ultimately, the goal of coordinating law and fire's response to ASI's is to reduce the victim's injury to treatment time to save lives. According to the literature, the injuries with the highest incidence of mortality included massive bleeding, airway obstruction, and respiratory compromise secondary to a tension pneumothorax. Therefore, the literature recommended that victim treatment, whether using TCCC, TEMS, or a variation of the two, should focus on identifying and stopping massive bleeding through the use of tourniquets, correcting airway obstruction with airway adjuncts, and treating tension pneumothorax by needle decompression.

Finally, the information gained from the literature review provided this researcher with the background knowledge needed to develop the questionnaires and interviews used for this project. This researcher was particularly influenced by the combined law/fire rescue team model, and through the questionnaires and interviews conducted, hopes to determine if the rescue team model is a viable response solution for our region.

Procedures

Descriptive research utilizing external fire and police department questionnaires, as well as telephone interviews with content experts were used to gain insight into how other fire and police departments were responding to ASI's. The questionnaires were developed and disseminated using Survey Monkey, an Internet based survey platform. The questions were

derived from information gained from the literature review and this researcher's participation in the Local Hostile Incident Planning Committee. Two questionnaires were developed, one to solicit information from the fire service and the second to obtain information from law enforcement. Prior to dissemination, the members of the Local Hostile Incident Planning Committee completed the questionnaires as part of a pilot study group to provide feedback on the content, phrasing, and structure of each questionnaire. The pilot study also served to test the Internet link for the questionnaire as well as the skip logic, data collection, and data analysis functions provided by Survey Monkey. The questions for the fire service and law enforcement questionnaires will be described in detail with rationale for each question discussed.

Fire Service Active Shooter Response Questionnaire

The fire service questionnaire (See Appendix A) was disseminated via email to 885 members of the National Society of Executive Fire Officers (NSEFO) on June 12, 2013. The participation period remained open for 39 days and was closed on July 19, 2013. In total, 155 questionnaires were completed representing a return rate of 17.5%. The introduction section of the questionnaire provided six definitions this researcher felt were important to ensure the questions were answered based on common terminology. The definitions were obtained from the literature reviewed for this research. The intent of the questionnaire was to provide answers to the research questions posed in the introduction section of this paper and to assist the Local Hostile Incident Planning Committee with implementing an effective ASI response plan.

Questions one and two sought demographic information relative to the respondent's fire department. The size and type of agency was considered important data to facilitate comparison of the respondent's resource capability to our local region. To further explore the concept of resource availability, question eight asked the respondent to indicate the number of personnel

their agency would typically have on-scene within the first 12 to 20 minutes of an ASI. This time frame was selected based on our local region's response parameters and because the literature indicated the average shooting phase of most ASI's was resolved in ten to fifteen minutes. Question three asked the respondent to indicate which ASI response model was being currently used by their agency. The choices included the four response models identified in the literature; staging until the scene was declared clear, the use of SWAT medics assigned to law enforcement teams, using law enforcement personnel to extract victims, and the formation of rescue teams comprised of law/fire personnel. Question four sought to determine if the respondent's agency had protocols in place that integrated the response of fire/EMS and law enforcement to ASI's. If the respondent answered no to this question, the skip logic feature of Survey Monkey precluded the respondent from continuing with the questionnaire. Question four was designed this way because the remainder of the questionnaire sought information specific to department protocols addressing joint law/fire operations at ASI's. Question five was used to determine if the respondent's ASI protocol required the establishment of law/fire Unified Command prior to deploying firefighters into the warm zone as recommended in the literature. Question six asked the respondent to indicate if the law enforcement agency they responded with utilized the concept of contact teams to neutralize the shooter. Based on the literature, the contact team or rapid response model is recognized nationally as the preferred law enforcement response to ASI's and is the model used by our local law enforcement partners. Question seven was asked to determine if the respondent's ASI response protocol utilized rescue teams comprised of law and fire personnel. This question was asked to determine how agencies were staffing their rescue teams. The two rescue team staffing models discussed in the literature included combining law and fire personnel or alternatively, utilizing only law

personnel to extract patients to the CCP. Question nine was used to identify the ICS positions filled during the first 12 to 20 minutes of an ASI. This question was asked to gain insight into how fire departments were coordinating their response with law and managing the triage, treatment, and transport of patients. Question ten asked the respondent to indicate the type of personal protective equipment provided to members of their rescue team operating in the warm zone. The literature recommended the use of clothing that clearly identified personnel as firefighters as well as promoted the use of ballistic vests. Questions eleven and twelve were used to gain an understanding of the level of medical care agencies were providing in the warm zone as well as determine the type of medical equipment being used. The information gained from these questions will assist our region with planning for future training and equipment acquisition.

The limitations of the fire service questionnaire may include the definitions offered on the first page. The purpose of the definitions was to provide common terminology in order to facilitate comparison of the results with the information contained in the literature review. It is not known if the definitions provided were too specific in nature, and therefore limited the respondent's ability to accurately answer the questions based on their ASI response protocol. Likewise, question four was designed so that agencies that did not have written protocols which integrated their response with law enforcement were precluded from continuing with the questionnaire. Although having an integrated law/fire ASI response protocol was cited as critical to effective joint operations in the literature, the skip logic feature utilized resulted in only 46 agencies completing the questionnaire. With only 46 agencies providing responses to the entire questionnaire, the data obtained cannot be viewed as representative of the U.S. fire service's response to ASI's. Finally, the medical equipment listed in question twelve did not

include the use of nasal or oral pharyngeal airways. These items were discussed as beneficial airway adjuncts for use in the warm zone and should have been included as possible choices.

Law Enforcement Active Shooter Response

The law enforcement questionnaire (See Appendix B) was disseminated via email to 835 members of the Washington Association of Sheriffs and Police Chiefs (WASPC) during the same June 12, 2013 to July 19, 2013 period as the fire service questionnaire. The group demographics included 226 Police Chiefs, 39 Sheriffs, 27 Tribal Police Agencies, 8 Federal Agencies, and 535 Associate and Affiliate members. In total, 19 questionnaires were completed representing a return rate of only 2.1%.

The introduction page of the questionnaire provided the same definitions included in the fire service questionnaire. Again, the rationale was to provide common terminology on which to base responses, and in particular for law enforcement, introduce terms that may not be part of their everyday vernacular.

Question one was used to determine the size of the respondent's agency and question seven was asked to determine how many law enforcement officers would typically be on-scene in the first 12 to 20 minutes of an ASI. These questions, similar to those contained in the fire service questionnaire, were asked so that comparison between the respondent's resource availability and our local capability could be examined. Question three asked the respondent to indicate if they had protocols specific to ASI that integrated their response with their fire service partner. If the answer was no, the skip logic feature precluded them from continuing with the survey. Again, this feature was included because the remainder of the questionnaire asked questions specific to their joint law/fire ASI response protocol. Question four asked if the respondent's agency utilized the concept of contact teams to neutralize the active shooter.

Question five asked if the respondent's agency provided force protection to fire/EMS personnel as part of a joint rescue team. Again, this staffing model was one of the staffing options discussed in the literature. Question six asked if their protocol required the establishment of Unified Command, consisting of law and fire personnel, prior to deploying rescue teams into the warm zone. The literature recommended that some form of Unified Command be established at ASI's to coordinate the strategy and tactics of the responding agencies. Question eight sought to determine the type of protective equipment worn by officers operating in the warm zone. This information will be used to assist with determining what protective equipment should be provided to fire personnel assigned to operations in the warm zone of an ASI. Question nine was asked to determine what ICS positions the law enforcement agency typically staffed during the initial 12 to 20 minutes of the incident. This question was of particular interest to the law enforcement members of our local committee as the use of ICS by law enforcement is not as routinely used on a day to day basis as it is in the fire service.

The primary limitation of the law enforcement questionnaire was only 19 respondents participated in the questionnaire. In fact, in response to question three, only eight respondents indicated they had written response protocols that integrated their response with the fire service. Ultimately, only seven respondents completed the entire questionnaire. It is not known why the overall participation rate was so low. One possibility is that while the membership of NSEFO is accustomed to receiving questionnaires pertaining to research, the members of WASPC may not. In an effort to improve participation, this researcher included as part of the introduction to the questionnaire, a description of the purpose and intent of the research including this researchers affiliation with the National Fire Academy EFO program. Improved participation may have resulted had the introduction been included as part of the original email request.

Interviews

For this research, email interviews were conducted with three individuals who were identified as having information specific to the Hillsboro, OR ASI response plan that utilizes law enforcement officers instead of fire/EMS personnel to rescue victims in the warm zone. It was felt by this researcher that obtaining their viewpoints would be vital to include in this research as a counter argument to the model response offered by MWCOG and to assist our local planning committee move forward with a local response plan. The three interviews include Deputy Chief Mark Prince of the Hillsboro Fire Department, Engineer Jeff Gurske of the Hillsboro Fire Department, and George Williams, Director of Training at Cutting Edge Training LLC.

Results

The data was collected and analyzed using the Survey Monkey data analysis tool and is presented here in narrative format. The data from the two questionnaires is presented together when applicable to facilitate comparison. Data from the fire service questionnaire is abbreviated FSQ (See Appendix C) and the law enforcement data is abbreviated LEQ (See Appendix D).

The demographics of the 148 fire departments who participated in the FSQ showed 25.2% had 50 personnel or less, 26.5% had between 51 and 100 personnel, and 48.4% had more than 100 personnel. These departments consisted of 1.9% that were volunteer, 31.6% that were combination volunteer and career, and 66.5% that were all career departments. For the LEQ, 89.5% or seventeen responses were from agencies with 50 or less personnel and the remaining two responses were from departments with 51 to 100 personnel.

The first question posed by this research was to determine how law and fire agencies

were coordinating their response to ASI's. The following data was obtained to assist in providing answers to this question.

The respondents were asked to identify their current response to ASI's. The data showed that 58.1% of the FSQ and 31.6% of the LEQ held their fire/EMS personnel in staging until the scene was declared clear by law enforcement. The data also indicated 12.3% of the FSQ and none of the LEQ used SWAT medics to make entry with law enforcement to extract victims. The data also indicated that 3.9% of the FSQ and 26.3% of the LEQ utilized the response model of having law enforcement officers extract victims to a CCP. The use of rescue teams comprised of law enforcement officers and fire/EMS personnel was used by 18.7% of the FSQ and 36.8% of the LEQ. These results are displayed in Table 1.

Table 1

Agency Response to ASI: Victim Rescue

	<u>Stage</u>	<u>SWAT Medics</u>	<u>LE Rescue</u>	<u>LE/Fire Rescue</u>	<u>n =</u>
FSQ	58.1%	12.3%	3.9%	18.7%	155
LEQ	31.6%	0%	26.3%	36.8%	19

Question four of the FSQ and question three of the LEQ were used to filter out agencies that did not have protocols integrating the response of law and fire to ASI's. While this limited the response data obtained from the remainder of each questionnaire, it served to limit the results to only those agencies that had integrated law/fire ASI protocols. For the FSQ, 34.2% of the 155 fire departments indicated they had protocols in place and 65.8% indicated they did not. For the LEQ, 42.1% of the nineteen agencies indicated they had protocols and 57.9% indicated

they did not. As referenced in the limitations, this resulted in only 46 agencies completing the entire FSQ. For the LEQ, eight agencies reported they had protocols in place but only seven completed the entire LEQ.

The data from both questionnaires indicated the majority incorporated the use of contact teams to neutralize the assailant as part of their ASI response. The FSQ revealed that 93.5% of the 46 agencies completing the questionnaire were partnered with a law enforcement agency that utilized contact teams. The LEQ indicated that 85.7% of the seven agencies completing the questionnaire utilized contact teams. In addition, the data from the LEQ and FSQ indicated the majority of agencies established law/fire Unified Command prior to deploying fire personnel into the warm zone as part of rescue teams. The results depicting the use of contact teams and Unified Command are displayed in Table 2.

Table 2

Use of Contact Teams and Establishment of Unified Command

	<u>Utilize Contact Team</u>		<u>Establish Unified Command</u>		<u>n=</u>
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	
FSQ	93.5%	4.3%	65.2%	23.9%	46
LEQ	85.7%	14.3%	71.4%	28.6%	7

In addition to the data presented in Table 2, 10.9% of the FSQ responses were in the form of comments regarding the establishment of Unified Command prior to deploying firefighters into the warm zone. The comments included that Unified Command was referred to in their protocols but not required, was used at the discretion of the law enforcement OIC, or

that fire department members were allowed to deploy into the warm zone with a law enforcement escort prior to Unified Command being established if there were confirmed victims. The final comment referred to the use of SWAT medics making entry with law enforcement therefore eliminating the need for Unified Command.

Question seven of the FSQ and question five of the LEQ asked the respondents if their response protocol combined law and fire personnel into rescue teams tasked with making entry into the warm zone to extract injured civilians. For the FSQ, 67.4% formed rescue teams comprised of fire personnel and law enforcement. The data for the LEQ was not as conclusive with 42.9% reporting their rescue teams were comprised of law and fire personnel and 42.9% reporting they were not. Additional comments from the FSQ included that the composition of the rescue team was at the discretion of the law enforcement OIC, one respondent was not sure which personnel were included in rescue teams, and the final comment stated SWAT medics entered with the contact teams but were dedicated to treating law enforcement officers until the scene was declared clear. The one comment to this question included in the LEQ was their system was currently “morphing” towards combining law and fire personnel into rescue teams. The data showing the staffing of rescue teams is shown in Table 3.

Table 3

Rescue Team Staffing: Law and Fire Personnel

	<u>Law and Fire Combined into Rescue Teams</u>		
	<u>Yes</u>	<u>No</u>	<u>n=</u>
FSQ	67.4%	23.9%	46
LEQ	42.9%	42.9%	7

To determine resource availability, the FSQ and LEQ asked the respondents to indicate the number of fire/EMS or law enforcement officers they would typically have on-scene under optimal staffing conditions within the first 12 to 20 minutes of an ASI. The range of answers provided was based on our local region’s resource capability. For comparison, the local initial response capability will range from 11 to 25 fire personnel and 11 to 25 law enforcement personnel. The results are shown in Table 4.

Table 4

Personnel Resource Availability: Initial 12 to 20 Minutes

Personnel	<u>10 or less</u>	<u>11 to 25</u>	<u>26 or more</u>	<u>n=</u>
FSQ	26.1%	39.1%	34.8%	46
LEQ	57.1%	28.6%	14.3%	7

The final question posed to the respondents with regards to coordinating the response of law enforcement and fire to ASI’s involved identifying the ICS positions utilized during the initial 12 to 20 minutes of the incident. The FSQ contained the positions of Unified Command and Staging Officer as well as the ICS mass casualty positions of Treatment, Transportation, and Communications Officers. The results of the FSQ are shown in Table 5.

Table 5

FSQ ICS Positions during the initial 12 to 20 minutes of an ASI

<u>ICS Position</u>	<u>Implemented</u>	<u>Not Implemented</u>	<u>n=</u>
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Law/Fire Unified Command	93.5%	6.5%	46
Fire/EMS Staging Officer	78.3%	21.7%	46
Treatment Officer	58.7%	41.3%	46
Transportation Officer	58.7%	41.3%	46
Communications Officer	17.4%	82.6%	46

Additional FSQ comments included the positions of Safety Officer, Triage Officer and the establishment of an EMS Branch Supervisor to direct rescue team operations.

The LEQ contained the ICS positions of Law/Fire Unified Command, Law Command not co-located with Fire Command, Law Staging Officer, Operations Officer, PIO, Liaison Officer, and the option that an incident commander would not be appointed during the initial 12 to 20 minutes of the incident. The results are shown in Table 6.

Table 6

LEQ ICS Positions during the initial 12 to 20 minutes of an ASI

<u>ICS Position</u>	<u>Implemented</u>	<u>Not Implemented</u>	<u>n=</u>
Unified Law/Fire Command	71.4%	28.6%	7
Law Command (Not w/ Fire Command)	28.6%	71.4%	7
No Command during initial 12 to 20 min.	28.6%	71.4%	7
Law Staging Officer	14.3%	85.7%	7
Operations Officer	28.6%	71.4%	7
Public Information Officer	28.6%	71.4%	7
Liaison Officer	0%	100%	7

The second question addressed by this research was to determine what personal protective equipment law and fire personnel were utilizing in the warm zone. The results of the LEQ and FSQ will be presented separately.

The LEQ indicated that 100% of the 7 agencies utilized ballistic vests while only 57.1% used ballistic helmets and none utilized ballistic shields. An additional comment included the use of plate carriers that held level IV ballistic plates that were worn in addition to the vest.

The FSQ provided the respondents with a range of choices which are shown in Table 7.

Table 7

Fire Service Rescue Team Personal Protective Equipment

<u>Equipment</u>	<u>Response</u>	<u>n= 46</u>
Station Uniform	39.1%	46
Bunker Gear (coat & pants) w/ Helmet	21.7%	46
Bunker Pants w/ Helmet	10.9%	46
Ballistic Vest	26.1%	46
Ballistic Helmet	8.7%	46
Personnel Do Not Enter Warm Zone	15.2%	46

Additional comments added with regards to personal protective equipment included the use of reflective ICS vests to identify fire personnel and the directive to have their firefighters “dress to look like firefighters with the use of a fire helmet as the minimum requirement”.

The final question to be addressed by this research was to determine the medical

equipment and procedures fire departments were using in the warm zone. To answer the question of the level of care provided, the FSQ offered the choices of BLS interventions, ALS standard paramedic protocols, TEMS protocols, or TCCC protocols. Of the 46 agencies, 30.4% provided only BLS interventions, 30.4% relied on standard ALS paramedic protocols, 17.4% utilized TEMS, and 10.9% utilized TCCC guidelines. An additional comment included the observation that mass casualty events are normally initially treated using BLS interventions.

The final question of the FSQ provided the respondent with the opportunity to choose which medical equipment and procedures their personnel utilized in the warm zone of an ASI. Those results are displayed in Table 8.

Table 8

Medical Equipment and Procedures Utilized in the Warm Zone

<u>Equipment/Procedure</u>	<u>Response</u>	<u>n=</u>
Tracheal Intubation	41.3%	46
Surgical Cricothyrotomy	17.4%	46
Occlusive Chest Dressing	71.7%	46
Needle Thoracentesis	28.3%	46
Tourniquet Application	84.8%	46
Intravenous Access	45.7%	46
Interosseous Access	32.6%	46

Additional comments for this question included the use of quick clotting bandages and the observation that although the majority of the procedures and equipment listed are carried in

the warm zone, the treatment priority should be controlling massive hemorrhage and extricating the victim so they can be transported to the hospital for definitive surgical care.

Three email interviews were conducted to gain further insight into the ASI response model developed in Hillsboro, OR. Deputy Chief Mark Prince and Engineer Jeff Gurske of the Hillsboro Fire Department and George Williams, of Cutting Edge Training LLC were asked to explain the rationale behind having law enforcement extricate victims to the CCP instead of combining law and fire personnel into rescue teams. Williams, who has an extensive background in law enforcement stated that training firefighters to operate tactically and move with a law enforcement contingent is not practical. He added that it takes three to five years for a law enforcement officer to learn how to move quickly and efficiently as part of a team in a hostile environment. Williams also stated the dynamic nature of an ASI is extremely stressful and is therefore not the time to have firefighters performing skills that are not a normal part of their job function. In conclusion, Williams added that law enforcement officers can be trained very quickly to apply tourniquets to control massive bleeding as well as techniques for moving victims to the CCP using any means available (G. Williams, personal communication, August 12, 2013).

Deputy Chief Mark Prince stated the initial response model used by the Hillsboro Fire Department incorporated the use of combined law/fire rescue teams, but they identified early on that the model did not work efficiently. Prince reported that deploying personnel and medical equipment throughout the warm zone as teams located and treated patients required extensive equipment and manpower. Prince stated the concept of law enforcement moving patients to the CCP where members of the fire department had established triage and treatment zones provided a more efficient use of resources and expedited patient care (M. Prince, personal

communication, July 20, 2013). Finally, Engineer Jeff Gurske provided the following viewpoint on combined law/fire rescue teams vs. law enforcement extricating victims to the CCP. Gurske claimed that placing firefighters into an area where law enforcement is wearing ballistic vests and have their weapons drawn should be considered a hot zone regardless of what others may call the area. As such, any firefighter working in that type of environment should receive the same tactical training as law enforcement officers in addition to the medical care taught in TCCC. This he asserted would be financially prohibitive for most fire departments. Gurske is also of the opinion the Hillsboro model requires less man-power to deploy because personnel are focused on their primary objective, i.e., law enforcement stopping the shooter and moving victims to the CCP and fire personnel managing the triage, treatment, and transport of victims to the hospital. Gurske claimed the intricacies of the combined law/fire rescue team model require that agencies train together regularly to perfect team movement in the warm zone. Gurske felt that integrating law enforcement officers and firefighters into a rescue team is an integration process that would take significant time to master and would have to be trained on frequently. Gurske finished by adding that combining law and fire into a Unified Command is a hurdle even in their system. If you add the additional challenge of command and control over a combined law/fire task force the entire process will slow down. Gurske emphasized the Hillsboro system results in victims getting to the CCP and ultimately transport to the hospital much faster than when using rescue teams comprised of law and fire personnel (J. Gurske, personal communication, September 10, 2013).

Discussion

Active Shooter Incidents, according to the statistics, are increasing in frequency. With the media's ability to converge on all areas of the country and provide extensive coverage

we are provided with almost firsthand accounts of the devastation. It must become an operational priority for agencies tasked with mitigation to develop a coordinated and effective response. The need for emergency response agencies to work together to mitigate the loss of life was emphasized by Gaines (2013) and the NFFF (2013). The NFFF (2013) also recommended that response agencies develop plans that were comprehensive, inclusive, and recognized the resource limitations of the involved agencies. The fire service does not appear to have adopted this mindset. Davis (2009) found that 88% of the departments surveyed to determine their ASI response staged until the scene was secured by law and that many did not have protocols addressing ASI's. The data from this research indicated that while increased focus on ASI's may be taking place on a national level, many agencies are still unprepared to respond should an event occur in their jurisdiction. Of the 155 fire departments who participated in this research, 58.1% reported they staged until law reported the scene was clear and 65.8% indicated their agency did not have an ASI protocol that integrated their response with law enforcement. Although the total number of law enforcement agencies who participated in this research precludes comparison to law enforcement in general, the data indicated 57.9% of the law enforcement agencies also did not have protocols in place that integrated their response with the fire service.

It is understandable that the fire service is struggling to adopt a standardized response to ASI's when even industry leaders cannot agree on how these incidents should be managed. As discussed in the literature review, NFPA 1500, Bledsoe, Porter, and Cherry (2007), and Ludwig (2012) all supported the practice of fire personnel staging until law enforcement secured the scene. In contrast, Smith (2009), MWCOG (2010), and Morrissey (2011) claimed that preventable deaths are occurring because fire departments are staging. Atwater (2012) agreed

that preventable deaths occur as a result of staging and further argued that staging protocols place firefighters at increased risk citing instances of firefighters self deploying into the warm zone to rescue victims.

Whether a fire department makes the decision to stage at ASI's or develops a response that facilitates rapid access to patients, the response must be coordinated with their law enforcement partner. The literature review identified the use of Unified Command as the preferred method of managing and coordinating multi-agency dynamic incidents such as ASI's. The ICS Field Operations Guide (USFA, 2010), the model plan developed by MWCOG (2010), after action reports including USFA (1999) and USFA (2008), and the response procedure of the Chandler Fire Department (CFD, 2012) all utilize Unified Command. The research data indicated 93.5% of the 46 fire departments with integrated law/fire ASI protocols and 71.4% of the seven law enforcement agencies with integrated law/fire ASI protocols implemented Unified Command during the initial phase of the incident. Ultimately, NFFF (2013) provided the most simplistic solution by stating that law and fire command should communicate face to face during these incidents. In addition to utilizing Unified Command, the research data indicated the majority of fire departments are implementing a Staging Officer, Treatment Officer, and Transportation Officer to manage resources as well as the treatment and transport of victims. In contrast, the law enforcement research data indicated only one of the seven agencies established a Staging Officer. Again, the extremely low number of participants in the law enforcement questionnaire prevents speculation on whether or not law enforcement in general is utilizing staging, but the use of staging to limit freelancing by individual resources should not be overlooked.

The literature identified three ASI response procedures currently in use by the fire

service. Staging fire department personnel until the scene is secure appears to be the default protocol for the majority of fire departments who participated in this research. As noted by Atwater (2012) staging fire personnel away from the incident may afford the highest level of safety for firefighters but does not provide timely patient care. As a bridge, Blair and Martindale (2013) offered the concept of training law enforcement officers to apply tourniquets if they encountered victims with life threatening bleeding. The second response procedure identified in the literature was the use of SWAT medics. Atwater (2012) discouraged the use of SWAT medics citing prohibitive equipment and training costs and further claimed the mission objective of a SWAT medic was to remain with their team and bypass injured civilians until the threat had been neutralized. The data from this research indicated only 12.3% of the 155 fire departments and none of the law enforcement agencies utilized SWAT medics for victim treatment and extraction.

We are left then with the discussion of the rescue team concept proffered by Smith (2009), MWCOG (2010), Morrissey (2011), and Atwater (2012). As described by Williams (2013), the rescue team concept effectively addresses the two simultaneous mission objectives of rapidly neutralizing the threat and treating the victims. Smith (2009), Morrissey (2011), and Atwater (2012) all promoted the concept of rescue teams comprised of fire and law enforcement personnel. However, the personal communications this researcher received from Prince, Gurske, and Williams discouraged using fire personnel as rescue team members claiming the use of fire personnel proved ineffective and difficult to manage. Clearly, future research must be done to determine which rescue team concept is most effective. For the agencies with pre-established ASI response protocols the data from this research indicated 67.4% of the 46 fire departments and 42.9% of the law enforcement agencies are currently combining firefighters

with police officers to form rescue teams.

The NFFF (2013) recommended that resource availability must be factored into response protocols developed for ASI's. The data from this research indicated 39.1% of the 46 fire departments would expect to have 11 to 25 personnel on scene within 20 minutes. This is comparable to the resource capability of our local jurisdiction. The question that must be answered by our local Hostile Incident Response Committee is which rescue team model would prove most effective for our local jurisdiction given our limited resources. Gurske (personal communication, September 10, 2013) made a compelling argument that using law enforcement officers to rescue victims frees up fire department personnel to establish the CCP and manage the triage, treatment, and transport of victims. Not adequately identified by this research is the optimal number of law enforcement officers needed during the initial phase of an ASI to accomplish the mission objectives of stopping the assailant, securing the perimeter, providing CCP security, and protecting critical areas of the incident. This number must be identified by our local committee as we move forward in the planning process.

Providing for the safety of responding fire department personnel is of paramount concern regardless of incident type. Firefighters entering a structure fire are provided with turnout gear, SCBA, a hose line, and tools all designed to increase their safety. If firefighters are tasked with responding inside the warm zone of an ASI, special considerations must also be made. USFA (1999) and the NFFF (2013) both recommended that firefighters wear clothing that distinctly identifies them as members of the fire department. The recommendations included the use of ICS vests and fire helmets. The data obtained from this research indicated the majority of fire departments only require their personnel to wear their daily station uniform. This may prove problematic during a dynamic event such as an ASI. More in line with the

recommendations contained within the literature review, 32.6% of the 46 fire department required their personnel to wear either full turnout gear and helmets, or at a minimum, turnout pants and helmet. USFA (1999), Smith (2009), and Atwater (2012) all recommended that fire personnel operating in the warm zone be provided with ballistic vests. Davis (2009) supported the provision of ballistic vests but acknowledged the cost of equipping firefighters with vests could be financially prohibitive. This may explain why only 26.1% of the 46 fire departments provide ballistic vests to their personnel. Conversely, all of the law enforcement agencies indicated their personnel wear ballistic vests in the warm zone. Ballistic helmets were used by only 8.7% of the 46 fire departments and these were limited to fire department personnel who were members of the local jurisdictions SWAT team.

Simply stated, the purpose of coordinating the response of law enforcement and fire departments to ASI's is to save lives. Morrissey (2011), Savitsky et al. (2012), and Biddinger (2013) prioritized patient treatment based on the frequency and severity of injuries encountered. By far, massive hemorrhage was documented as the leading cause of mortality. The application of combat style tourniquets was cited as the most effective method to treat these injuries. Airway obstructions were identified in the literature as the second leading cause of mortality and the use of simple airway adjuncts such as nasal or oral pharyngeal airways was cited as the preferred treatment. Finally, airway compromise secondary to the development of tension pneumothorax was identified as the third leading cause of mortality. The use of occlusive chest dressings or needle thoracostomy was the recommended treatment. The research data supported these observations with 84.8% of the 46 fire departments utilizing tourniquets and 71.7% carrying occlusive dressings. Only 28.3% reported the capability to perform needle thoracostomy. As noted in the limitations, the use of airway adjuncts was not ascertained.

The implications of this research to our local region will be profound. Currently, our fire department's response policy to hostile incidents requires firefighters to stage and wait for law enforcement to clear the scene. As noted in the literature, this policy will result in preventable deaths occurring to civilians. Developing a coordinated response with law enforcement will improve our fire department's ability to save lives while at the same time provide the highest level of safety for our personnel.

Recommendation

It is this researcher's observation based on many years in the fire service that firefighters pride themselves in working effectively as a team to save lives and property. Enforcing a staging policy that prevents firefighters from performing the work of saving lives will have disastrous repercussions to both the mental well-being of firefighters as well as erode the trust and confidence civilians have in their local emergency response organizations. Based on this research the local response to ASI's must be changed from staging to a more proactive response.

The end result of an ASI response model should be to reduce victim injury to treatment time while affording the highest level of protection for emergency responders. The rescue team model appears to meet this need. What is not clear at this time is whether the local response model should follow the recommendation of MWCOG (2010) and incorporate law and fire personnel into rescue teams, or instead follow the model utilized in Hillsboro, OR which utilizes police officers to rescue victims. The two models will be presented to the members of the Local Hostile Incident Planning Committee for their consideration.

The formation of Unified Command to coordinate multi-agency response must be a mandatory component of any response developed. Of particular influence to this researcher

were the benchmarks incorporated into the Chandler Fire Department's ASI SOG (CFD, 2012). Prior to rescue team deployment, the SOG required Unified Command be established, the threat be neutralized or contained, the area of the warm zone defined, and a CCP established. The benchmarks provide responders with clearly defined objectives that improve scene safety and operational effectiveness and therefore should be included in the local response procedure.

Based on this research, a recommendation will be made to the local planning committee to equip fire personnel with ballistic protection should they be tasked with entering the warm zone. Providing the highest level of personal protection must be a priority for fire departments to ensure their personnel can safely operate in the warm zone. Likewise, the local response protocol must require firefighters to wear clothing that clearly identifies them as members of the fire department. The recommendation to the local committee will include the use of ICS vests and fire helmets in addition to their daily station uniform.

The provision of medical care including the purchase of medical equipment will be directed at treating the three primary lethal injuries identified in this research. Future training using TCCC or TEMS curriculum should also be considered by the region as they would improve the fire department's ability to provide appropriate patient care under these circumstances. At the very least, law enforcement and fire department personnel should be equipped and trained in the use of combat style tourniquets to control massive hemorrhage.

In conclusion, ASI's significantly strain the resource capabilities of emergency response organizations. The work performed by the local committee must continue with a sense of urgency. The information from this research will be used to assist the local Hostile Incident Planning Committee implement an effective ASI response that will ultimately save innocent lives while providing for the safety of emergency responders.

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Appendix A

Fire Service Active Shooter Response Questionnaire

Fire Service Active Shooter Response
<p>The purpose of this survey is to obtain information which will be used to prepare my final Research Project for the National Fire Academy's Executive Fire Officer Program. The data will be used to develop a coordinated Law/Fire Active Shooter response protocol for our region. For the purpose of this survey the following terms are defined:</p> <p>Active Shooter Incident (ASI)- An individual or group whose actions are immediately causing death and/or serious bodily injury to others. It is not limited to the use of firearms.</p> <p>Contact Team - Group of first arriving police officers (2-4) who form a team and enter the hostile area to neutralize the suspect.</p> <p>Law/Fire Unified Command - Formed to manage strategy and tactics of contact teams and rescue teams.</p> <p>Rescue Teams - Team comprised of at least 2 fire personnel grouped with 2- 4 Law personnel as force protection. Rescue Teams enter warm zone to rapidly treat and extract victims.</p> <p>Warm Zone - Area(s) that have been quickly cleared by the Contact Teams but are not 100% cleared.</p> <p>Casualty collection Point - CCP -Secured location where victims are extracted to prior to moving them to the ambulance loading area.</p>

Fire Service Active Shooter Response

*** 1. Indicate the size (total number of personnel) in your agency**

0 - 50
 51-100
 100 +

*** 2. Indicate your type of response agency**

Volunteer
 Combination
 Career

*** 3. Choose the answer that best describes your agency's response to ASI.**

Fire/EMS units stage at safe distance away from Incident and wait for law to declare the scene "clear"
 SWAT Medics make entry with law enforcement to extract civilian victims
 Law enforcement patrol officers extract civilian victims to Casualty Collection Point
 Coordinated Fire/EMS response with law enforcement that prioritizes neutralizing suspect and gaining rapid access to civilian victims using Law/Fire Rescue teams
 Other (please specify)

*** 4. Does your agency have a protocol specific to ASI that integrates Fire/EMS response with law enforcement agencies? If No, you have completed the survey, thank you for participating.**

Yes
 No

Fire Service Active Shooter Response

*** 5. Does your ASI protocol require Unified Law/Fire Command be established prior to deploying fire personnel into the Warm Zone?**

Yes
 No
 Other (please specify)

*** 6. Does the law enforcement agency or agencies you respond with utilize the concept of Contact Teams to neutralize an active shooter?**

Yes
 No
 Other (please specify)

*** 7. Does your ASI response protocol establish Rescue Teams comprised of Fire/EMS personnel teamed with Law Personnel as force protection that make entry into the warm zone to extract injured civilian victims?**

Yes
 No
 Other (please specify)

*** 8. According to FBI statistics, the average ASI lasts 12 minutes. How many Fire/EMS personnel would your agency typically have on-scene within the first 12 to 20 minutes of an ASI under optimal staffing conditions?**

10 or less
 11 - 25
 26 +

Fire Service Active Shooter Response

*** 9. Indicate the ICS positions your agency would primarily staff during the initial phase (12 to 20 min) of an ASI to manage entry into the Warm Zone and rescue, treatment, and transport of injured civilians. Choose all that apply.**

- Unified Law/Fire Command
- Fire/EMS Staging Officer
- Treatment Officer at CCP
- Transportation Officer
- Communications Officer
- Other (please specify)

*** 10. Indicate the personal protective equipment your fire personnel would wear when entering the WARM zone as part of a Rescue Team. Choose all that apply. It is assumed that BSI precautions are observed.**

- Station (daily) uniform
- Station (daily) uniform with fire helmet
- Firefighting bunker gear (Coat and Pants) with fire helmet
- Firefighting bunker gear (pants only) with fire helmet
- Ballistic vest with either station uniform or turnout gear
- Ballistic helmet
- Personnel do not enter the warm zone
- Other (please specify)

Fire Service Active Shooter Response

*** 11. Choose the level of medical care that best describes your treatment of ASI victims inside the WARM zone?**

- Basic Life Support Interventions only
- ALS (standard paramedic response protocols)
- Tactical Emergency Medical Support (TEMS)
- Tactical Combat Casualty Care (TCCC)
- Other (please specify)

*** 12. Indicate the specialized medical equipment and procedures your personnel are using to manage patients in the WARM zone. Choose all that apply.**

- Tracheal intubation
- Surgical cricothyrotomy
- Occlusive chest dressings
- Needle thoracostomy
- Conventional pressure dressings
- Hemostatic dressings
- Tourniquet application for life threatening extremity hemorrhage
- Intraosseous access
- Interosseous access
- Other (please specify)

Appendix B

Law Enforcement Active Shooter Response Questionnaire

Law Enforcement Active Shooter Response

The purpose of this survey is to obtain information which will be used to prepare my final Research Project for the National Fire Academy's Executive Fire Officer Program. The data will be used to develop a coordinated Law/Fire Active Shooter response protocol for our region. For the purpose of this survey the following terms are defined:

Active Shooter Incident (ASI)- An individual or group whose actions are immediately causing death and/or serious bodily injury to others. It is not limited to the use of firearms.

Contact Team - Group of first arriving police officers (2-4) who form a team and enter the hostile area to neutralize the suspect.

Law/Fire Unified Command - Formed to manage strategy and tactics of contact teams and rescue teams.

Rescue Teams - Team comprised of at least 2 fire personnel grouped with 2- 4 Law personnel as force protection. Rescue Teams enter warm zone to rapidly treat and extract victims.

Warm Zone - Area(s) that have been quickly cleared by the Contact Teams but are not 100% cleared.

Casualty collection Point - CCP -Secured location where victims are extracted to prior to moving them to the ambulance loading area.

Law Enforcement Active Shooter Response

*** 1. Indicate the size (total number of response personnel) in your agency**

0 - 50

51-100

100 +

*** 2. Choose the answer that best describes your agency's response to ASI.**

Fire/EMS units stage at safe distance away from Incident and wait for law to declare the scene "clear"

SWAT Medics make entry with law enforcement to extract civilian victims

Law enforcement patrol officers extract civilian victims to Casualty Collection Point

Coordinated Fire/EMS response with law enforcement that prioritizes neutralizing suspect and gaining rapid access to civilian victims using Law/Fire Rescue teams

Other (please specify)

*** 3. Does your agency have a protocol specific to ASI that integrates Fire/EMS response with law enforcement agencies? If No, you have completed the survey, thank you for participating.**

Yes

No

Law Enforcement Active Shooter Response

*** 4. Does your law enforcement agency utilize the concept of Contact Teams to neutralize an active shooter?**

Yes

No

Other (please specify)

*** 5. Does your ASI response protocol establish Rescue Teams comprised of Fire/EMS personnel teamed with Law Personnel as force protection that make entry into the warm zone to extract injured civilian victims?**

Yes

No

Other (please specify)

*** 6. Does your ASI protocol require Unified Law/Fire Command be established prior to deploying fire personnel (Rescue Teams) into the Warm Zone?**

Yes

No

Other (please specify)

Law Enforcement Active Shooter Response

*** 7. According to FBI statistics, the average ASI lasts 12 minutes. How many Law Enforcement personnel would you typically have on-scene within the first 12 to 20 minutes of an ASI under optimal staffing conditions?**

10 or less
 11 - 25
 26 +
 Other (please specify)

*** 8. Indicate the personal protective equipment your initial response personnel utilize during an ASI.**


Ballistic Vest
 Ballistic Helmet
 Ballistic Shield
 Other (please specify)

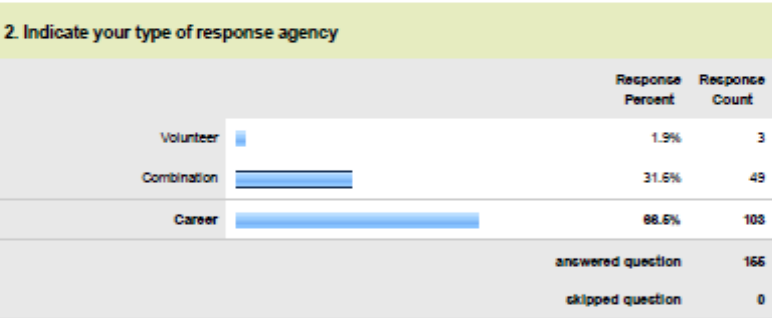
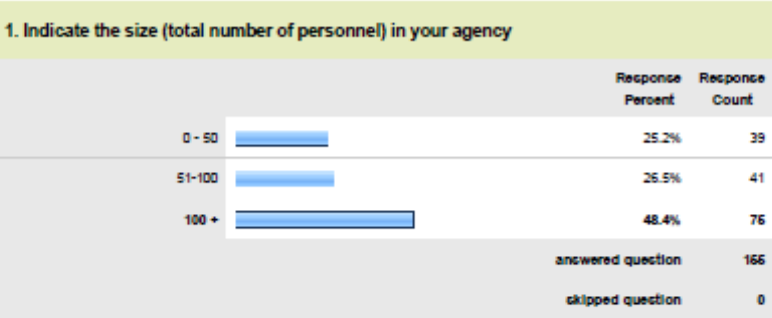
*** 9. Indicate the ICS positions your agency would primarily staff during the initial phase (12 to 20 min) of an ASI to manage Contact Teams, Rescue Teams, Perimeter control, and other related law enforcement functions etc. Choose all that apply.**

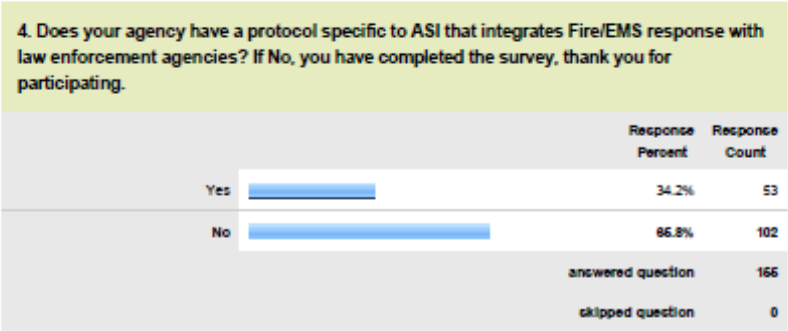
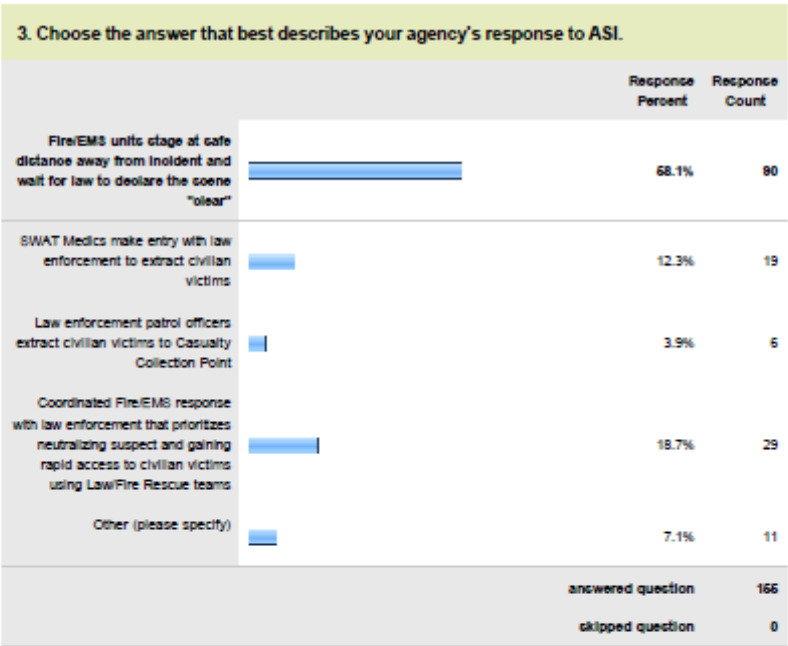
Unified Law/Fire Command
 Law Command (Not co-located with Fire/EMS Command)
 Incident Commander would not be established within first 12 to 20 minutes
 Staging Officer
 Operations Officer
 Public Information Officer
 Liaison Officer
 Other (please specify)

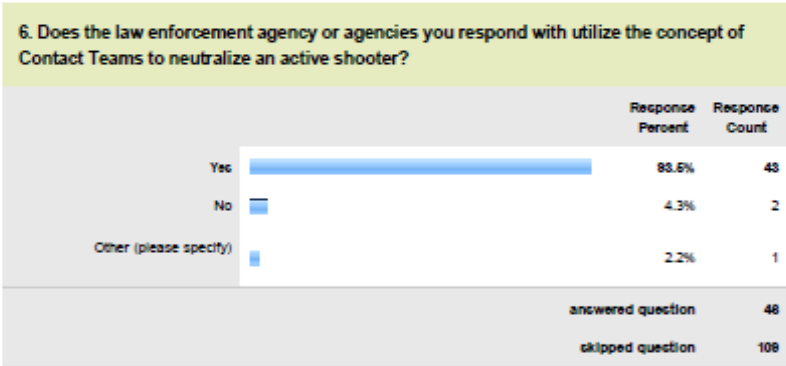
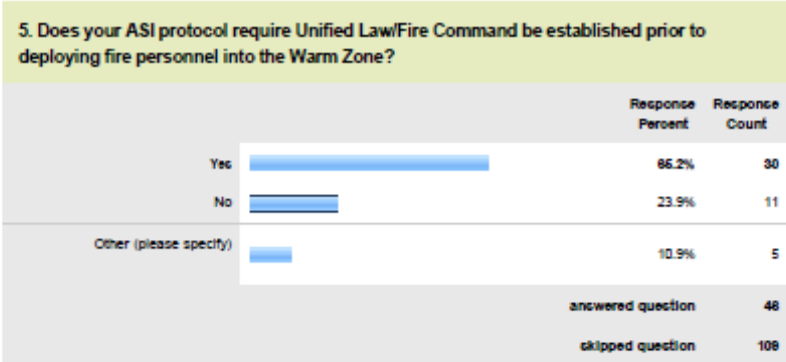
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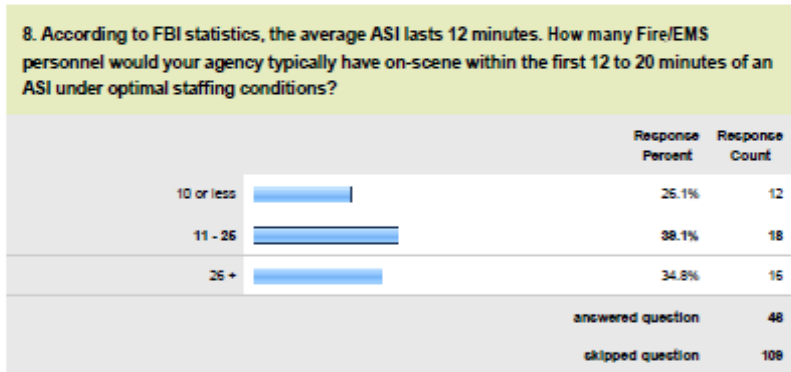
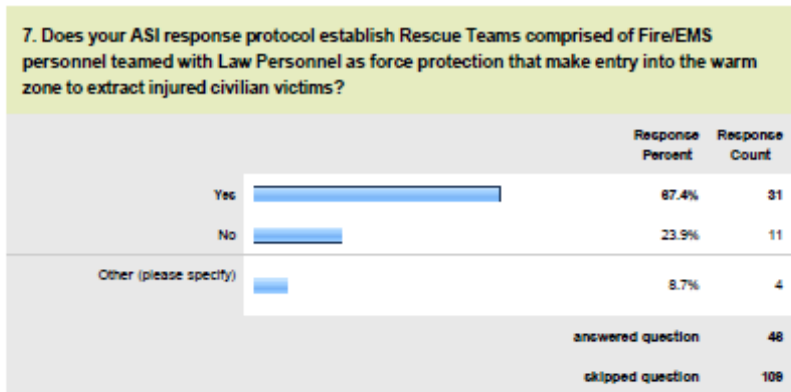
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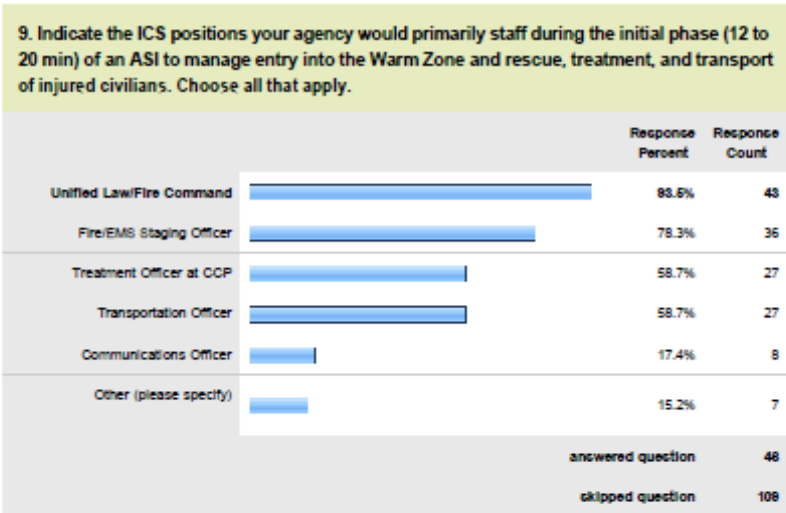
Fire Service Active Shooter Response 

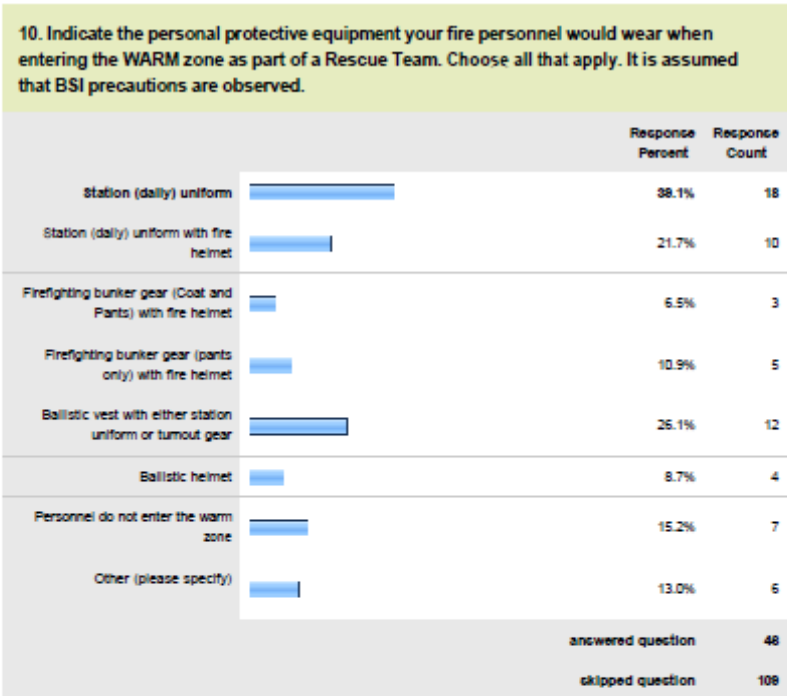






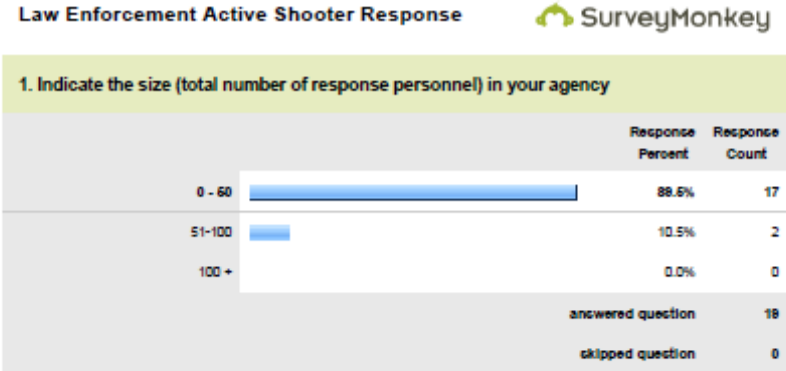


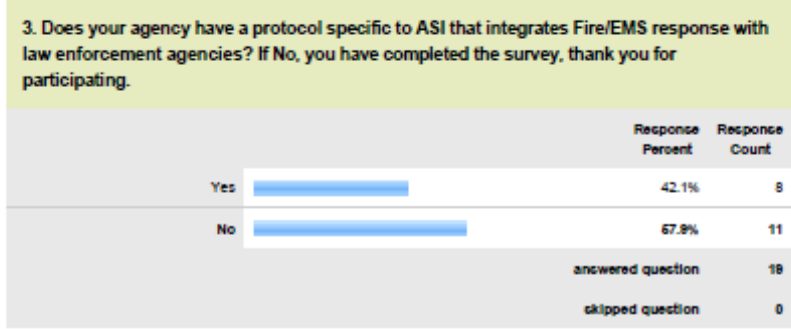
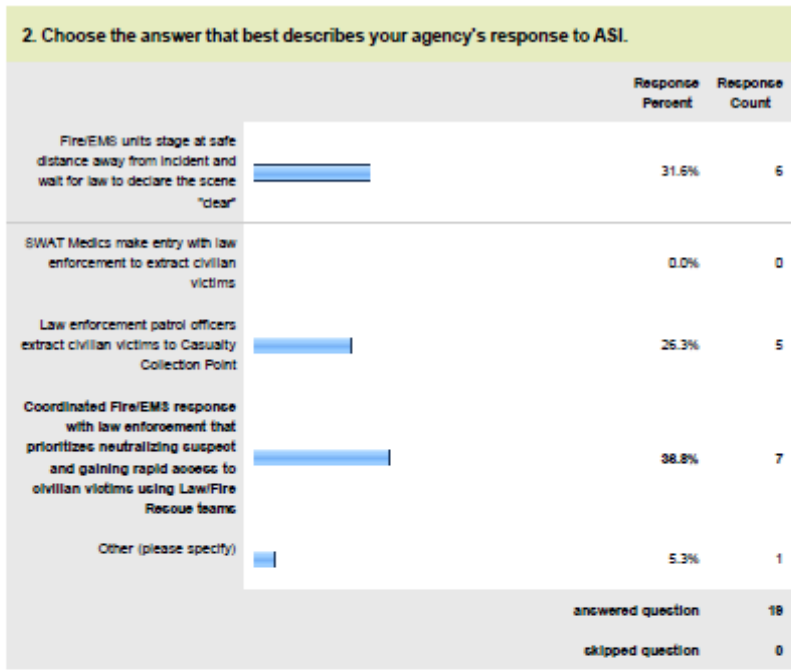


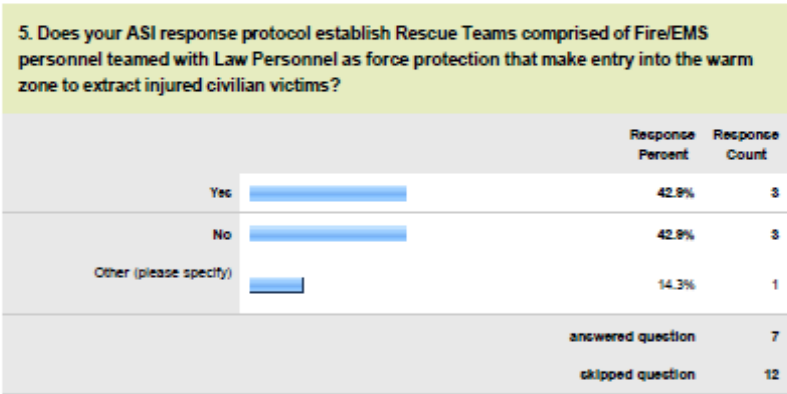
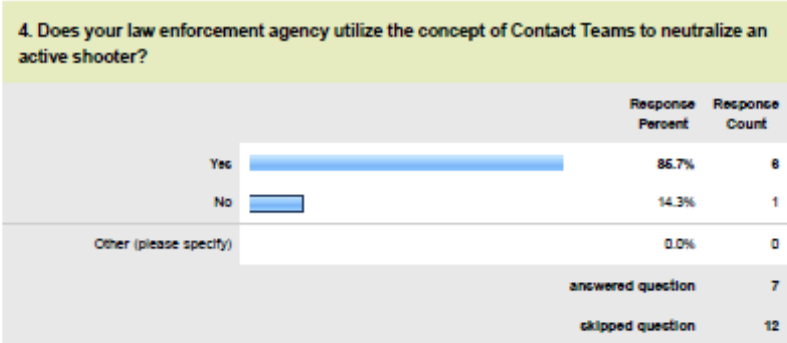


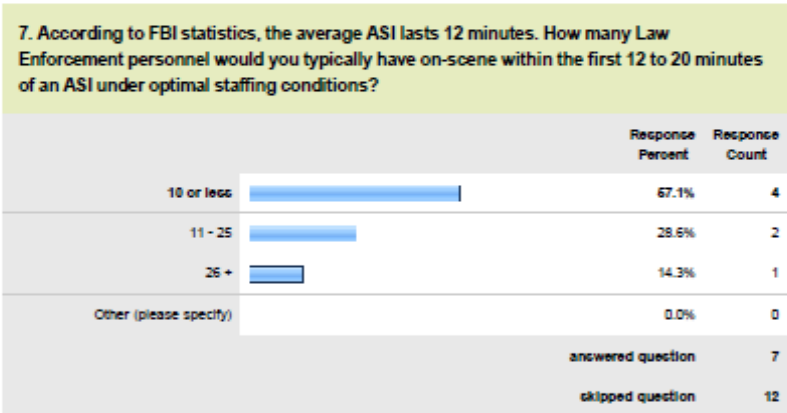
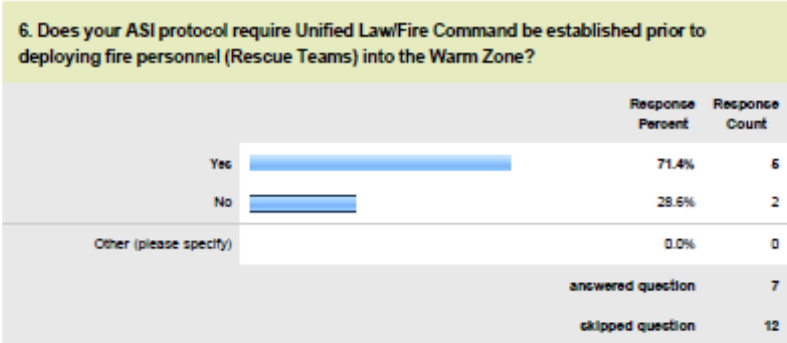
Appendix D

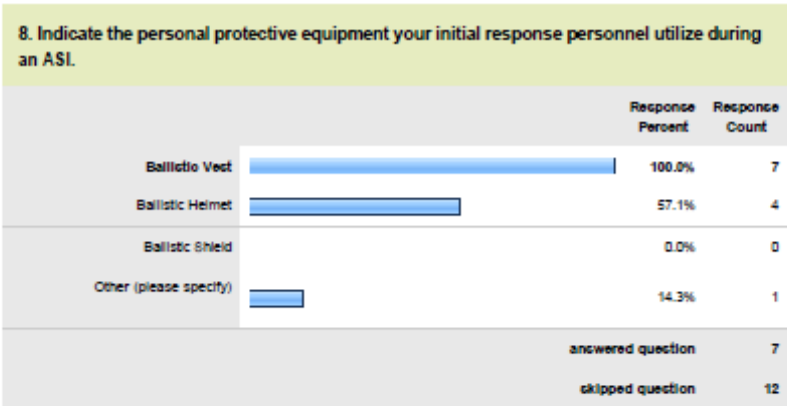
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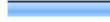









9. Indicate the ICS positions your agency would primarily staff during the initial phase (12 to 20 min) of an ASI to manage Contact Teams, Rescue Teams, Perimeter control, and other related law enforcement functions etc. Choose all that apply.

		Response Percent	Response Count
Unified Law/Fire Command		71.4%	6
Law Command (Not co-located with Fire/EMS Command)		28.6%	2
Incident Commander would not be established within first 12 to 20 minutes		28.6%	2
Staging Officer		14.3%	1
Operations Officer		28.6%	2
Public Information Officer		28.6%	2
Liaison Officer		0.0%	0
Other (please specify)		0.0%	0
answered question			7
skipped question			12