

Benefits of an Accelerant Canine

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Certification Statement

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

Signed: William H. Bellon

Date: Sept 14, 2020

Abstract

The problem was that Howe Springs Fire Rescue (HSFR) has never had an Accelerant Detection Canine (ADC) and was unaware whether the program will be sustainable if it was implemented. The department was looking to move forward with obtaining an ADC, but all the leadership needed to be familiar with the benefits of owning one but also familiar with the challenges of owning one. The purpose of this research was to complete a cost-benefit analysis for HSFR to determine if an ADC program would be sustainable. A descriptive research method was used to answer the following questions. (1) To what extent does an ADC improve the efficiency and success of origin and cause investigation? (2) What are the benefits of owning an accelerant detection canine? (3) What are the cost and responsibilities of owning an ADC? (4) What preparations must be made at the department before receiving an ADC? The researcher utilized published documents and interviews. The results revealed that the use of an ACD does improve the results and the efficiency of fire investigations. It was also discovered that having an ACD could improve public education and improve morale around the fire station. There is a tremendous responsibility that comes with being the handler of a canine and some cost that an agency should expect. This research recommends that HSFR move forward with implementing an ADC program and should complete the preparations such as picking a handler, budget, building partnerships, developing procedures, and obtaining the things needed to care for a canine. It is also recommended that the HSFR should use other funding sources such as grants and donations to help fund the program.

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Benefits of an Accelerant Canine

Florence County covers 799.96 square miles and a population of 136,879 according to the 2010 Census (United States Census Bureau, 2010). The County is protected by 10 departments working out of fifty stations total. Each department has its policy for determining origin and cause and that authority has been given to the Authority Having Jurisdiction (AHJ) by the State of South Carolina. When there is a suspicious fire within the County and the use of accelerants are unknown, the fire department and/or the Florence County Sherriff's Office (FCSO) have to call the South Carolina Law Enforcement Division (SLED) to respond with an ADC. There are currently no ADC in Florence County.

HSFR covers 152 square miles and a population of 20,850 according to the 2010 Census (United States Census Bureau, 2010). HSFR is the largest department in the County and responds to approximately 1200 calls out of seven stations. The department has six full-time staff to include: Fire Chief, Assistant Chief, Maintenance Coordinator, Fire Marshal, Firefighter, and an Administrative Specialist. The paid staff supports the 65 volunteers that manage the emergency calls daily. It was determined in a separate Applied Research Project (ARP) that HSFR needed to improve on the origin and cause investigation within its jurisdiction. As part of the improvements, an ADC has been considered for the department. The problem was that HSFR has never had an ADC and is unaware whether the program will be sustainable if it is implemented.

The purpose of this research was to complete a cost-benefit analysis for HSFR to determine if an ADC program would be sustainable. A descriptive research method was used to answer the following questions:

- (1) To what extent does an ADC improve the efficiency and success of origin and cause investigation?
- (2) What are the benefits of owning an accelerant detection canine?
- (3) What are the cost and responsibilities of owning an ADC?
- (4) What preparations must be made at the department before receiving an ADC?

Background and Significance

HSFR has taken great strides over the past five years to fulfill its responsibilities in origin and cause investigations. The department has provided more training for the company officers and has allowed the Chief and Assistant Chief to obtain certifications through the International Association of Arson Investigators (IAAI). More equipment and resources have been obtained to complete investigations at our fire scenes. The department has taken this new data that is being collected and used it as a road map for our community risk reduction efforts. The department has also improved its relationship with the Florence County Sheriff's Office (FCSO) and the South Carolina Law Enforcement Division (SLED).

While the department developed plans for continuous improvements in origin and cause tactics, the use of an ADC was brought to the discussion table. The department nor has Florence County ever owned an ADC. With so many questions, limited budget, and limited personnel I decided to do an applied research project to determine if a canine team would be sustainable at HSFR. It is feared that the investment in time and money will outweigh the benefits of having the ADC.

Since HSFR has started putting more focus on origin and cause investigation there has been an increase in personnel time spent on the scene. This alone has impacted the budget in overtime and sometimes additional personnel for digging out a fire. The addition of an ADC

could assist with locating evidence and points of origin quicker or could cause more of a budget issue with unforeseen cost and handler overtime pay.

The United States Fire Administration's Strategic Plan has three goals in the 2019 – 2023 plan (USFA: Strategic Plan, 2019, p.8). Goal one of the plans is to build a culture of preparedness in the fire and Emergency Medical Services. HSFR is in the process of determining if adding an ADC to the department will help the department be resilient against arson and more efficient with the origin and cause determination.

This APR is based on the Fire Service Operations in Emergency Management Class provided by the United States Fire Administration's Executive Fire Officer Program. The national response framework is discussed in Module One of the Fire Service Operations in Emergency Management Student Manual. It states that "Capabilities-Based Planning balances the potential threat and magnitude of terrorist attacks, disasters and other emergencies with the resources required to mitigate, prepare, respond and recover." (USFA, 2016). The benefit of the ADC would be a tool that helps with the origin and cause determination and could help speed up the recovery efforts for the owner.

Literature Review

A comprehensive literature review was conducted using relevant published documents that focused on the cost-benefit analysis of accelerant detection canine. Internet resources, books, and journals were researched to help gather the information in the applied research project. The purpose of the literature review was to complete a cost-benefit analysis for HSFR to determine if an ADC program was sustainable.

The History

Although the purpose of this applied research project is to complete a cost-benefit analysis for HSFRR owning an ADC, a brief history of ADCs may help explain how they are beneficial to the job. “A working dog is a canine working animal that learns and performs the task to assist and/or entertain its human companions. Detection, herding, hunting, search and rescue, police, and military dog are all examples of working dogs.” (Kingsley, 2017) Working dogs have been around since ancient times. “Dogs of all sorts have been used as hunters, herders, and sentinels for pretty much all of recorded time”. (Willingham, 2019) The first ADC was trained in 1986. “Mattie, a Labrador retriever trained by the Connecticut State Police with assistance from the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), to respond (alert) to 17 different odors of ignitable liquids in 1986.” (USFA, 2015)

A canine’s sense of smell is incredible. “An accelerant detection canine ADC is trained to sniff out minute traces of ignitable liquid accelerants that may have been used to start a fire.” (USFA, 2015) The strength of the dog’s smell has proven to be more powerful than the mechanical sniffers used in the field today. In an article published by the U.S. Fire Administration, they wrote, “An ADC has a sense of smell that is 100,000 times more acute than humans.” (USFA, 2015) In a different article written by the U.S. Fire Administration, they explained that there are “200 million cells in the average dog’s nose” and “increasing the canine’s sense of smell is an organ (Jacobson’s organ) in the roof of the mouth. This organ essentially allows the dog to “taste” a smell”. (USFA, 2015) “For the ADC program, candidate dogs—mostly Labrador retrievers—are identified because they demonstrate acute odor recognition and value rewards, either food or play.” (Envisage, 2017)

Once the ATF created the pilot program and these dogs started becoming successful with great accuracy, it was not long before the demand for them grew rapidly. Several other agencies train ADC's along with the ATF. State Farm started sponsoring their Arson Dog Program in 1993. The reason? As an insurance company, they could see firsthand the devastation and cost from arson fires. "Each year billions of dollars' worth of property damage and hundreds of lives are lost due to the crime of arson." (State Farm, n.d.) State Farm Arson Dog Program has continued to sponsor this program each year and has provided hundreds of canine teams to communities across the Nation. Science has improved a lot over the years in the technology of a portable accelerant sniffer, but they still have not improved over the ADC. "It is widely accepted that well-trained dogs are the most portable, economic, and versatile tools in use today for odor protection." (Latimer, 2015)

The Efficiency

With any cost-benefits analysis, efficiency and success are going to drive factors in the data collected. If the ADC is not efficient then it will cost the department unnecessary money that could have been spent on something else. If the ADC is not successful, then there is no benefit for maintaining the program. Most all the literature found on this subject was positive in both topics of ADC efficiency and success.

"Using an accelerant detection dog during a fire investigation is always the most efficient and cost-effective method of identifying potential samples for lab testing." (Coull, 2016) Using devices such as mechanical sniffers can take hours if the investigator is not exactly sure where the origin may be located. Using an ADC can help clear an area in a fraction of the time that would be required without one. The U.S. Fire Administration reported that an ADC "is fast, covering an entire scene in less than 30 minutes. It can take humans days to do what a dog does

in minutes.” They also stated that an ADC “is accurate. At best, humans can make educated guesses about possible accelerant use and will need to collect an average of 20 samples to send off to a lab for testing. With an ADC, its nose narrows down the guesswork, and it winds up taking three samples on average.” (USFA, 2015)

As discovered in the research for this question, man-hours can be the costliest factor in the investigation. The quicker that the point of origin can be determined, and it determined if accelerants were used, the quicker staff can get off the scene. “The K-9s have the ability to survey a variety of terrain in a fire scene in an incredibly short time, says Jerry Means, and agent with Colorado Bureau of Investigations.” (Wogan, 2015) The shorter the time that resources are kept on the scene the more money the department will save. Overtime can cost departments thousands of dollars a year. Depending on the department and the policy, an ADC may not need to be on call after hours possibly saving the department even more money. Emma Wagner writes “It is possible for accelerant detection canines to detect odors of accelerant up to 18 days after the fire has been extinguished and this the dog and his handler do not need to be on call 24 hours a day.” (Wagner, 1997)

Having an ADC gives pinpoint accuracy to the area of origin versus an investigator having to try and determine where the origin is located and pulling numerous samples. John Coull, a Fire and Explosion Investigator, explains that “The degree of efficiency and accuracy is unparalleled compared to any other investigative tool. And given the high cost of laboratory tests, using a dog to pinpoint areas of interest and minimize the number of required samples just makes good sense.” (Coull, 2016) Quality is also a must when obtaining samples. “Higher Quality lab samples are known to speed inquiry and increase the rate of convictions.” (Envisage, 2017)

An ADC cannot just be quicker, and the team cannot be just focused on saving money for the department. The team must also produce successful results to be a benefit to the community. So how accurate are these canines? As mentioned before, dogs have a much stronger sense of smell than humans. “Smell is a dog’s primary sense, and it is 10,000 to 100,000 times more acute than ours.” (Coull, 2016) One study that was completed on an ADC named Gus demonstrated just how successful and reliable a dog’s nose is. “Gus was tested by the State Highway Patrol Laboratory and was found to be capable of detecting 2/100ths of a microliter of evaporated gasoline – lower than the detection limits of most of their machines.” (Wagner, 1997)

In this research, it was discovered that several studies believe that the samples that show a false positive at the lab are due to the canine’s nose being stronger than the instruments at the lab. James Harynuck stated in his research that, “There have been many cases where a dog will flag debris that then tests negative in the lab. For us to improve laboratory techniques so that they can match the performance of the dogs, we must first assess the dogs.” (University of Alberta, 2020) Emma Wagner also explained, “The exact detection limit of the canine is not known but is considered to be in the order of 0.01 microliters of accelerant. It is conceivable that an accelerant detection canine may alert to accelerant present below the detection limits of the instruments used in confirmation, resulting in what appears to be a false positive alert by the canine.” John Coull explains, “They can find remnants of accelerants at the fire scenes far more quickly and accurately than humans, at levels that are at and sometimes beyond the sensitivity of lab testing techniques and equipment.” “Standard lab tests can sometimes come back negative, but because the sensed something, a deeper test is conducted, and accelerants can be revealed.” (Coull, 2016)

The ADC is only one tool in the investigator's toolbox. The ADC must be used in conjunction with good investigation tactics and laboratory follow-up. "Well-trained dogs will expedite the search for evidence and make it easier for a lab to corroborate." (Envisage, 2017) These canines rely on the fact that their handler will train with them daily. "Even with exemplary care, detection dogs are accurate, but not infallible." "According to CADA, any canine alert should not be considered valid until confirmed through laboratory analysis." (Envisage, 2017)

The Benefits

There are many benefits for an organization to own an ADC. As already discussed, the ability to help find evidence that may lock up an arsonist is going to be a great benefit within itself. Chief Patrick Nicholson of Brinnon Fire stated that "Use of a certified dog can increase arson conviction rates by as much as 50 percent." (Leader, 2015) Not only are you taking the arsonist off the street, but the presence of the canine will also deter others from setting fires.

Some other benefits that an ADC has are that they can assist with other searches. Using the canine just at the origin of the fire is limiting the ability of the team. Emma Wagner wrote, "The accelerant detection canine is a tool which can be utilized in other ways to assist a fire investigation including equipment searches, vehicle searches, crowd searches, and clothing searches." "Accelerant detection canines may also be utilized in searches of unburned vehicles i.e. a suspect vehicle." (Wagner, 1997)

Although the primary role of an ADC team is to combat the crime of arson, there are other things the ADC does for its community. Every department has those hard to reach citizens. It can be just being invited into assisted living facilities or it could be that first-grade class that may have a short attention span. "ADCs often begin as service canines where they exhibit

talents for community outreach. This disposition is leveraged for educational events that teach fire safety and prevention.” (Envisage, 2017) Kids tend to focus more when there is a reward at the end of the lesson such as a demonstration with a dog “People love animals, so that kind of allows people to focus their attention on the topic that’s being presented – whether it be a smoke alarm or general kitchen safety,” Marshal Shedd said. (Bowes, 2019) Other facilities may be more receptive to invite an ADC team into the facility to do a demonstration and this could open the door for some community risk reduction education.

Another benefit the canine may have is back at the firehouse. The job as a firefighter, police officer, or paramedic has been proven to be a stressful one. The International Journal of Environmental Research and Public Health completed a study that found that “increased social support was associated with lower levels of depression and better job performance in a survey of 240 hospital workers”. (Williams, 2017) “Other studies comparing only the presence versus the absence of a dog have observed lower stress responses when the dog is present than when it is absent.” (Williams, 2017) The canine can have great psychological benefits in the firehouse as long no one has an issue with allergies, or you own an aggressive canine.

The Responsibilities

Owning an ADC comes with great responsibilities and costs. If a handler or the department is not prepared, they could be in for many challenges. First off, an ADC can be very expensive. The up-front cost just for the dog and the training can average around \$25,000. “Specialized service dogs can run upwards of 25,000 dollars. This includes the cost of the puppy, medical bills, training and the fees it entails to apply for a service dog.” (Service Dog Certification, n.d) The upfront cost can be too much for some departments to obtain so they rely on grants or scholarships. These canines are few and far between across the country, so they are

in high demand. “As you can imagine; however, the cost associated with breeding, buying, raising, and training these gifted dogs is a time-intensive endeavor that also requires a substantial monetary investment.” (Pawderosa Ranch, 2015) These figures can give a good estimate of what cost could look like to implement a new canine program.

“ \$2k-\$3K for the initial training
\$3k-\$6k added salary compensation
\$5k-\$10k+ to outfit a new car with the cage
\$1k-\$2k for food, treats, bedding, kennel per year
\$1k-\$2k for vet bills
\$1k-\$2k for annual certification
\$1k-\$2k for training aids: narcotics or explosives” (Pawderosa Ranch, 2015)

There is a lot of costs associated with the ADC, but there are things a department and the handler can do to ease the burden. There are numerous grants out there that will help purchase the canine and pay for the training. Linda Gilbertson, a grant professional, stated, “For federal or state grant opportunities, you may be able to tie in the K-9 unit as an important component of the object being funded.” (Gilbertson, 2019) Other grants could also help with the annual cost of the canine. Several retail chain stores have grants that support emergency services or community programs. These grants could be used for dog food, kennels, vet bills, etc. Fundraisers are other options to pick up where grants may not cover. “most grants will not cover all of the costs involved and may require you to do some fundraising on your own.” (Gilbertson, 2019)

For the handler, they can almost always expect to have some personal expenses involving the ADC. Dog food, treats, grooming, upholstery cleaning, fence, kennels, and equipment could be paid for by the handler when there is less than full support from the department. There are

tax-deductible expenses that the handler should consider. As explained by Jeff Franco, “you are never really off the clock since you must always take care of the dog. This type of employment situation allows K9 handlers to take advantage of many tax deductions for job-related expenses.” (Franco, 2019) A handler should keep a record and receipts of all expenses associated with the canine to file on their taxes.

The responsibilities can far outweigh the cost for a new handler and department. The required time spent daily can overwhelm anybody that is not prepared. So, what can the handler expect? The ADC will live with the handler 24/7. “The training of the canine and handler really never ends. The ADC doesn’t receive food unless it earns it either through rigorous daily testing or while at an investigation.” (USFA, 2015) “The dog has to work to eat, so the handler must work the dog on days off, holidays, and sick days.” (Wagner, 1997) Training is key for a successful ADC team. And ADC must perform daily on the job but must also pass an annual certification test to stay certified.

Every year the ADC team will be certified by an agency. “All daily activities, fire scenes, and training are kept in a daily log.” (Wagner, 1997) This paperwork must accompany the team to the certification testing. Testing could be hundreds of miles and normally will last 2-4 days. “Certification involves double-blind recognition odor recognition and search exercise scoring 100 percent.” (USFA, 2015) This is why it is so important that so much time is spent on training daily. “A dog and handler are involved, either through proficiency testing or working a scene, in over a hundred trials per day.” (USFA, 2015)

Depending on the guidelines of how the dogs were obtained the ADC team may be required to respond outside of its jurisdiction on occasion. This can be very time consuming with additional investigations and travel time. It is described in an article by Envisage

Technologies that “ADC teams average 90 fire investigations per year.” (Envisage, 2017) To put that in perspective, that is one investigation every other workday.

The Preparations

The handler has things he must prepare for when taking on this new role. The handler’s lifestyle is about to change and he or she must prepare their household for those changes. More importantly, the department must be prepared to add an ADC team to its roster. This will be something that a department needs to prepare for before obtaining the canine. The best way to obtain good reliable information about how to prepare for an ADC team is to meet with other departments that have already obtained one.

A department must first review County or Town policies to make sure that no policy may prohibit the department from having an ADC. The department must prepare to develop their policies covering response policies, dog care, usage of the team, community outreach, etc. In an article written by Nicholas Johnson, a new ADC was denied the ability to enter the firehouse once the team returned from training. “We’ve never addressed animals in the firehouse, “EJFR Chief Gordon Pomeroy said.” (Leader, 2015) Planning may have prevented this incident from ever occurring. “When this came up, a number of employees complained of allergies to pets such as cats or dogs. If we bring animals into the firehouse and have people with allergies, we are creating an unsafe or hostile work environment, so it’s easier to just say no pets allowed in the firehouse.” (Leader, 2015) Personnel may have to be questioned about allergies to dogs.

The department’s risk manager should be contacted to make sure that the current insurance policy will cover the liability of a canine. Most departmental umbrella policies will but it is worth the phone call. The department must also consider the safety of the dog to include

possible fencing and/or kennels at the station. The handler's vehicle may need a kennel installed to include a system that will monitor the temperature in the vehicle. These systems could cost upwards of \$2000 with some having annual reoccurring subscriptions. It will be in the best interest of the canine for these items to be purchased before receiving the canine.

Summary

In summary, the findings from this literature review have helped to put the problem questions into perspective. HSRF has never owned an ADC nor do we have an experienced handler on our staff. With 90% of the department being a volunteer and a lot of the daily responsibilities being managed by the few paid staff that we have, we know the addition of an ADC team will be a taxing endeavor. The results of the literature review were overwhelmingly positive. "On the whole, however, the benefits far outweigh the disadvantages. This program is looked upon as an unqualified success by those who use accelerant detection canines, and most have plans to acquire more dogs for this purpose." (Wagner, 1997)

The literature that was reviewed was informative and a great deal of information can be found on how an ADC improves efficiency and how an active ADC team can save the department money in man-hours spent in investigations. John Perry wrote, "The time I have spent on fire scenes digging out has been drastically reduced. What used to take four hours is now taking sometimes less than one hour." (Perry, 2017) The ADC is also reducing case closure times which benefits the owner and the insurance companies. Community risk reduction efforts can be increased using the canine as an educational component.

This research also discovered that there is a tremendous amount of time that must be committed to being a handler. The upfront cost can be expensive with grant assistance. The continued annual cost is not detrimental to most departments with dog food and vet bills being

the most common reoccurring cost. The ADC team can drive up the annual budget with overtime to the handler if the department has a high call volume or if the team responds to other agencies upon request.

Procedures

This applied research project was supported with information collected by interviews and published documents. The data collected focused on the following four questions. (1) To what extent does an ADC improve the efficiency and success of origin and cause investigation? (2) What are the benefits of owning an accelerant detection canine? (3) What are the cost and responsibilities of owning an ADC? (4) What preparations must be made at the department before receiving an ADC? A descriptive research method was used to gather the data for this project. Four active handlers were interviewed for their experience in handling ADC. An interview was also conducted with a Chief Officer with a department that discontinued an ADC program. Agent Joseph Graham is a fire investigator with SLED and is currently an ADC handler. Agent David Gulley is a fire investigator with SLED and is currently an ADC handler. Matthew Rice is a Fire Investigator with Horry County Fire Rescue in South Carolina and is currently an ADC handler. Chief Ricky Flowers is the Fire Chief and ADC handler for the Darlington County Fire Department in South Carolina. All four handlers have several years of experience and work a variety of different breeds. Chief Greg Main is with the Evansville Fire Department where an ADC program was discontinued.

Question One: To what extent does an ADC improve the efficiency and success of origin and cause investigation? To gather data on this question the following methods were used.

- 1.) Published documents were used to gather information on how an ADC improved efficiency and increased success in an investigation.

- 2.) Interviews were conducted with four current ADC handlers from SLED, Horry County Fire Rescue, and Darlington County Fire Department. The interviews were recorded, and notes were taken. See Appendix A for interview questions and responses.
- 3.) Interviews were conducted with a Chief with the Evansville Fire Department. The interviews were recorded, and notes were taken. See Appendix B for interview questions and responses.

Question Two: What are the benefits of owning an accelerant detection canine? To gather data on this question the following methods were used.

- 1) Interviews were conducted with four current ADC handlers from SLED, Horry County Fire Rescue, and Darlington County Fire Department. The interviews were recorded, and notes were taken. See Appendix A for interview questions and responses.
- 2) Interviews were conducted with a Chief with the Evansville Fire Department. The interviews were recorded, and notes were taken. See Appendix B for interview questions and responses.
- 3) Published documents were used to discover the benefits that departments have by owning an accelerant detection canine.

Question Three: What are the cost and responsibilities of owning an ADC? To gather data on this question the following methods were used.

- 1) Interviews were conducted with four current ADC handlers from SLED, Horry County Fire Rescue, and Darlington County Fire Department. The interviews were

recorded, and notes were taken. See Appendix A for interview questions and responses.

- 2) Interviews were conducted with a Chief with the Evansville Fire Department. The interviews were recorded, and notes were taken. See Appendix B for interview questions and responses.
- 3) Published documents were used to gather information on what the cost and responsibilities are of owning an ADC.

Question Four: What preparations must be made at the department before receiving an ADC?

- 1) Interviews were conducted with four current ADC handlers from SLED, Horry County Fire Rescue, and Darlington County Fire Department. The interviews were recorded, and notes were taken. See Appendix A for interview questions and responses.
- 2) Interviews were conducted with a Chief with the Evansville Fire Department. The interviews were recorded, and notes were taken. See Appendix B for interview questions and responses.
- 3) Published documents were used to discover the preparations that must be made by a department to have an ADC.

Limitations

There were minimal limitations on the research being collected. There is plenty of literature available about working dogs in general but not so much specific to the ADC. The information that could be found about the ADC was heavily geared towards how an ADC worked and the relationship to fire investigation and not towards cost and benefits analysis.

Reaching out to departments that had discontinued the ADC program was not very successful either. It was discovered that most departments that lost their ADC were due to a handler not doing what was required and not related to budget or legal issues.

Results

The purpose of this research was to complete a cost-benefit analysis for HSFR to determine if an ADCC program would be sustainable. Four research questions were used to help discover the problems that HSFR could have not being aware of what to expect operating an ADC team. Descriptive research was done using ADC teams in the State of South Carolina.

Interview questions were developed that this researcher felt would give the best answers to the problem questions. All five interviewees responded to the same eight questions in the interview. The interview with Chief Greg Main from the Evansville Fire Department had more questions added at the end of the interview to get more details of why their program was not successful. Agent Joseph Graham and Agent David Gulley, both fire investigators with SLED, was chosen due to being current handlers and work for a State Law Enforcement Agency. Matthew Rice, a Fire Investigator with Horry County Fire Rescue, was chosen due to his years of experience as a handler with a fire-based service. Chief Ricky Flowers, the Fire Chief and ADC handler for the Darlington County Fire Department, was chosen due to being an experienced handler and affiliated with the fire service. Chief Flowers was also a selection due to his department being very similar to Howe Springs Fire Rescue. Chief Greg Main, a Chief Officer with the Evansville Fire Department, was chosen due to their ADC program being shut down after many years of service.

Research Question One: To what extent does an ADC improve the efficiency and success of origin and cause investigation?

Due to the amount of information that was collected from the four handlers and Chief Main, only a summary will be given for each question. The first question asked in the interview was does the use of an ADC make investigations more efficient? All four handlers and Chief Main agreed that having ADC available makes the job more efficient. Agent Graham stated that in his experience, compared to mechanical devices that he used personally, the ADC is more sensitive to the scent. Investigator Rice echoed that response and said that his ADC enables him to process the scene faster and with a far greater amount of accuracy. The second question asked in their interview was had there been cases where they felt not having the ADC would have caused a different outcome? Agent Gulley described the ADC as being a tool and this tool was used to assist the investigation and was not to be used to short cut a good investigation. Investigator Rice stated that there have been cases of having the ADC helped solve a case. He described one instance when the ADC alerted on an individual that had splattered gas on themselves while pouring the gas on a vehicle he burnt.

The third question asked the interviewees if there was ever a case that they saw the ADC locate evidence that a mechanical device had missed? Both agents from SLED stated that they had seen such cases in training evolutions but not on an actual fire scene. Investigator Rice stated that with the ADC he has been able to clear the scene much faster and with greater accuracy than the mechanical sensors.

Research Question Two: What are the benefits of owning an accelerant detection canine?

This research question was studied using interview questions and published documents. The fourth question asked to the interviewees is does the benefits of owning an ADC outweigh the cost and extra work required of having one? All the answers were positive with most replying they do not see having the ADC as being extra work and the benefits greatly

outweighed the cost. Chief Main also added that it depends on what the community is willing to pay for, but in their experience, the dog was more beneficial to have than not. The fifth question asked if having an ADC has any other benefits than just accelerant detection? Investigator Rice stated that his canine is a huge part of our public education and CRR efforts. Agent Graham also expressed how the canine could be used as an educational tool. He stated that he uses his canine to teach firefighters how the canine works and what to look for with a suspicious fire. Chief Flowers expressed how the ADC has boosted the morale in his department and jokingly stated that she doubles as a therapy dog.

The sixth question asked if the interviewee felt that an ADC would reduce intentional set fires in the community? Both agents with SLED responded that they did not feel that the canine was a deterrent for arson but just a tool used in the investigation after the fire. Chief Main felt like it could help reduce intentional fires by having a quicker conviction time of arsonists. Chief Flowers stated that it reduced the fires in his area by 30% within six months of having the canine. He contributes this reduction to the media attention that the new ADC team got in the first six months. Investigator Rice also feels that he has seen a reduction in intentional fires just from getting in front of the camera as much as possible and reminding the community that the ADC is there.

Research Question Three: What are the cost and responsibilities of owning an ADC?

This research question was studied using published documents and interview questions. The seventh question asked what are some of the costs associated with having an ADC? Investigator Rice stated that most of his expense is in vet care and dog food. He also feels that training can drive the cost up since you are training every day. Chief Main stated the same as Rice but added that overtime for the handler was the biggest cost. Especially if the ADC is used

regionally. Agent Graham described vehicles fitted with transportation and overheating equipment, along with recertification for the canine and handler are also associated cost.

The eighth question in the interview asked about the increased responsibilities associated with owning an ADC? All of the participants had similar answers. General care, safety for the canine, keeping the canine trained properly, and constant training so the dog can be fed if it is a food reward dog. Inspector Rice added that the handler is also responsible for the image of the team. That there is normally just one team per the department and a lot of availability is expected from the team.

Research Question Four: What preparations must be made at the department before receiving an ADC?

This research question was answered by interviewing the four experienced handlers. The ninth question asked in the interview was what preparations need to be made at the office to prepare for an ADC? Investigator Rice stated that the office staff must be prepared to have a canine in the work area. They must be trained on the dos and don'ts of the canine such as not feeding them snacks and trying to keep the trash cans clean of food. The other handlers expressed the same about the office staff and other personnel that may work close to the canine. Agent Gulley recommended that if the canine will be in the office for a long period then have a fenced-in area that they can take breaks and run. Chief Flowers recommended that the handler inquires about allergies with the staff so there are no surprises. A kennel is helpful but not necessary.

The tenth question that was asked of the handlers was what preparations should be made at the handler's home to prepare for an ADC? All the handlers referenced the same answers that they had recommended for preparing the office. Investigator Rice and Chief Flowers also

expressed the importance of preparing for introducing the new canine to the family pets. Feeding schedules and kennels must be considered before bringing a new canine home.

Discussion

Howe Springs Fire Rescue is making great strides with improving the origin and cause determination within the department. Better training for company officers, additional investigators, and better equipment has brought this seven-station combination department into the twenty-first century. The department wanted to add an ADC but did not know if the department could afford it or sustain the program. As discovered in the research of this paper, there are many factors to consider when analyzing if an ADC program is right for a department.

There is no question with all the facts that are published that an ADC can assist with an investigation. An ADC team can improve investigations efficiency and success. Many published documents supported that using a well-trained ADC team would be more efficient than trying to use electronic devices for finding accelerants. “Using an accelerant detection dog during a fire investigation is always the most efficient and cost-effective method of identifying potential samples for lab testing.” (Coull, 2016) In several different reports, the U.S Fire Administration championed the fact that ADC was efficient and accurate. In one document they stated, “It can take humans days to do what a dog does in minutes.” (USFA, 2015)

Agent Graham explained in his interview that the ADC is more sensitive to the scent and can pinpoint the location much faster. (Appendix A) Investigator Rice said since he received his ADC that he can process the scene faster and with a far greater amount of accuracy. (Appendix A) Being able to be efficient will save time and money for any department, but especially for a department the size of HSFR. Being efficient saves money will help offset the new cost of the canine. As Emma Wagner explained, “the dog and his handler do not need to be on call 24 hours

a day.” (Wagner, 1997) One of the highest cost factors for an ADC team is the overtime that a handler will obtain. Being efficient will cut down on the time that the investigators are on the scene.

Obtaining an ADC is a big investment for a department. With any investment there must be a return. In Investigator Rice’s interview he spoke of two cases he worked where if he did not have the ADC, he feels there would have been a different outcome. In both cases, the insurance company did not have to pay out saving thousands of dollars. (Appendix A) Agent Graham also states that with his experience using mechanical sniffers and being an ADC handler that the canine is more sensitive to the scent and can pinpoint the location faster. (Appendix A)

An ADC can show the handler exactly where the accelerant is located. It is important to remember that the success of the ADC is reliant on the handler and other investigators that are working the scene. John Coull wrote in a publication, “using a dog to pinpoint areas of interest and minimize the number of required samples just makes good sense.” (Coull, 2016) Even the accuracy that you can get from an ADC should be confirmed through a lab. An ADC can improve results from scene samples and make the investigation team successful.

Chief Nicholson stated, “Use of a certified dog can increase arson conviction rates by as much as 50 percent.” (Latimer, 2015) Increasing the conviction rate for HSFR would be the greatest benefit that the canine could provide. Getting an arsonist off the street could save thousands of dollars and possibly save lives. Being able to get in and out of a scene without spending countless hours pulling samples just to get negative results from the lab will benefit the department’s budget. Not all departments may benefit as the same as others. When Chief Ricky Flowers was asked if the benefit of an ADC having outweighed the cost, he replied by saying yes

for extremely active departments, but no for departments that only investigate a few fires annually.

The literature review and interview revealed that there are more benefits to owning an ADC than just improving fire investigations. ADC teams can become an important part of community risk reduction efforts. Being able to use the ADC to meet with groups in the community for demonstrations also allows teaching fire prevention messages. “ADCs often begin as service canines where they exhibit talents for community outreach. This disposition is leveraged for educational events that teach fire safety and prevention.” (Envisage, 2017) This is echoed by the handlers that were interviewed with them describing how they can use their ADC for educational purposes. Investigator Rice said that they get requests all the time to have him come out to a school or other group and give a class or demonstration. Chief Flowers also said that when it comes to public education with younger children that it is much easier to bribe them with being able to pet the dog if they are attentive during the message. This will work great with HSFR since we have had problems in the past losing time to law enforcement canines.

The cost of an ADC can vary from department to department. The published documents found that an ADC can be very costly upfront, sometimes costing \$25,000 to \$50,000. “This includes the cost of the puppy, medical bills, training and the fees it entails to apply for a service dog.” (Service Dog Certification, n.d) The annual cost for maintaining the ADC program is less than \$5000. The interviews told a slightly different story than the literature review. Most of the handlers received their dogs from grants. They also reported that the annual expenditures on the ADC were not that high. Chief Flowers stated he spends less than \$1000 annually on vets and dog food. All the handlers stated there is a small cost with annual re-certification, but it was not more than \$500 for travel and lodge. HSFR has not been very successful with grants in the past

but is well supported by the community. Finding sponsors for food and vet care should not be too hard to accomplish.

Chief Main and Investigator Rice stated that overtime is the biggest cost with ADC. Depending on how busy the department and policies were written, an ADC could expect to be on call all the time. Working nights and weekends will tax a payroll budget. There are also laws in the Fair Labor Standards Act that requires an agreed-upon compensation for being a dog handler. This is time that is received every day for taking care of the canine even on the days you are not on duty. Chief Main explained that this is one of the reasons that they did not maintain the ADC program in the Evansville Fire Department. HSFR would not have any trouble obtaining the ADC or the cost to take care of the canine, but the payroll cost would be a real concern.

“The training of the canine and handler really never ends.” (USFA, 2015) With training, calls, and basic care, the responsibilities for the ADC handler can be overwhelming if not prepared. The handlers interviewed stressed that you never have a day off. Even when you are sick you are a dog handler and the dog must train every day. Chief Main stated it is the responsibility of the handler to keep the training up to date.

Preparation was the primary thought when this applied research project was started. Preparation for the budget, preparation for the office, preparation for the home, and preparation for the handler. “We’ve never addressed animals in the firehouse,” (EJFR Chief Gordon Pomeroy said.) (Leader, 2015) This was a case where the handler went through the training, got the dog back to the station, but then was not allowed to bring the dog in the station due to employee complaints. All of the interviews discussed the importance of being prepared. From training the personnel at the office to preparing the family at home, before the handler leaves for training the preparation should be done. HSFR would have to prepare by analyzing the budget, new policies,

training personnel, outfitting a vehicle, purchasing crates and kennels, and having the handler prepare his family.

HSFR will benefit from having an ADC team. To increase the ability to process scenes faster and improve conviction rates would be worth any investment spent on the canine. The budget will have to be analyzed to see if it is affordable, but the cost-benefit analysis supports HSFR in getting an ADC team. A lot of preparation needs to be done before receiving a canine and a reliable handler should be chosen.

Recommendations

The purpose of this research was to complete a cost-benefit analysis for HSFR to determine if an Accelerant Detection Canine program would be sustainable. Although ADC's have been around for over 30 years, HSFR has never had the privilege of having one available to us. As the department has progressed over its years of existence, the origin and cause investigations are still catching up to today's standards. While improving on fire investigation it has become apparent that the department needs more tools and resources to do the job. One of the tools that are being considered is an ADC. The problem was that HSFR has never had an ADC and is unaware of the program will be sustainable if it is implemented. The HSFR budget has little flexibility to add an ADC team and minimal staff to pick a handler from. It was hoped that this ARP would be a deciding factor in rather obtain an ADC or not. The following four questions were addressed:

1. To what extent does an ADC improve the efficiency and success of origin and cause investigation?
2. What are the benefits of owning an accelerant detection canine?
3. What are the cost and responsibilities of owning an ADC?

4. What preparations must be made at the department before receiving an ADC?

The following recommendations are based on the literature review and interviews. The first task that HSFR will have to do is to complete an analysis of a need for the ADC. HSFR will need to confirm with the local law enforcement agencies and the solicitor that is evidenced located by an ADC will be used in cases of arson. These relationships need to be built before the canine if obtained. The cost versus benefit will drastically change if the ADC will not be utilized once it is obtained.

HSFR will need to do determine if they have anyone suitable to be the ADC handler. They will need to determine the salary, estimated overtime, and any supplemental pay that may be required. The department should review the FSLA laws to may sure it will be complying. An equipment list should be made of all the things that will need to be purchased for the handlers work, vehicle, and home. Vehicle, kennels, crates, temperature alarms, vets, dog food, brushes, bowls, leashes, collars, harnesses, and fencing should be considered. A budget needs to be finalized on how much the initial cost will be and how much the reoccurring cost would be. The final figure that will need to be added is the cost of the ADC itself and the training. Grants could pay for a lot of these costs, but the department should be able to afford the cost in case the grants do not.

The department should check with their insurance carrier to make sure there are no unforeseen issues with having a canine. A poll of the workers should be conducted in the building that the canine will be house to make sure there are no allergies to canines. Policies should be written concerning compensation, response, interaction with personnel, and interaction with the public. The fire investigator should assist in writing procedures for when the ADC should be used, how the evidence is collected, and how that evidence is transferred to the lab.

These procedures should be reviewed by the Florence County Sherriff's Office and the Solicitor to make sure they are in agreeance.

After conducting the research, it is obvious that there is much consideration that needs to be taken before excepting an ADC in the department. While researching this ARP it was discovered that although an ADC could be affordable for HSFR, there is a lot of other factors that need to be considered. The research will need to be done for each department. The expenditure for an ADC will be different for each department so no one department should take the figures from published documents or this ARP. Each department will need to complete a cost-benefit analysis to determine if an Accelerant Detection Canine program would be right for them.

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Appendix A

Benefits of an Accelerant Detection Canine (ADC)

Name: Joseph Graham

1) Does the use of an accelerant detection canine make your investigations more efficient?

Yes. In my experience, compared to the mechanical device that I have personally used, the ADC is more sensitive to the scent and can pinpoint the location. ADCs can cover a larger area more quickly than an investigator with a mechanical device. An ADC may also alert an investigator to accelerants in an area not previously believed to be involved.

2) Have there been cases where you feel that not having an ADC would have had a different outcome?

From my experience, I cannot give a definitive answer to this. The ADC is a tool to be utilized in the investigation, as a mechanical device would be, however, a final decision cannot be made based on the ADC alone. Several factors come into play.

3) Have you seen a case where the ACD located evidence that mechanical devices had missed?

I have not seen this. I have seen cases where the mechanical device was utilized and positive alerts were given and a sample collected, only to find that once tested, the sample was negative.

4) Do the benefits of having an ADC out way the cost and extra work required of having one?

Yes. I do not look at having an ADC as extra work. The amount of time spent with the ADC better assures the accuracy of the ADC and the competency the handler has with

the ADC. This provides a more thorough and accurate investigation when the ADC is utilized.

5) Does having an ADC have any other benefits than just accelerant detection?

ADCs can be used as an education tool. An example of this would be teaching firefighters how a K9 works, signs to look for, and actions to take should they suspect an intentionally set fire. Demonstrations with the K9 afford the firefighters the ability to see what the ADC and handler can do.

6) Overall, do you feel that an ADC would reduce intentional set fires in a community?

I do not know if they are a direct deterrent to reduce intentionally set fires. I am not aware of any studies suggesting this.

7) What are some of the costs associated with having an ADC?

Feeding, training, and veterinary care are the biggest costs associated with an ADC. The initial cost of housing and equipment must be considered also. Vehicles fitted with transportation and overheating equipment, along with recertification for the canine and handler are also associated costs.

8) What are some of the increased responsibilities associated with owning an ADC?

Proper care, equipment, and training with the canine. Also, it is the handler's responsibility to make sure the canine is utilized properly and the environment is safe for the canine.

9) What preparations need to be made at the office to prepare for an ADC?

All personnel should be made aware of the presence of a canine on the premise and understand that it is a working canine. Signs should also be posted letting everyone in the area know of the canine's presence. There should be a dedicated area, such as a kennel,

provided to allow the dog to be kept, should an extended stay be required. This area should include the ability to provide water and shade for the canine.

10) What preparations need to be made at the handler's home for an ADC?

Housing, fencing, and storage of equipment just to name a few. A handler must also make arrangements with a veterinary office and an emergency veterinary office for the proper care of the canine. Family members must be made aware of the canine and proper actions to take when being around the canine.

Benefits of an Accelerant Detection Canine (ADC)

Name: Matthew Rice

1) Does the use of an accelerant detection canine make your investigations more efficient?

Absolutely!! Using Crosby enables me to process the scene faster and with a far greater amount of accuracy.

2) Have there been cases where you feel that not having an ADC would have had a different outcome?

Yes, two come to mind. The first was our very first case. We were requested by the City of Conway Police Department to help identify a suspect in a car fire. The suspect poured gasoline on a car and lit it on fire. Crosby was able to positively identify the suspect from a lineup sniff. He was later convicted of the arson.

The second was a house fire. The owner did a short sale but was unhappy with it. She lit the bonus room over the garage on fire. Crosby hit in the room of origin and when the results came back, she was booked on and convicted of the arson. She was also denied the insurance money which is what she was after.

3) Have you seen a case where the ACD located evidence that mechanical devices had missed?

In several training scenarios with our and neighboring departments, Crosby has been able to detect and clear the scene much faster and with greater accuracy than the mechanical sensors.

4) Do the benefits of having an ADC out way the cost and extra work required of having one?

Defiantly!! After a while, the extra work just becomes part of your routine and you don't even notice it. The benefits are endless, from being able to process the scene faster and better to public education. You end up figuring out more ways to incorporate the K9 into everything.

5) Does having an ADC have any other benefits than just accelerant detection?

He is a huge part of our Public education and CRR efforts. We get requests all the time to have him come out to a school or other group and give a class or demonstration. When you teach, especially younger kids, they remember it better when the K9 is there. They will tell their parents that K9 Crosby taught them about fire safety.

6) Overall, do you feel that an ADC would reduce intentional set fires in a community?

Yes. I get him in front of a camera as much as possible and use him to remind people that he is there. I think that people think twice when they hear about the K9.

7) What are some of the costs associated with having an ADC?

Time is the biggest one. Training never stops, it doesn't matter how you feel or how tired you are you must feed your dog so you train. Money costs are mostly like any other animal, vet care, food, and we have the additional costs of annual training and possibly a specialized K9 vehicle.

8) What are some of the increased responsibilities associated with owning an ADC?

You are the person everyone is looking at. If you're on a scene everyone is watching you and critiquing how you do your job. In most departments you are the K9 handler, there is

only one of you and you are sometimes expected to be available anytime the K9 is needed, whether you are on call or vacation.

9) What preparations need to be made at the office to prepare for an ADC?

The office staff must be prepared for the change in a dog running around. They have to understand that, yes, the dog can be petted and is adorable, they cannot feed it. They may want to give the K9 treats because they think that you do not feed the dog enough and they are always hungry. Try and explain to them that it is all part of the training. Try and keep garbage cans clean of food, K9's love to stick their noses in them and find something. Get a baby so you can keep your K9 in your office without closing the door.

10) What preparations need to be made at the handler's home for an ADC?

Many of the same ones as in the office. The big difference is if you already have dogs as a pet at home is figuring out the feeding schedule. Get a good crate for your house. The K9's don't mind the crate and will happily sit there while the other dogs eat. The crate is also just a good idea to have.

Benefits of an Accelerant Detection Canine (ADC)

Name: David Gulley

1) Does the use of an accelerant detection canine make your investigations more efficient?

Yes. While the use of the accelerant detection canine should only be taken with the totality of the circumstances, they do provide for a quicker, thorough search than would be possible with handheld detection equipment.

2) Have there been cases where you feel that not having an ADC would have had a different outcome?

It is difficult to say because of the role that accelerant detection canines play. They are a tool that is used to assist with a complete and thorough fire investigation and not as a short cut to bypass an investigation.

3) Have you seen a case where the ACD located evidence that mechanical devices had missed?

Yes. Also, mechanical devices detect hydrocarbons from all sources where our accelerant detection canines locate the odor of a chemical. I have observed instances where a mechanical instrument indicated hydrocarbons and the canine did not alert and the sample came back with a negative result.

4) Do the benefits of having an ADC out way the cost and extra work required of having one?

Yes. I do not think you can qualify not having a canine as extra work because they are a tool that is useful for some situations, but they are not suitable for all situations. The most important thing to remember is that they are not a replacement for a complete and thorough fire investigation.

5) Does having an ADC have any other benefits than just accelerant detection?

N/A

6) Overall, do you feel that the ADC would reduce intentional set fires in a community?

I do not believe that having an accelerant detection canine acts as a deterrent to intentionally set fires. They are a tool used to investigate fires and in turn determine an origin and cause of a fire. The next step is an investigation where you locate those responsible for the act.

7) What are some of the costs associated with having an ADC?

The costs of feeding, housing, and veterinary care for the canine. Training and recertification and the training and continued education of the handler.

8) What are some of the increased responsibilities associated with owning an ADC?

General care for the canine and assuring the canine is used safely. Assuring the canine is cared for appropriately.

9) What preparations need to be made at the office to prepare for an ADC?

Making sure there is an understanding of the staff that this is a working canine and that they are treated as such. If you intend to have the canine there for extended periods space for the dog to take breaks and run. This would be a fenced-in area with water and shade.

10) What preparations need to be made at the handler's home for an ADC?

A kennel of some sort to ensure that the canine is safely and securely housed and cared for. This would also include a prepared area whether concrete or otherwise natural surface that can be cleaned along with shade for the canine.

Benefits of an Accelerant Canine

Name: Ricky Flowers

1) Does the use of an accelerant detection canine make your investigations more efficient?

Yes, the use of the canine allows the investigator to find the source of an accelerant much faster than a mechanical device.

2) Have there been cases where you feel that not having an ADC would have had a different outcome?

Yes, poor sample taking yielded a negative conformation leading to the case never being followed through.

3) Have you seen a case where the ACD located evidence that mechanical devices had missed?

Yes, typically this is shown in sources on a hard surface.

4) Do the benefits of having an ADC out way the cost and extra work required of having one?

In an extremely active department, yes. For departments that only respond and investigate a few fires annually, no.

5) Does having an ADC have any other benefits than just accelerant detection?

Our canine has become a staple in the community and for our members. The morale boost that came with her is amazing. We often joke that she doubles as an emotional support dog. Public education with the younger children is much easier when we “bribe” them with being able to pet the dog If they are attentive during the message.

6) Overall, do you feel that an ADC would reduce intentional set fires in a community?

It has reduced our intentional set fires. Within six months our fires dropped by 30%, I strongly feel that was from the media attention we promoted when I returned with the canine.

7) What are some of the costs associated with having an ADC?

Vet bills are the most expensive costs, averaging around \$400 annually. Food is bought every other month and is about \$60 a bag.

8) What are some of the increased responsibilities associated with owning an ADC?

Constant training is a must with a canine. These are food reward dogs, so they must work to eat. This means you may do training 10 times a day to make sure your dog gets the amount of food you expect for that day.

9) What preparations need to be made at the office to prepare for an ADC?

Ensure no one is allergic or afraid of dogs. I had to make sure our members understood how important it was to not feed the dog and must constantly explain she is not a pet but a working dog. A strong vacuum cleaner is also needed. A kennel is helpful but not necessary.

10) What preparations need to be made at the handler's home for an ADC?

Introduction to house pets is the hardest problem. A kennel is needed at home. Making sure the family understands the idea of the working dog is essential. Setting ground rules for the dog is vital, the dog may not be allowed in a certain area of the home for whatever reason.

Appendix B

Benefits of an Accelerant Detection Canine (ADC)

Name: Greg Main

1) Does the use of an accelerant detection canine make your investigations more efficient?

Yes. Believes the ADC makes the job a lot more efficient and helps both law enforcement and the fire department fight the crime of arson.

2) Have there been cases where you feel that not having an ADC would have had a different outcome?

Yes.

3) Have you seen a case where the ACD located evidence that mechanical devices had missed?

I have never handled the dog personally, but the handler had described times that this had occurred.

4) Do the benefits of having an ADC out way the cost and extra work required of having one?

It depends on what the community is willing to pay for. The ADC was greatly beneficial in investigating a rash of vacant home fires that has occurred.

5) Does having an ADC have any other benefits than just accelerant detection?

Yes. First off it is good for the mutual aid program. It is good public relations for the department and good for teaching fire prevention.

6) Overall, do you feel that an ADC would reduce intentional set fires in a community?

It could help because it can provide a quicker conviction.

7) What are some of the costs associated with having an ADC?

Had a veterinary cost. Overtime is also an issue especially when the ADC team is being used regionally. The handler also got one hour of compensation every day to take care of the dog.

8) What are some of the increased responsibilities associated with owning an ADC?

The dog becomes a part of the handler's family. Keeping the training up to date.

9) What preparations need to be made at the office to prepare for an ADC?

N/A

10) What preparations need to be made at the handler's home for an ADC?

N/A

***11) What was a challenge that caused a decision to be made to not maintain the ADC program?**

Not having the law enforcement powers within the fire department, investigations were dependent on the local law enforcement. The culture was not within the local police department or prosecutor to use the ADC on cases. That with the required overtime just did not make having an ADC an efficient tool.

*Question 11 was not asked the other interviewees. Chief Main also did not answer questions 9 or 10 due to not being the handler of their team.