

**Exhibit 13**

**to**

**Plaintiffs' Cross-Motion for Summary Judgment**

**and**

**Opposition to Defendants' Motion for Summary  
Judgment**

**DECLARATION OF BUFORD BOONE**

I, Buford Boone, under penalty of perjury, declare and state as follows:

1. I am over the age of 18, have personal knowledge of the facts and events referred to in this declaration, and am competent to testify to the matters stated below.

2. I am enclosing a copy of my expert report in this matter, dated December 13, 2013, the contents of which are, to the best of my knowledge and belief, true and accurate. I hereby adopt and incorporate my expert report in this declaration as if fully set forth herein.

3. In addition to the expert opinions proffered in my expert report, there are additional facts and opinions I hereby offer to rebut incorrect statements of fact and/or conclusions advanced by the Defendants in this case.

4. Contrary to Defendants' arguments to the contrary, the soft body armor commonly worn by law enforcement officers is rated only to stop handgun rounds. It is not rated to stop most center-fire rifle rounds.

5. It is notable that the defendants make use of high-ranking police officers for many of their arguments. It has been my experience that law enforcement executives typically have very little understanding of wound ballistics and appropriate firearms for law enforcement purposes. I make this statement after having provided lectures to hundreds of FBI National Academy students. The FBI National Academy is a professional course of study for U.S. and international law enforcement leaders. During the lectures, it was my practice to query their opinions before and after the lecture. It was common to have attendees admit that, prior to this training, they were ignorant of actual firearm performance and had opinions which were based on commonly held beliefs as opposed to scientifically repeatable testing. It is also notable that one of defendants' experts does not appear to know what firearm his department actually issues.

For example, to my knowledge, the Baltimore Police Department does not issue the Glock 20 pistol.

6. Defendants' arguments are replete with vague references to firearms and cartridges. Any firearms expert would realize that cartridges come in many configurations. Assuming cartridges are loaded to the pressures prescribed by the Sporting Arms and Ammunition Manufacturer's Association, the most important aspect of performance is the projectile. To quote the terminal performance of any particular caliber without specificity of the projectile being used can be misleading. For example, it is possible to find a .223 cartridge that, when used in an AR-15 rifle at close range, has limited penetration. It is also possible to find another .223 cartridge that will have deep penetration under the same circumstances. In my opinion, an intention to mislead with emotion instead of persuading with facts would be the only reason any firearms knowledgeable person would make the sort of blanket statements about ammunition performance as made by the defendants and certain of their experts.

7. Using a firearm includes both carrying/displaying and firing. The mere presence of a firearm has proven to be sufficient to prevent further aggressive action by criminals in both law enforcement and civilian self-defense incidents. It is a fact that the overwhelming majority of US law enforcement arrests are made without firing a shot. While it is accurate to say that law enforcement uses firearms with magazines capable of holding more than 10 rounds in most arrests, it is misleading to indicate that the actual magazine capacity had anything to do with the success of most of those arrests. Similarly, the number of incidents wherein a single officer has been required to fire more than 10 rounds is small. It is also a fact that law enforcement performed all these functions well before the advent of automatic firearms with magazine capacity greater than 10 rounds. Therefore, it is my opinion that law enforcement use of

magazines with a capability of holding more than 10 rounds is because of a desire to be prepared for the worst. This is the same reason private citizens desire to have magazines capable of holding more than 10 rounds.

8. I understand the defendants and certain of their experts have argued that “Flash suppressors on assault weapons are engineered and designed to disperse the flash down and away from a shooter’s eye to be able to take successive shots with greater efficiency, as well as to hide a shooter’s position to allow for more effective, aggressive engagements”. Contrary to defendants’ arguments, the intent of a flash suppressor is not to direct the gases “down”. This can best be shown in the design of the A2 flash suppressor. Research I conducted of various manufacturers showed that the A2 is currently the most common standard flash suppressor used. The A2 can be described as a “Birdcage without a bottom slot”. Inasmuch as the most commonly used flash suppressor has an enclosed bottom, it directs all flash upwards or to the sides.

9. I understand that defendants and certain of their experts have argued that “Coiling (sic – believed to actually be “cooling”) shrouds that cover the barrel of assault weapons are designed to allow a shooter to hold a weapon with greater ease while firing dozens or hundreds of rounds in a brief period of time with limited mechanical failure”. It should be understood that most long guns (firearms which are designed to be fired with two hands) have a forearm. This forearm is intended, among other things, to allow the shooter to continue to use the firearm after the barrel has become too hot to comfortably hold.

10. Defendants and certain of their experts make reference to the vertical pistol grip aiding in “spray” firing from the hip. To my knowledge, no law enforcement agency currently teaches such a technique. However, the defendants’ law enforcement experts all admit to using

firearms with pistol grips but do not explain why they were chosen instead of other firearms, such as a Ruger Mini-14, which do not have this feature. Additionally, defendants and their experts fail to explain why they feel a rifle with a 30 round magazine poses more potential danger of “spray” firing than a shotgun expelling in excess of 30 projectiles with each trigger pull.

11. Defendants’ statements claiming the banned rifles to be “dangerous” and “unusual” are crafted to elicit emotional responses. All firearms are “dangerous”. The modern sporting rifle is very common in the United States and, therefore, cannot be called “unusual”. One expert stated: “we regularly confront assault weapons, usually held by people with no legal right to possess any firearm”. This statement hardly supports the expert’s assertion that such a firearm is “unusual”.

12. The declarations of the Commissioner of the Baltimore Police Department and the Superintendent of the Maryland State Police both state that their agencies issue full-auto capable rifles but prohibit their use in full-automatic mode. “Although the M16 and AR-15 assault weapons both had fully-automatic capabilities, we were instructed never to use that function. The semi-automatic function was deemed appropriate for all SWAT team uses”. Semi-automatic versions of these rifles certainly exist and are easily obtainable. The experts fail to provide any explanation as to why these departments consciously choose to issue a capability but prohibit its use. It is also reasonable to believe, since its use is prohibited, that there is no training given in the use of full-automatic fire. As a retired FBI Agent with 23 years as a firearms instructor, I am shocked that there are large agencies which provide such a capability to their officers without more training than “do not use this”.

13. I understand the defendants and certain of their experts have argued that “circumstances in which it may be appropriate to use an assault weapon, and circumstances in which it may be necessary to have more than 10 rounds available involve uniquely law enforcement functions such as affirmatively engaging criminal suspects.” In my opinion, this argument is not factually based. The vast majority of LE actions end with no shots fired. If a situation ends with no shots fired, it cannot be argued that a magazine capacity of greater than 10 rounds is “necessary”. Similarly, when shots are fired, the number fired by individual officers is typically less than 10. Therefore, there is little to no “necessity” for LE Officers to have firearms with magazine capacity greater than 10 rounds. Despite the factual lack of necessity, it is interesting to note that most law enforcement firearms are issued with magazines capable of holding more than 10 rounds.

14. I understand the defendants and certain of their experts have argued that “There are times when law enforcement officers are required to act in an offensive manner, such as when they are required to bring suspects into custody, to engage violent people who are attempting to kill multiple people at the same time, to conduct aggressive searches to locate and apprehend a suspect, and to breach buildings housing suspected criminals.” While I don’t disagree that these actions can be considered “offensive”, absent a visual display, the firearm is not actually used unless shots are fired. When shots are fired, they are only done so in defense of the officer or others. The fact that an officer is required to defend himself during offensive maneuvers does not, in my opinion, make subsequent firing of the weapon an offensive act.

15. I understand that the defendants and certain of their experts have argued “When a criminal runs away from a civilian acting in self-defense, the civilian has accomplished his goal. When a criminal runs away from a law enforcement officer charged with apprehending him, the

law enforcement officer must be prepared to launch a sustained, aggressive effort to capture the suspect and end the broader threat to the general public.” Again, the attempted apprehension of the criminal can be viewed as an offensive act. However, the police officer would not be justified in firing simply to prevent escape (see *Tennessee v. Garner*, 471 U.S. 1 (1985)). The officer is only allowed to fire his/her firearm in defense of self and/or others.

16. I understand that defendants and certain of their experts have made assertions that “Most assault weapons have significant penetration capabilities that are especially dangerous to both law enforcement officers and civilians alike”. Based on the research I conducted over a 15 year period, this statement is inaccurate and misleading. The caliber most commonly associated with the AR15 and its variants is the .223 Remington or 5.56mm NATO (not technically identical but considered as such for purposes of this discussion). To consider this cartridge “High Power” shows a gross lack of general firearms knowledge. The game and fish commissions of some states prohibit its use for hunting whitetail deer while allowing center-fire rifle cartridges of greater bore diameter.

17. I understand that defendants and certain of their experts have made assertions that “With respect to civilians, rounds from assault weapons have the ability to easily penetrate most materials used in standard home construction, car doors and similar materials. Although rounds from many handguns can also penetrate thru such materials, the rounds from assault weapons like the AR-15 are more dangerous and effective once they do so”. In years past, this was a commonly held belief. Research I and others have conducted, and which is quoted by the ATF in a PowerPoint presentation, shows this statement to be false. These facts are best evidenced by the increased use of these firearms in law enforcement building entries. Declarations of some of the defendants’ experts support this use inside buildings “I found the AR-15 to be an effective

weapon for the specialized purposes of the SWAT team, including undertaking offensive actions such as raiding structures and addressing barricade hostage situations.” It is also a fact that the projectile will behave no differently when fired by a law enforcement officer than a civilian. Therefore, if its use inside a building is appropriate, it is appropriate for use by both law enforcement and civilians.

18. I understand that defendants and certain of their experts have made assertions that “The length of assault weapons make them inferior to handguns for most home self-defense uses in light of relatively tight spaces in homes and the need to turn corners and maneuver in hallways.” I find this statement to be disingenuous and misleading due to the proliferation of law enforcement use of these types of firearms in these types of places. I also find it disingenuous and misleading due to one expert next stating “A shotgun would be a superior self-defense weapon to an assault weapon, at least if it is loaded with appropriate shot that does not give rise to too great a risk of over penetration”. If the aforementioned rifle is too long to use inside a home, I fail to understand how this expert can opine that a shotgun would be any easier to use. The expert also fails to factually support his assertion that such “appropriate shot” exists.

19. I understand that defendants and certain of their experts have made assertions that “The Baltimore Police Department allows retiring law enforcement officers to purchase their service weapons, along with associated magazines (which now hold 15 rounds) at replacement cost. This is a time-honored tradition among law enforcement agencies nationwide that recognizes the contributions made by law enforcement officers and provides a way for law enforcement agencies to replenish their armories with new firearms at no cost to the agencies”. It is my opinion that this demonstrates an attitude of elitism, commonly referred to as “us vs.

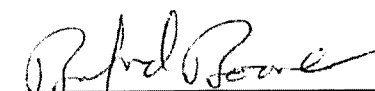


them”. It is my opinion that “time-honored tradition” is no reason to create an elite class of citizen.

20. I understand the defendants and certain of their experts have made the assertion that “assault weapons have been used in numerous crimes in Maryland, perhaps the most well-known of which was the case of the so-called D.C. Sniper, John Allen Muhammed, who used a Bushmaster semi-automatic rifle to terrorize people in the Maryland and Virginia suburbs of Washington, D.C., murdering and wounding people throughout the region, including murdering 6 people in Maryland”. It is my opinion, having personally worked on that case, that this expert is attempting to use emotion to further personal beliefs. I make this statement based on the belief that the referenced case would not have resulted in any saving of lives if the subjects had used a bolt action hunting rifle. I do not recall the firing of multiple shots in any of the murders committed in this case. I agree the case was tragic but the elimination of these types of firearms would not have changed the outcome.

21. I understand that the Maryland State Police Superintendent states “The Maryland State Police does not transfer assault weapons to retiring or retired law enforcement officers, nor does it have any intention of doing so.” Earlier, however, he states: “The Maryland State Police maintains an officer-owned patrol rifle program through which individual officers may acquire their own approved assault weapons and use them in the line of duty...”. It is my opinion that this accomplishes a similar purpose.

I declare under penalty of perjury that the foregoing is true and correct.

  
\_\_\_\_\_  
Buford Boone

03/16/2014  
Date

## Attachment A

J. Buford Boone III  
Boone Ballistics, LLC  
15222 Freeman's Bend Road  
Northport, Al. 35475

J. Buford Boone III currently is the member of Boone Ballistics, LLC and is a retired Supervisory Special Agent (SSA) of the Federal Bureau of Investigation (FBI). He was the primary SSA with oversight of the FBI Ballistic Research Facility (BRF) from April 15, 1997 – August 31, 2012.

Retired SSA Boone will offer opinions to a reasonable degree of firearm, ballistic, law enforcement and scientific certainty and will testify consistently with the contents of his report, below. Specifically, modern sporting rifles, particularly those based on the AR-15 series, are well suited for use in home defense. Additionally, that standard capacity magazines (those for which the firearm was designed) are appropriate and, potentially, necessary for successful defense of oneself or home.

#### Background and qualifications:

Prior to my first full-time law enforcement employment, I served as a reserve police officer or Deputy Sheriff with Tuscaloosa County, Alabama, Upson County, Georgia, Las Animas County, Colorado and Trinidad Colorado.

Approximately May of 1988 I was hired as a Police Officer with the Tuscaloosa, Alabama, Police Department. I was subsequently offered a position as a Special Agent of the Federal Bureau of Investigation (FBI) in July of 1988. I began employment with the FBI on 07/25/1988. I was graduated from the FBI Academy on 10/21/1988. My first duty station was New Haven, Connecticut.

I have maintained an interest in firearms all my adult life. I have shot competitively. My firearms scores at the FBI Academy were sufficiently high to allow me to attempt the "Possible" Club. I was successful on my first attempt. To shoot a "Possible", Agents must fire a perfect score on a very difficult course. Though there were in excess of 10,000 Agents in 1988, my "Possible" was approximately number 1,198 in FBI history.

Upon arrival in New Haven, I was assigned to the Reactive Squad, conducting background, bank robbery and fugitive investigations. I later served as the Fugitive Coordinator for the New Haven Division. I was named "Detective of the Month" by the Bronx Homicide Task Force for the capture of an America's Most Wanted fugitive.

I successfully completed FBI Firearms Instructor school in July of 1989. This qualified me to teach firearms to Field Agents.

I was transferred to the Organized Crime/Narcotics Squad in July of 1990. I primarily participated in investigations of drug gangs. These investigations typically involved significant amounts of surveillance, electronic monitoring and the service of multiple search warrants. I

also participated in organized crime investigations. I have participated in multiple arrests in urban and suburban areas.

I was named the Principal Firearms Instructor (PFI) of the New Haven Division in November of 1992. I maintained that position until I transferred to the Firearms Training Unit at the FBI Academy, Quantico, Va.

As PFI, I oversaw all firearm and defensive tactics training of the 90+ Agents in the New Haven Division of the FBI. I coordinated training sessions for all firearms issued to general Agents. This included revolvers, pistols, carbines and shotguns. I was also responsible for transitioning agents from carrying revolvers to carrying semi-automatic pistols.

In September of 1989 I was admitted to the FBI New Haven Special Weapons and Tactics (SWAT) Team as a Sniper/Observer. I successfully passed both the two week Sniper/Observer course and the two week Basic SWAT courses at the FBI Academy. I served operationally on the New Haven SWAT Team until my transfer to the FBI Firearms Training Unit at the FBI Academy, Quantico, Va.

In March of 1996, I was promoted to a position as a Term GS-14 Firearms Instructor at the Firearms Training Unit (FTU), FBI Academy, Quantico, Va. During this assignment, I performed line and PFI instruction of Agent trainees. I provided or oversaw line and combat instruction in handguns, carbines and shotguns. I also provided judgmental instruction utilizing Firearms Training Simulator (FATS) equipment. The FATS training was used primarily to teach Agents when the use of deadly force was appropriate, and when it was not.

I was transferred to the Ballistic Research Facility (BRF) of the FTU on April 15, 1997. I maintained my position at the BRF for more than 15 years, retiring on August 31, 2012. I received a permanent promotion to Supervisory Special Agent in September of 1997.

The BRF has responsibility for testing and evaluating all ammunition used operationally by the FBI. The BRF was created following a 1986 shootout wherein a subject was fatally injured by FBI bullets but continued fighting and ultimately killing two Agents after receiving the "fatal" wound. A through investigation revealed the primary cause of the failure of rapid incapacitation was attributable to the projectile not penetrating sufficiently deep in the subject's body.

This investigation spawned research into the mechanics of wound ballistics. Ultimately, the research led to the creation of a scientifically repeatable method of comparing the potential effectiveness of individual cartridges. The resultant test has been referred to as the "FBI Method". The BRF published test findings available upon official request of Law Enforcement and Military agencies. The BRF became the most trusted source of ballistic information in the Law Enforcement and Military community.

As SSA of the BRF, my responsibility was to oversee all aspects of the research. I was the only full-time person at the BRF until a support person (non-Agent) was assigned as an Engineering Technician, Ballistics (ETB), in the last quarter of 1988. I was the Supervisor and rating official of the ETB.

As SSA, I performed or directed all functions of the BRF. I hand loaded cartridges, put test firearms together, hand-fired firearms for testing, built tissue simulant blocks, conducted penetration testing and reported on same. I created a relational database to store data and report test results. I operated sophisticated ballistic testing and photographic equipment. I was frequently sought out to train others in the use of this equipment.

I was the primary author of specifications for ammunition procurements for the FBI. This included ammunition used for training as well as for operational use, commonly referred to as "Service" ammunition.

I was the primary author of the FBI Body Armor Test Protocol.

I directed the creation of a procurement of 5.56mm NATO ammunition tested using piezoelectric conformal transducers for pressure testing.

The BRF served as the primary source of ballistic information regarding ammunition and firearms for all FBI Agents. Field Agents routinely referred local and state partners to me for ballistic information and advice.

During my service at the BRF, a strong liaison was formed with the Department of Defense (DOD). The BRF performed testing for and consultation with the DOD on many occasions. My expertise has been, and continues to be, sought out and relied upon by the Special Operations Community.

I have been a participant in a number of government sponsored Integrated Product Teams researching ballistics, such as:

- Joint Services Wound Ballistics
- Lead Free Ammunition
- Protective Armor
- Armor Piercing Ammunition development

In 2002, I traveled to Darligen, Switzerland, at the specific request of the Department of State, to represent the United States in discussions of wound ballistics.

I have provided numerous live-fire terminal ballistic demonstrations to local, state and federal law enforcement officers as well as to all branches of the United States Military.

I have conducted international presentations on wound ballistics, ammunition selection, weapon selection, sniper operations and body armor.

I have briefed the Secretary of the Army and provided, at his request, my professional opinion of a 5.56mm NATO cartridge intended to replace the M855.

I have functioned as the primary instructor of 48 Basic Law Enforcement Sniper/Observer schools. Approximately 908 students have successfully completed this course under my instruction.

I consistently received high performance ratings in the FBI. I received the highest possible, "Outstanding", each of the last 4 years of my service. I have received numerous letters of commendation and performance awards.

I was the 2008 recipient of the National Defense Industrial Association Joint Armaments Committee's Gunnery Sergeant Carlos Hathcock Award.

Publications authored in the past 10 years. All restricted to Law Enforcement/Govt. official request:

Review of Accuracy 1<sup>st</sup> Training  
Weapon Selection – Revision III  
Ammunition Selection 2007  
TSWG MURG Briefing  
Accuracy Expectations  
AIM III TSWG Briefing 3/16/2010  
Wound Ballistics  
B2 Sniper Rifle Cleaning Method  
FBI Body Armor Test Protocol

**The suitability of modern sporting rifles for home defense**  
**J. Buford Boone III**  
**Boone Ballistics, LLC.**  
**December 02, 2013**

Examples of “Modern Sporting Rifles” should be expected to change over the years. There was a time when the only requirement for a rifle to be considered “Modern” was its ability to utilize metallic cartridges. “Modern Sporting Rifles” of 2013 include those that are magazine fed and semi automatic (require the trigger to be moved from a starting point to a stopping point for each shot). Modern sporting rifles may resemble modern military rifles but possess at least one significant difference: they lack the ability to fire multiple shots with one movement of the trigger.

It has been common in the United States to adopt military rifles for sporting purposes. The Springfield bolt action rifles in use during World War I were routinely “sporterized”. The M1 Garand has seen extensive use in high power rifle competition.

For purposes of this discussion, rifles similar to the AR-15, despite their manufacturer or model variation, will be referred to as “AR-15” rifles. They may also be correctly referred to as “Modern Sporting Rifles”.

**Self Defense**

The appearance of increasing violence, especially “home invasion” type crime has many citizens concerned for the safety of themselves and their family. “Home” is supposed to be a safe place. It is a place you retreat to, not from. Firearms are commonly chosen, appropriately, as a crucial link in the home defense chain.

Defensive shooting is “shooting to stop”. It is not “shooting to kill”. While it is reasonable to believe that the use of a firearm might result in death, death is not certain. Stopping the attack is the goal. Death, if it occurs, is an unintended by product of the encounter.

Firearms, when used for defensive purposes, are actually used to compel an attacker to stop. Absent exact shot placement coupled with penetrating trauma, there is no logical method of calculating how many cartridges will be required to stop an attacker. Similar attacks may require vastly different numbers of shots as there is no reliable method of accurately estimating how determined the attacker will be or how he will react to being shot.

**Wound Ballistics**

Americans are exposed to violence, real or imagined, every day. It is reasonable to say that most Americans witness far more imagined than real violence. Entertainment, particularly television, movies and video games, is replete with fantasy examples of firearm effectiveness. The fantasy can and does create false expectations.

A common entertainment myth is the ability of a particular cartridge to cause immediate incapacitation, regardless of the situation. This can be referred to as a “magic bullet”. The

general public has embraced these myths. A prime example is the number of people that believe there are special cartridges that will immediately incapacitate a human being but will not penetrate the skin of a commercial airliner. As misguided as it may be, many decisions regarding firearms are founded on myths.

Firearms should not be counted on to stop aggressive human beings in the manner depicted in entertainment media. Though real life can, and sometimes does, mimic fantasy, it is not predictable.

Aggressive human actions can only be stopped by two methods, physical or psychological (or a combination of the two). Simply put, humans stop either because they want to or their body ceases to be able to support action. The reality is that there are no “magic bullets”.

Humans, physiologically, are similar despite who or where they attack. Accordingly, the parameters used by Law Enforcement in wound ballistic theory are applicable to all confrontations involving human beings.

The most important salient characteristic of any cartridge's ability to be effective is the construction of its projectile. Comparing the terminal effectiveness of cartridges without specifying the projectile used is similar to attempting to compare vehicles simply by the number of doors they have. For example, while it may be reasonable to say a 4 door sedan accommodates more adults than a 2 door coupe, it is not reasonable to say that 2 door coupes are faster than 4 door sedans.

For a firearm to be physiologically effective, the projectile it launches must penetrate the subject's body. The expected range of penetration is critical in deciding the appropriate firearm/ammunition to use. Wound ballistic research conducted by the FBI (Handgun Wounding Factors and Effectiveness, Urey W. Patrick, 1989) has determined that the most desirable range of penetration is 12” – 18” in human tissue. As a person's physiology does not change according to what he is hiding behind or where he is encountered, this penetration range is appropriate for the majority of incidents of human aggression.

It is not uncommon for the penetration performance of a projectile to be influenced by intermediate barriers. Those without a firm foundation in ballistics would reasonably believe an intermediate barrier would decrease the penetration potential of a projectile. There are many instances, however, wherein a projectile's penetration has actually been increased due to its reaction to an intermediate barrier. In these cases, the intermediate barrier acts to retard or completely prevent the projectile from expanding. Some hollowpoint handgun projectiles are particularly known for this type of behavior when encountering intermediate barriers typically found in home construction.

Fast moving, light handgun projectiles have been used in an attempt to lessen the possibility of “over-penetration” for defensive situations. While the logic appears sound, the results may be opposite of intentions. For example, a test I participated in at the BRF showed a particular 115 grain +P+ 9mm averaged approximately 11” in bare tissue simulant but approximately 29” in the same simulant after impacting  $\frac{3}{4}$ ” plywood.



A projectile which performed similarly despite the presence or lack of an intermediate barrier would be referred to as “barrier blind”.

### **Law Enforcement**

United States law enforcement agencies utilize firearms “in defense of self and others”. Police officers found to employ a firearm in other than defensive use are typically charged in criminal court.

The United States Department of Justice, in a memorandum dated October 17, 1995, issued a Policy Statement on the use of deadly force:

“Permissible Uses. Law enforcement officers and correctional officers of the Department of Justice may use deadly force only when necessary, that is, when the officer has a reasonable belief that the subject of such force poses an imminent danger of death or serious physical injury to the officer or to another person.”  
(<http://www.justice.gov/ag/readingroom/resolution14b.htm>)

The AR-15 rifle is arguably the most common rifle in use by law enforcement.

The unit of the Federal Bureau of Investigation (FBI) with responsibility for purchasing and approving all firearms for operational use is called the Defensive Systems Unit (DSU). The FBI uses AR-15 rifles. Therefore, it can be inferred that the FBI believes the AR-15 is an appropriate firearm for defensive purposes. Though the FBI does not officially “endorse” any particular firearm that I am aware of, there could be no better endorsement than awarding a firearm a contract and making it a general issue item.

To successfully survive a violent encounter, the FBI teaches its agents to fire until the threat is eliminated. There is no minimum or maximum amount of shots per subject. It is as simple as realizing the aggressor is in total control of the situation. If shooting must occur, it will stop as soon as the aggressor stops his aggressive actions. This is the foundation of truly “defensive” use of a firearm.

It could easily be argued that fully-automatic rifles are appropriate for defensive purposes as most Federal and many State and Local law enforcement agencies issue fully-automatic rifles. The FBI actually had available, for general issue, a carbine with the ability to fire two shots with one trigger press. Though these carbines are being phased out, it is likely that there are still examples being used by field agents.

### **Magazine Capacity**

Magazine capacity is an important consideration in any self-defense situation. It is difficult to imagine such a situation in which any rational person would desire a magazine of 10 rounds over a magazine of 11 rounds. Many believe the Hollywood myths of “one-shot-stops”. While it is true that some confrontations are stopped with one shot, it cannot be counted on.

If a 30 round magazine is used and only one shot is required, the victim has stopped his attacker. However, if a 10 round magazine is used and 12 rounds are required to stop the attacker(s), the victim could very likely be injured and might not survive.

The best evidence of the appropriateness of magazine capacity can be found by looking at those issued by the FBI DSU. Standard magazines for AR-15 rifles hold 20 or 30 rounds. Although 20 round magazines are readily available, the FBI issues 30 round magazines.

In all consultations I have had with US law enforcement agencies, I am unaware of ANY which issue AR15 magazines of less than 20 round capacity. In my experience, twenty (20) round magazines are the exception. Thirty (30) round magazines are the norm.

It can only be concluded that US law enforcement believes that 30 round magazines are the most appropriate choice for defensive purposes when using an AR15 rifle.

Additionally, standard magazines for the currently issued FBI handgun (Glock 22) hold 15 rounds. Glock also manufactures a 10 round magazine for this pistol. To my knowledge, the FBI does not, and never has, issued a Glock magazine with capacity restricted below the standard. Furthermore, I am not aware of any law enforcement agency that issues pistol magazines that are restricted below standard capacity.

It is interesting to note that FBI practice is to carry pistols "fully loaded". This means a Glock 22 would have 16 (one in the chamber and 15 in the magazine) cartridges available when drawn from the holster.

During my time on the New Haven SWAT team, I was issued a Sig Sauer P226 pistol. Standard capacity magazines held 15 rounds. I was also issued 20 round magazines.

Based on my training and experience, the FBI has never advocated carrying less ammunition than your system was originally designed to use.

### **Handguns vs. Long Arms**

Firearms come in many shapes and sizes. The cartridge used in the firearm reasonably places limits on the size of the firearm. Weapons that are designed to be held against the shoulder are commonly referred to as "Long Arms". Typical examples of this are rifles and shotguns.

My training and experience in wound ballistics has shown me that handguns are the most convenient but least effective choice for self-defense. They are commonly used simply because their size renders them more concealable than a shoulder fired weapon. If the best choices are used in ammunition selection, handguns are typically far less terminally effective than rifles or shotguns. In addition, handguns are much more difficult to accurately fire than rifles or shotguns.

The Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) is an association of the nation's leading manufacturers of firearms, ammunition and components. SAAMI was founded in 1926 at the request of the federal government and tasked with:

Creating and publishing industry standards for safety, interchangeability, reliability and quality  
Coordinating technical data  
Promoting safe and responsible firearms use

SAAMI publishes ammunition standards in four classifications:

Centerfire Pistol and Revolver  
Centerfire Rifle  
Rimfire  
Shotgun

It is not uncommon to find a shoulder-fired weapon chambered for "Pistol and Revolver" cartridges. It is also not uncommon to find a hand held firearm chambered for "Centerfire Rifle" cartridges. Generally speaking, and based on testing I conducted while employed by the FBI, the terminal effectiveness of a "Pistol" cartridge fired from a shoulder arm is not substantially improved. In contrast, the terminal effectiveness of a "Rifle" cartridge fired from a short barreled handgun is frequently diminished, sometimes by a large margin.

While Rifle cartridges are typically more effective than handgun cartridges, it is quite possible to reverse this order by choosing a poorly constructed rifle cartridge and a well constructed pistol cartridge.

My observations of handguns, particularly pistols, shows they are typically more sensitive than long guns to shooter technique. Many pistols require a great deal of support to operate reliably. One of the most common explanations for pistol malfunctions is "Limp Wristing". This refers to the shooter not locking their wrist. This can induce malfunctions as the pistols are designed so that the slide moves back and forth on top of the frame. If the frame is also allowed to move rearward, the slide frequently does not travel its full distance and can fail to properly eject spent cartridges or pick up a fresh cartridge from the magazine. Modern, gas operated semi-automatic sporting rifles, using the proper ammunition, will usually function normally when fired with only one hand.

Additionally, I have witnessed that semiautomatic handguns are typically more sensitive to the addition of safety equipment such as an attached flashlight to aid in target identification or a laser to aid in aiming. I have received numerous reports of pistols failing to function when fitted with these devices. I have assisted with testing and documentation of these failures. I am unaware of any report of an AR-15 rifle that failed to function due to a properly mounted flashlight or laser.

There is little need to conceal a weapon in a home-defense situation. The mere presence of a weapon may be sufficient to cause the criminal to go away. The goal, after all, is to compel the aggressor to leave you alone. Larger firearms are typically more intimidating than small firearms.

AR15 rifles, because of their commonality in both real life and the entertainment industry, are readily recognizable as effective defensive firearms. It is reasonable to believe that a criminal would be more intimidated by a homeowner with an AR15 than the same homeowner with a small frame 5-shot revolver. I have personally witnessed the immediate surrender of a known violent subject who later explained his actions as directly attributable to the imposing nature of the firearm pointed at him.

Observations from 23 years as an FBI Firearms Instructor have shown that rifles and shotguns are easier to fire accurately than handguns. While I recall numerous failed qualification attempts with handguns, there were less with shotguns and a failure with the carbine or rifle was rare. This is particularly notable in that both shotgun and carbine courses required shots at 50 yards while the pistol qualification course only required shots at 25 yards.

Because rifles and shotguns are typically easier to employ accurately, fire cartridges that possess the potential to be most effective and are more intimidating than handguns, it is my opinion that they are among the most logical choice for home defense.

While shotguns have great potential for effectiveness, they are limited by the amount of recoil they generate and the number of cartridges they contain. Most shotguns utilized for home defense will have a capacity of between 2 and 8 rounds with the most common number being 5. Effective shotgun ammunition, typically buckshot or slugs, has a great deal of recoil and, therefore, can be more difficult to master than a 5.56mm carbine. Additionally, buckshot and slugs can be counted on to penetrate deeper than desired, practically guaranteeing pass-thru shots in a home defense situation.

Though buckshot is believed by many to have little chance of pass-thru, testing I participated in at the BRF showed that close shots (10') have resulted in deeper tissue simulant penetration than lead slugs. Despite empirical data to the contrary, there continue to be firearm "experts" that recommend buckshot as unlikely to "over penetrate".

Another consideration in the use of a shotgun is the responsibility for multiple projectiles with each press of the trigger. If 00 buckshot is used in a 2 3/4" 12 ga. shotgun, multiple (between 8 and 12) .32" lead balls are expelled with each shot. These projectiles spread as distance increases. During qualifications I witnessed, it was not uncommon for an agent to have one or more 00 buck pellets outside the scoring area of the FBI target. The 00 buckshot portion of the FBI Shotgun Qualification Course is fired at 21'.

In 1988, general FBI Agents had the option of two shoulder weapons, H&K MP5-SF and Remington 870. The MP5-SF is a semiautomatic carbine that fires 9mm handgun ammunition. Advantages of the MP5 over a handgun are that it is easier to shoot accurately, has a 30 round magazine and a more intimidating appearance. The Remington 870 shotgun used either 00 buckshot or rifled lead slug. The issued 870 magazine held four (4) rounds. While there were AR-15 rifles available at that time, they were normally used only by SWAT Agents or Firearms Instructors. The FBI later made MP10 carbines available to general Agents. These carbines utilized 30 round magazines and had a selector that included an option for "two round burst" (two shots with one trigger press).

The FBI began making AR-15 rifles more readily available following a procurement action conducted jointly with the DEA. The contract was awarded to Rock River, Colt and Sig Sauer in approximately December of 2003. The FBI has since begun to phase out the MP5. General policy has been to not repair broken MP5s, thereby removing them thru attrition. This can only be interpreted as the FBI believing that an AR-15 rifle is better suited to their defensive needs than a carbine firing a handgun cartridge.

FBI agents routinely use AR-15 rifles in arrest situations occurring in and around common housing structures. The FBI presentation I authored entitled "Weapon Selection" specifically demonstrates the appropriateness of using an AR-15 rifle for close quarters encounters.

While shotguns continue to be available to FBI Agents, my experience was that their popularity decreased first as MP5s became readily available and more so as AR-15 rifles were procured. Based on my observations that the shotgun is not popular in a federal law enforcement agency with high physical standards, it is reasonable to believe that it is not the best overall choice for the average citizen.

The AR-15 rifle has characteristics that make it particularly suitable for defensive purposes.

It is relatively lightweight

It is available with a telescoping/adjustable stock

It has a vertical pistol grip

It is semi-automatic and can be fired with one hand

It is chambered for cartridges that can be effective while having relatively mild recoil

It utilizes magazines with a standard capacity of 20 or 30 rounds

Being lightweight, the AR-15 rifle can easily be mastered by persons of slight stature.

A telescoping/adjustable stock allows for a more compact overall size, thereby enhancing the user's ability to maneuver in the tight spaces of a home. Additionally, this feature enables the firearm to be quickly adjusted to fit people of different statures.

The vertical pistol grip design is easier to operate with one hand than traditional pistol grips, such as found on the Mini-14. This can be of particular benefit when needing to use one hand to hold a flashlight or call 911. Pump, lever and bolt action firearms typically require two hands to function if more than one shot is required.

The most common chambering, 5.56mm NATO/.223 Remington, has proven effective when the proper projectile is used. Additionally, its relatively mild recoil renders it easily mastered by persons of slight stature. It is recognized that there are differences between 5.56mm NATO and .223 Remington. For purposes of this discussion, however, the two should be considered substantially identical.

The standard magazine capacity provides a fair compromise between having sufficient ammunition without becoming unwieldy.

**I am charging \$700/hour for my consulting services.**

A handwritten signature in black ink, appearing to read "J. Buford Boone III", with a horizontal line drawn through it.

**J. Buford Boone III  
Boone Ballistics, LLC  
Its Member**

J. Buford Boone III  
Curriculum Vitae

May, 1984

BA degree, General Management, University of Alabama

July, 1984 - Nov. 1985

Management trainee, Smith Newspapers, Inc, Thomaston Times, Thomaston, Ga. Shortly after my arrival, the photographer resigned. Due to my being the only person with darkroom qualifications, I became the primary photographer. Additionally, I was expected to be trained in all other aspects of a small newspaper.

September, 1984 - Nov. 1985

Reserve Deputy Sheriff, Upson County Sheriff's Office.

Nov. 1985 - July 1987

Management trainee, Boone Newspapers, Inc., Raton Daily Range and Trinidad Plus, Raton, New Mexico. Performed duties in most aspects of a small newspaper to include advertising sales, reporting, photography, composition and printing of the paper.

January, 1986 - July 1987

Reserve Deputy Sheriff, Las Animas County Sheriff's Department. Achieved rank of Sgt.

October, 1986 - July 1987

Reserve officer, Trinidad Police Department, Trinidad, Colorado.

July 1987 - May 1988

Unemployed, Tuscaloosa, Alabama, in application process for the DEA and FBI.

July 1987 - May 1988

Special Deputy, Sheriff's Reserve, Tuscaloosa County Sheriff's Department.

May, 1988 - July 1988, Police Officer, Tuscaloosa Police Department.

July 25, 1988

Appointed to FBI, began New Agent Training at FBI Academy, Quantico, Va.

October, 1988

Graduated from FBI Academy, assigned to the New Haven Division

October 1988 - June 1990

Assigned to the Reactive Squad investigating property crimes, fugitives and Bank robberies.

July 28, 1989

Successfully completed FBI Firearms Instructor Certification, FBI Academy, Quantico

August, 1989

Successfully completed General Police Instructor Certification, FBI Academy, Quantico

September 1989 - March 1996

Served as an operational sniper on FBI New Haven Division SWAT Team.

September 1989 - March 1996

Assistant instructor for approximately six (6) basic SWAT Schools (40 hours).

May, 1990

Successfully completed Observer/Sniper Certification, FBI Academy, Quantico.

July 1990 - March 1996

Assigned to the Organized Crime/Drug squad (worked primarily on Joint Gang Task Force)

September, 1990

Successfully completed SWAT certification, FBI Academy, Quantico.

Attended FBI SWAT Senior Team Leader Conference, 1990, Quantico

September 1990 – Present

Primary Instructor of FBI Basic LE Sniper School. I have taught 48 schools with approximately 924 students attending. Nine hundred eight (908) of these students have successfully completed the course. I have taught this course primarily in the United States, from Hawaii to Connecticut. I have also taught this course in Helsinki, Finland.

I completed the Basic Drug Investigator course at the FBI Academy, Quantico, Va., in 1991.

I completed the Informant Development in-service at the FBI Academy, Quantico, Va., in 1992.

December 1992 - March 1996

Served as the Principal Firearms Instructor (PFI), FBI New Haven Division. With this position, I oversaw the firearms training program of approximately 93 agents and 30 Task Force officers.

December 1992 - March 1996

Served as an instructor at the Municipal Police Training Academy, Meriden, Ct. I taught the basic concept of SWAT (2 hour block) - approx. 8 times.

July, 1993

Attended Firearms Instructor recertification at the FBI Academy, Quantico, Va.



November 1993

Completed the Hostage Rescue Team Selection at the FBI Academy, Quantico, VA.

Attended the 1993 Principal Firearms Instructor Conference at the FBI Academy, Quantico, Va.

Attended the 1994 Principal Firearms Instructor Conference at the FBI Academy, Quantico, Va.

March 31, 1994

Received a performance award in recognition and appreciation of exceptional performance of official duties throughout the previous year.

June 16, 1994

Received cash award and letter from FBI Director in recognition of investigative efforts in connection with a drug gang investigation.

May 1995 - March 1996

Served at the Principal Tactics Instructor, New Haven Division

February 2, 1995

Attended the Principal Defensive Tactics Instructor seminar at the FBI Academy, Quantico, Va.

May 1995

I successfully completed the Tactical Instructor Certification course at the FBI Academy, Quantico, Va.

Attended 1995 SWAT Specialized Team Training at the FBI Academy, Quantico, Va.

Attended the 1995 Principal Firearms Instructor Conference at the FBI Academy, Quantico, VA.

December, 1995

Attended the 1995 Regional Principal Tactical Instructor Conference, Fredericksburg, Va.

March 1996 - April 1997

Firearms Training Unit – Term GS-14 Firearms Instructor.

April 1997 – August 2012

Firearms Training Unit (Later split off to form National Firearms Program Unit which was later re-named Defensive Systems Unit) - Supervisory Agent - Ballistic Research Facility.

May, 1997

Visited various ammunition manufacturers.

Conducted test of 1911 pistols for FBI SWAT use.

July, 1997

Completed Glock Armorer's Course at the FBI Academy, Quantico, Va.

Provided tour and demonstration of BRF for USMC Range Control.

Conducted demonstration of ballistic armor for Department of Justice personnel.

August, 1997

Assisted USMC with ballistic testing of mockup of walls of indoor range.

September, 1997

Promoted to permanent Supervisory Special Agent

Taught Sniper School in Virginia Beach, Va.

October, 1997

Completed standards of conduct training

Conducted ballistic demonstration for Israeli GSS

November, 1997

Participated in familiarization fire with USMC Special Application Scoped Rifle (.50 caliber)

Hosted demonstration of Remington Light Sniper Rifle (later re-named LTR).

December, 1997

Attended Contracting Officer's Technical Representative training, Management Concepts, Vienna, VA.

Met with materials scientist from Oak Ridge National Laboratory to discuss hazards of lead projectiles.

January, 1998

Attended SHOT Show, Las Vegas, Nv.

Hosted demonstration of shotgun slug.

Hosted demonstration of high speed video equipment.

Conducted ballistic demonstration for FBI contract employees.

Provided instruction in precision shooting to HRT operator Trainees.

Attended SHOT Show in Las Vegas, Nv.

February, 1998

Taught Sniper School in Hattiesburg, Ms.

Met with representatives of ammunition manufacturer.

Hosted Connecticut State Police Firearms Training Unit personnel and provided tour and ballistics demonstration.

Provided ballistic demonstration for USMC Weapons Training Battalion.

March, 1998

Provided ballistic demonstration for USMC Scout Sniper Instructor Advanced Course

Participated in live-fire demonstration for National Academy graduates.

Taught Sniper School in Columbia, SC.

April, 1998

Attended Oehler Ballistic Testing Workshop, Fredericksburg, Tx

May, 1998

Conducted body armor test for DEA

Attended non-toxic ammunition meeting at the Federal Law Enforcement Training Facility, Glynco, Ga.

June, 1998

Taught Sniper School in San Diego, Ca.

Provided presentations at the PFI conference on defective ammunition and shooting statistics

Conducted ballistic demonstration for a French newspaper.

July, 1998

Attended non-toxic ammunition seminar at INS facility, Altoona, Pa.

Conducted ballistic test for OSI

Participated in INS meeting regarding testing protocol and equipment used by the BRF

August, 1998

Conducted ballistic demonstration for Michigan State University Police Officers.

Shot .50 caliber rifles with USMC.

September, 1998

Completed Wordperfect 8.0 class.

October, 1998

Attended non-toxic ammunition meeting at Indian Head, Maryland.

Met with SWAT Sniper personnel to discuss .308 ammunition contract.

November, 1998

Attended legal training.

Met with other FBI personnel regarding .223 ammunition.

December, 1998

Hosted visit of Connecticut State Police

Participated in live fire demonstration for National Academy graduation

Attended meeting on ammunition procurement.

January, 1999

Taught Sniper School in Hattiesburg, Ms.

February, 1999

Conducted vest test for DEA

Taught Sniper School in Honolulu, Hawaii

March, 1999

Conducted ballistics presentation and demonstration for USMC Scout Sniper Instructor School

Conducted ballistics demonstration for United States Army Special Operations Command (USASOC).

Conducted test of .50 caliber weapons against airplane glass.

Conducted ballistic presentation for visiting Boy Scouts.

Conducted gelatin test of Federal 10mm ammunition.

Conducted ballistic demonstration for National Academy class.

Provided a presentation on shooting thru glass for the USMC Scout Sniper Basic class.

Conducted test to compare gelatin from two different manufacturers.

April, 1999

Shot qualifying score on USMC Sniper Qualification course.

Provided wound ballistic presentation to personnel from the Armed Forces Institute of Pathology.

Conducted body armor test.

May, 1999

Met with rifle manufacturer to attempt to address problems with magazines.

June, 1999

Conducted gelatin test of Simunition .223 Greenshield ammunition

Conducted gelatin test of Federal 62gr. Bonded .223 ammunition

Conducted ballistic demonstration for USMC Range Officer Course.

Participated in live-fire demonstration for graduating NA students and their families.

Assisted USMC with pressure testing of .223 ammunition.

July, 1999

Hosted meeting with representatives of ammunition manufacturer

Attended Joint Non Toxic Working Group meeting in San Diego, Ca.

Conducted .308 gelatin testing for US Capital Police.

August, 1999

Taught Sniper School in Sacramento, Ca.

Conducted tour of BRF for Irish National Police.

Hosted demonstration of .300 Whisper cartridge.

Conducted gelatin test of 12 ga. Slug ammunition.

Attended Advanced Firearms Instructor Training.

September, 1999

Attended Unertl scope class at USMC.

Attended Advanced Firearms Instructor Training.

Conducted ballistic demonstration for Country Music Television.

Met with representative of ammunition manufacturer.

October, 1999

Attended demonstration of Stabilisator return-to-battery weapon mount.

November, 1999

Conducted ballistic demonstration for Laboratory personnel.

December, 1999

Completed Drug-Free Workplace training.

Provided counsel to INS on accuracy testing.

January 2000

Attended SHOT Show, Las Vegas, Nv.

Conducted gelatin test for US Department of State.

Conducted body armor test for DEA

Provided instruction in precision shooting to HRT operator Trainees.

Received training on high speed video equipment.

February, 2000

Conducted ballistic demonstration for USMC Scout Sniper Instructor Advanced course.

Captured high speed video of M16 function for USMC.

Taught Sniper School in Hattiesburg, Ms.

Attend Non Toxic Working Group meeting in Glynco, Ga.

Shot .50 caliber rifles with USMC.

March, 2000

Conducted velocity testing for Armed Forces Institute of Pathology.

Shot gelatin tests for USMC Scout Sniper Instructor School.

Met with ammunition manufacturer representatives.

Traveled to Killeen, Tx., to serve as on-site FBI weapons and ammunition expert during infrared filming of firearms in response to the Waco investigation.

Conducted special rifle training for FBI personnel assigned overseas.

Participated in suppressed rifle test at the USMC test facility.

April, 2000

Attended Oehler Ballistic Workshop, Fredericksburg, Tx.

Shot vest test for HRT

Conducted ballistic demonstration for Medical Examiners.

Taught Sniper School in Birmingham, Al.

May, 2000

Conducted drop test of FBI handgun.

Met with representatives of ammunition manufacturers.

Conducted high speed video for Physical Training Unit.

Conducted high speed video of weapon function for the FBI Engineering Research Facility.

June, 2000

Conducted high speed video for FBI Physical Training Unit.

Conducted vest test for HRT.

Conducted ballistics demonstration for DEA.

July, 2000

Attended ammunition symposium at CCI/Speer manufacturing facility, Lewiston, Id.

Attended FBI Deadly Force training.

Attended body armor and blunt trauma seminar at the Armed Forces Institute of Pathology.

August, 2000

Provided general ballistics and weapon selection presentation to DEA Raid Instructor class.

Participated in demonstration of TOVAR 5.56mm Nato rifle.

Conducted high speed video for Physical Training Unit.

Conducted MP5 training for USMC Range Control.

September 2000

Attended Glock Armorer's Course, Quantico, Va.

Met with firearms officer from Hertfordshire, UK, regarding .223 and .308 ammunition against glass.

October, 2000

Conducted high speed video for Physical Training Unit.

Conducted .40 S&W contract gelatin, velocity, pressure, accuracy and environmental testing.

Met with Ontario Provincial Police regarding use of .223 and .308 rifles for law enforcement applications.

Attended demonstration of M16 clone weapons.

Met with ammunition manufacturer representatives.

November, 2000

Met with Volusia County, Fl., deputies to discuss wound ballistics and .223 ammunition.

December, 2000

Met with ammunition manufacturer representatives.

Conducted ballistic experimentation in relation to a supposed murder depicted in a "Snuff" film.

January, 2001

Met with manufacturer representative regarding .223 ammunition.

Met with US Customs to discuss ammunition selection and procurement specifications.

Shot vest test for DEA.

Taught Sniper School in San Antonio, Tx.

February, 2001

Met with ammunition manufacturer representatives.

Conducted high speed video to demonstrate Glock pistol function.



Conducted test of ballistic shields and vest panels for DEA.

March, 2001

Shoot muzzle flash test of M4 carbines.

Conducted body armor test for FBI.

Conducted ballistics presentation for USMC Scout Sniper Instructor Course.

Taught Sniper School at Fort Pickett, Va.

April, 2001

Attended demonstration of RBCD ammunition at USMC.

Conducted body armor test for FTU.

Conducted body armor test for HRT.

Taught Sniper School in Tuscaloosa, Al.

Attended Oehler Ballistic Testing Workshop, Fredericksburg, Tx.

May, 2001

Attended Contracting Officer's Technical Representative refresher training.

Shot gelatin test at 200 yards.

Briefed Pinellas County, Fl. Sheriff's Department on wound ballistics.

Met with ATF regarding ammunition selection.

Conducted body armor test for HRT.

Assisted with firearms instruction for FBIHQ shoot.

June, 2001

Taught Sniper School in Simsbury, Ct.

Provided remedial firearms training for Stafford County Sheriff's Department.

Conducted ballistics talk for DEA Firearms Instructor's Course.

Shot aerial photographs for Stafford County Sheriff's Office.

July, 2001

Conducted vest test for DEA

Conducted high speed video of soft ballistic shield resisting ballistic insults.

Met with ammunition manufacturer's representatives.

Conducted test of .223 ammunition.

August, 2001

Attended Back To Basics Training.

Taught Sniper School in San Diego, Ca.

Attended PFI conference.

September, 2001

Received training on piezoelectric transducer calibration equipment.

Performed recovery work at Pentagon site.

Conducted test of ammunition for Air Marshalls.

Worked at FBIHQ.

October, 2001

Worked at FBIHQ.

Consulted with Federal Air Marshals regarding appropriate ammunition to use aboard aircraft.

Attended Blood Borne Pathogen training.

Conducted vest test for DEA.

Provided training on HK53 to FBI personnel.

November, 2001

Participated in meeting regarding expansion of the Federal Air Marshals.

Conducted high speed video of muzzle blast of suppressed rifles for USMC.

Met with ammunition and firearm manufacturer to attempt to resolve malfunction issues.

Met with Department of Energy Nuclear Security personnel regarding ballistics and appropriate ammunition and weapons for their mission.

December, 2001

Hosted demonstration of Galil rifle

Assisted Federal Game Warden with eradication of problem deer on a federal facility.

Conducted gelatin test for USMC at their facility.

January, 2002

Provided training on proper weapon selection to National SWAT Sniper Symposium, Gaithersburg, Maryland.

Conducted body armor test for DEA.

Met with engineers from Naval Surface Warfare Center, Crane, to discuss wound ballistics and test methods.

Assisted USMC with pressure test of .223 ammunition.

Shot gelatin test M882 and new "green" projectile for Picatinny Arsenal.

Met with DEA representatives regarding .223 rifles.

February, 2002

Attended SHOT Show in Las Vegas, Nv.

Traveled to Crane, Indiana, to meet with engineers at the Naval Surface Warfare Center to discuss MK18 carbines, ammunition test methods and current and future ammunition for these weapons.

Assisted Federal Game warden with deer eradication in Fairfax County, Va.

Shot aerial photos for Stafford County SO investigation.

March, 2002

Shot endurance test on Glock 19C pistols.

Conducted high speed video of muzzle blasts for DEA.

Met with representative from Bismuth cartridges regarding their lead free products.

Shot body armor test for DEA.

Taught Sniper School in Tuscaloosa, Al.

April, 2002

Met with other government officials at the Pentagon with respect to frangible ammunition.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Chronographed ammunition from their rifles.

Conducted test of ballistic resistance of baffle designs for proposed range project.

Provide tour of BRF to Ontario Provincial Police Sgt. Discussed FBI wound ballistics theory, test methods and ammunition and weapon selection for law enforcement use.

Met with ammunition manufacturing representatives.

Provided tour of BRF to USMC Systems Command test personnel. Discussed FBI wound ballistics theory, test methods and ammunition and weapon selection for military use.

#### May, 2002

Met with Operational Training Unit personnel to discuss specifications for .45 Auto ammunition for FBI use.

Met with USMC Systems Command test personnel to continue earlier discussions.

Met with president of ArmaLite to explain and demonstrate FBI testing conducted on his company's rifles.

Met with FBI Contracting and Operational Training Unit personnel to continue discussions of specifications for .45 Auto ammunition for FBI use.

Assisted USMC Test Facility with diagnosis and repair of their Oehler ballistic test equipment.

Met with representative from the UK Government to discuss FBI wound ballistics theory, test methods and ammunition and weapon selection for law enforcement use.

Conducted high speed video of bomb reenactment for FBI Laboratory training.

Conducted vest test for Firearms Training Unit.

Shot aerial photographs for Stafford County Sheriff's Department criminal investigation.

Met with FBI contracting officials to discuss FBI ammunition and firearm contracts.

#### June 2002

Attended meeting in Darligen, Switzerland to assist the United States in negotiations with NATO and other European governments in an attempt to prevent the modification of the

Hague Declaration of 1899 (prohibiting the use of expanding ammunition). A portion of the proposed modification would have made the Hague restrictions applicable to law enforcement as well as military personnel. The proposal was not only defeated but one participant (Sweden) reversed its opinion. Sweden's law enforcement officers began to utilize expanding ammunition and make decisions based on testing protocols which closely resemble those created by the FBI BRF.

Meet with Swiss officials at Low Noise Ballistic Test Facility, Thun, Switzerland. Received demonstration on ballistic test methods used at the facility. Participated in discussion of penetration testing conducted with ballistic gelatin vs. ballistic soap.

Visited Heckler & Koch, Oberndorf, Germany. Received tour of manufacturing facility and discussed FBI wound ballistics theory, test methods and ammunition and weapon selection for law enforcement use. Participated in testing of 4.6x30mm ammunition as used in the MP7 personal defense weapon.

Conducted body armor test for HRT.

Met with representatives of the Virginia State Police to discuss the use of .223 rifles and proper ammunition selection for law enforcement purposes.

#### July, 2002

Conducted ballistic presentation for USMC Provost Marshall's Office. Provided explanation of FBI wound ballistics theory, test methods and ammunition and weapon selection for law enforcement use. Compared live-fire results of shotgun projectile (buckshot vs. slug) penetration into ballistic gelatin behind automobile glass.

Conducted pressure testing for USMC.

Met with representative from ammunition and firearm manufacturer.

Conducted drop test of SWAT 1911 pistols. Recorded high speed and normal video and photographed results. Participated in expert panel to determine outcome of testing.

Conducted 2 body armor tests for Firearms Training Unit.

Briefed PFI conference on issues seen with normal pressure .40 S&W ammunition and the FBI decision to down-load the ammunition to achieve less recoil.

Briefed PFI conference on planned conversion of M16A1 rifles to carbines. Provided opportunity for PFIs to fire different versions and barrel lengths and cast vote for most appropriate combination for FBI use by general Agents.

#### August, 2002

Taught Sniper School in Simsbury, Connecticut.

Hosted personnel from Heckler & Koch to demonstrate FBI ammunition test methods.

Received training on Stabilizer return-to-battery weapon mount.

Attended demonstration of SpeedCam high speed video camera.

Conducted vest and hard plate tests for DEA.

Designed and fabricated a fixture to allow investigators to safely fire pistol at the location of a double homicide/kidnapping crime scene.

Conducted three vest tests for Firearms Training Unit.

Participated in meeting at Marine Systems Command to discuss 5.56mm NATO testing they were requesting the BRF conduct.

September, 2002

Taught Sniper School at Fort Pickett, Va.

Conducted 5.56mm NATO gelatin testing for USMC.

October, 2002 – June 2006

Functioned as a core member of Joint Services Wound Ballistics Integrated Product Team. This team attempted to evaluate the effectiveness of military small arms ammunition and create a standardized test method.

October, 2002

Conducted 5.56mm NATO gelatin testing for USMC.

Met with DEA to discuss specifications for DEA/FBI .223/5.56mm NATO carbine contract.

Conducted high speed video to assist domestic police investigation.

Received demonstration of new Olympus high speed video camera.

Hosted members of USMC and Navy to discuss testing being conducted for USMC.

Assisted USMC personnel with pressure test of .223 ammunition.

Attended ammunition development seminar at CCI facility, Lewiston, Id.

November, 2002

Attended FBI deadly force training.

Conducted gelatin test of Swiss rifle for US DOD JAG.

December, 2002

Met with ammunition manufacturer representative to discuss problems experienced with their ammunition and their proposed resolution.

Provided training in ammunition reloading and assisted FBI Laboratory personnel in same.

Conducted gelatin test of .45 Auto service ammunition.

Met with USMC representatives to discuss results of recent 5.56mm NATO ammunition test the BRF conducted at their request.

January, 2003

Conducted preliminary 6.8 SPC testing for Legal Review for 5th Special Forces Group.

Conducted body armor test for DEA.

Met with contracting officer regarding specifications for FBI .45 Auto ammunition.

Conducted testing for joint FBI/DEA .223 carbine procurement

Hosted meeting with ammunition and pistol manufacturers to attempt to duplicate and record malfunctions reported by Firearms Training Unit.

February, 2003

Conducted testing for joint FBI/DEA .223 carbine procurement.

Inspected rifle for King George Sheriff's Department Deputy.

Provided briefing of service pistol malfunctions to Firearms Training Unit instructors.

Conducted test of service ammunition in alternate pistol.

Met with Baltimore County, Md., Police Department snipers to discuss curriculum of sniper schools for law enforcement.

March, 2003

Taught sniper school in Los Angeles.

Provided oversight for endurance testing of carbines submitted for DEA/FBI .223 carbine procurement.

Conducted gelatin test for U.S. Customs.

Met with ammunition manufacturer representatives.

Met with other FBI personnel to discuss possible BRF assistance.

Met with manufacturer of reticles used in telescopic sights.

April 2003

Conducted ballistic demonstration and discussion of exterior ballistics for USMC Scout Sniper Instructor School Instructor Students.

Attended Cultural Diversity training.

Met with pistol manufacturer to discuss resolution to malfunctions experienced.

Met with Assistant Director, Contracting Officer and Unit Chief to explain ammunition issues and discuss resolution.

Conducted ballistic presentation and live-fire test shots for USMC Scout Sniper Instructor Course. Shot body armor, glass shots and measured velocity of their rifles.

Assisted USMC in pressure testing.

Taught sniper school in Tuscaloosa, Al.

May 2003

Attended Joint Services Wound Ballistic Workshop/meeting at Picatinny Arsenal, NJ.

Hosted shoot of 6.8x43 SPC carbines for 5<sup>th</sup> Special Forces Group (Airborne) demonstration to United States Marshall's Service Director and representative from the Immigration Naturalization Service.

Taught Sniper School in Alpena Michigan.

Met with HRT regarding creation of specifications for FBI sniper rifles.

Conducted body armor test for HRT.

Met with manufacturer of polymer ammunition to discuss product viability.

June 2003

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Attended Oehler Ballistic Troubleshooting Workshop.

Attended demonstration of high speed camera.



Observed USMC Sniper School stalking field exercise.

Attended USMC Sniper School rifle painting class.

July 2003

Conducted body armor test for DEA.

Met with FBI personnel regarding sniper school curriculum.

Met with representative from Switzerland military and US DOD. Discussed FBI wound ballistic theory, test method and ammunition/weapon selection criteria.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted ballistic testing of 6.8x43 ammunition.

Participated in New Agent Review Board for trainee that was not meeting requirements.

Set up rifle for Federal Game Warden anticipating attending sniper school.

Taught Basic Sniper School to USMC Scout Sniper Instructor Cadre and local LE officers.

August, 2003

Provided presentation to PFI conference. Subjects covered included:

- Ammunition issues experienced by FBI
- Pending sniper rifle procurement.
- DEA/FBI .223 carbine contract that was recently awarded.
- Capabilities of the 6.8x43 cartridge in AR15 platform

Met with representatives of the United States Secret Service to discuss .223 ammunition suitable for law enforcement use.

Attended meeting on .40 S&W ammunition contract.

Met with FBI auditors regarding ammunition contracts.

September 2003

Taught Basic Sniper School in Simsbury, Connecticut.

Successfully completed GS15 Leadership Skills Assessment.

Met with FBI auditors regarding ammunition contracts.

October 2003

Provided ballistic demonstration to USMC Scout Sniper Instructor School. Measured velocity of ammunition fired from their rifles.

Assisted Federal Game warden with eradication of Deer from Federal facility.

Met with representatives from Lake City Army Ammunition Plant to discuss gelatin test procedures.

Conducted gelatin testing in support of Army Research Laboratory standardization proposal.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Latin American Law Enforcement Executive Development Society.

Taught Basic Sniper School in Minden, Nv.

Conducted demonstration of test protocol for Joint Services Wound Ballistic IPT.

Conducted accuracy and abuse testing of Sniper Rifles for procurement.

Met with representatives of ammunition manufacturers.

November, 2003

Conducted testing of known munitions and provided High-Speed video of ballistic test for presentation at Snipemur trial.

Requested to provide expert witness testimony at Snipmur trial. Defense objected, due to (claimed) prejudicial nature of video demonstrating projectiles impacting tissue simulant. Judge sustained the objection.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

December, 2003

Attended informant training, FBI Academy, Quantico.

Conducted body armor tests for Firearms Training Unit.

Completed Standards of Conduct/Ethics training.

Completed informant training.

Conducted accuracy test of rifles submitted for sniper rifle procurement.

Conducted body armor test for DEA.

Conducted ballistic demonstration for FBI Laboratory personnel.

January 2004

Attended National SWAT Sniper Symposium.

Met with NCIS investigator regarding fraud against the government case involving ammunition.

Attended demonstration of .499 LW cartridge as used in AR15 type rifle.

February, 2004 – June, 2007

Served as a core member of the Blended Metal Technology Integrated Product Team. This team was charged with evaluating the properties of supposed new small arms ammunition. BRF examination proved the ammunition to be commercially available projectiles. I reported this matter to the criminal division for fraud against the government investigation.

February, 2004

Conducted HS Video of projectile impacts for the Firearms Toolmarks Unit of the Lab.

Met with representatives of USASOC.

Attended SHOT Show.

Attended Tampa meeting of the Integrated Product Team researching Blended Metal Technology ammunition for possible SOCOM use.

Taught Basic Sniper School in San Antonio, Tx.

March, 2004

Conducted HS Video for Explosives Unit.

Observed New Agent training with service ammunition. Documented and investigated any malfunctions experienced.

Observed New Agent training with MP5s. Documented and investigated any malfunctions experienced.

Participated in debriefings of participants in sniper rifle contract.

Conducted tour of BRF for Inspector/Head of Training, Stockholm County Police, Sweden. Provided description of FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement use.

Conducted tour for UK Government officer. Provided description of FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement use.

Received briefing on new non-toxic ammunition.

Met with USMC Range Control Range Officer regarding creating surface danger zone limitations for non DOD munitions.

#### April, 2004

Conducted terminal ballistics discussion and demonstration for USMC Scout Sniper Instructor School. Measured velocity of ammunition fired from their rifles.

Taught Basic Sniper School in Tuscaloosa, Alabama.

Conducted decibel test of various firearms for Health and Safety officer.

Measured velocity for HRT.

#### May, 2004

Participated in Aircraft Security meeting.

Taught Basic Sniper School in El Paso, Tx.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Met with Contracting Officer and other FBI personnel regarding .223 contract.

Assisted Federal Game Warden with deer eradication from a Federal facility.

Shot accuracy test of 7.62 AA11 ammunition for USMC.

Met with USASOC personnel.

Provided training on the M4 carbine to NCIS Special Agent scheduled to deploy to Iraq.

#### June 2004

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Latin American Law Enforcement Executive Development Society.

Met with ammunition manufacturer's representative to discuss non-toxic primers.

Conducted ballistic plate test for DEA.

Conducted velocity measurements for FBI New York SWAT Snipers.

Attended the Blended Metal Technology meeting at SOCOM in Tampa, Florida.

Demonstrated Stabilisator return-to-battery weapon mount to engineers from Naval Surface Weapons Center, Crane.

July, 2004

Met with representative of Pacific Safety Products to discuss FBI vest testing procedures.

Met with representative of USASOC.

Assisted Federal Game Warden with eradication of deer from airfield.

Participated in teleconference to discuss results of standardization of gelatin test procedure round-robin test.

August, 2004

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted ballistic testing for USASOC.

Conducted test of non-toxic ammunition for use in FBI shoot-house.

Provided Presentation to PFI conference. Topics included:

- .40 S&W ammunition procurement
- Ammunition test and selection criteria
- Sniper rifle procurement results
- Sniper schools offered by BRF.

Attended Photo Shop basic class in Richmond.

Assisted Federal Game Warden with eradication of deer from airfield.

Met with USASOC personnel, Fort Bragg, Nc.

Met with Washington Field Agent to discuss possible fraud against the government case involving ammunition.

Sept. 2004

Taught Basic Sniper School in San Diego.

Completed training to participate on Career Boards.

Attended Joint Services Wound Ballistics IPT meeting at Picatinny, NJ.

Met with USASOC personnel.

October 2004

Taught Basic Sniper School in Minden, Nv.

Shot pressure, velocity and accuracy test of .40 S&W ammunition.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.

November, 2004

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Acting Unit Chief of National Firearms Program Unit.

Conducted body armor test for USASOC.

December, 2004

Conducted HS Video for Explosives Unit.

Completed blood borne pathogen training.

Met with Firearms Training Unit instructor to discuss appropriate protocol for function test.

Met with DEA to discuss appropriate protocol for suppressor test.

January, 2005

Provided presentation on Accuracy Expectations and Ammunition Selection Methods at National SWAT Sniper Symposium, Gaithersburg, Md.

Conducted video of M4 test by SWAT attempting to duplicate unintentional discharge experienced by field Agent.

Attended FBI legal training.

Attended SHOT show in Las Vegas.

February, 2005

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for officials from Jordan.

Attended meeting relating to FBI firearm rules and regulations.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Taught Basic Sniper School in Los Angeles, Ca.

Participated in meeting of FBI Firearms Advisory Committee.

March, 2005

Shot high speed video for Explosives Unit.

Shot high speed video of various projectiles impacting 40 lb. blocks of gelatin.

Conducted tour of BRF for Provost. Marshall from Fort Belvoir. Explained FBI wound ballistic theory, ammunition test method and selection of ammunition and weapons for law enforcement use.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.

Taught Basic Sniper School in Tuscaloosa, Al.

April, 2005

Consulted with Danish National Police and Special Forces on Wound Ballistics and ammunition selection.

Consulted with Swedish Defence Research Agency (FOI) on FBI method of ammunition selection, weapon selection and wound ballistics theory.

Consulted with the Stockholm County Police SWAT Unit on wound ballistics, ammunition and weapon selection.

Taught Basic Sniper School to the Helsinki, Finland, National Counter-terror team in Helsinki.

May, 2005

Met with Universal Training Munitions to view their manufacturing facility in the United Kingdom and receive briefing on their products.

Provided photographic assistance to FBI gunsmiths in photographing M4 parts.

Provided wound ballistics and cartridge/weapon selection brief to Connecticut State Police and other NA Students.

Taught Basic Sniper School at Fort Pickett, Va.

Conducted High Speed video of M4 functioning.

Conducted gelatin testing of subsonic .223 ammunition for government partners.

Briefed HRT on 6.8x43 SPC cartridge and capabilities.

Conducted gelatin and accuracy testing of .308 ammunition.

June, 2005

Conducted ballistic training for LAPD firearms officers. Training provided included procedures for manufacture of gelatin, verification of validity, test methods, recording and reporting of test data.

July, 2005

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted debriefing of manufacturer that participated in the .223 ammunition contract .

Provided wound ballistics and cartridge/weapon selection briefing to head of Kuwaiti Firearms Training Unit.

Conducted terminal ballistic discussion and demonstration for FBI Interns.

August, 2005

Conducted accuracy test of HK M4 type carbine.

Created and implemented training of newly assigned Engineering Technician, Ballistics.

Participated in FBI firearms acquisition committee meeting.

Conducted terminal ballistic discussion and demonstration for Chief Medical Examiner of Maryland.

Served as Acting Unit Chief of Defensive Systems Unit.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.



September, 2005

Consulted two NA students on wound ballistics, ammunition and weapon selection.

Conducted body armor test for DEA

Provided presentation to FBI Principal Firearms Instructors. Topics included:

- Ammunition testing and high speed video evaluation showing the superior effectiveness of rifle and shotgun ammunition over handgun ammunition.
- The over-penetration potential of 00buckshot if used for close quarters battle.
- The .223 ammunition contract award.
- How FBI ammunition procurements are conducted.
- Explanation of .40 Smith & Wesson recoil issues compared to performance.

Conducted high speed video for explosives unit.

Traveled to Pueblo, Colorado to conduct high speed video for HRT.

October, 2005

Taught Basic Sniper School in Columbia, SC.

Completed Blood Borne Pathogen training.

Attended "Green Ammunition" meeting at Picatinny Arsenal, NJ.

Conducted tour and ballistic demonstration for personnel from America's Most Wanted.

Conducted test of the ability of plexiglass to resist projectiles fired from a .22 LR.

November 2, 2005

Conducted ammunition testing informational meeting with personnel from Remington Ammunition.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted wound ballistics overview including ammunition and weapon selection for Virginia State Police Firearms Instructor Class.

Met with USMC Systems Command Lt. Col. and Major regarding proposed new USMC rifle and cartridge.

Attended FBI Legal training.

Conducted ballistic test of 9mm ammunition against human head model.

December, 2005

Attended Standards of Conduct training.

Attended FBI Legal training.

Conducted gelatin test of Black Hills .308 180gr. Accubond.

January, 2006

Conducted gelatin test of Swift 75 gr. Scirocco with owner of Swift in attendance.

Conducted test of body armor.

Assisted multiple Govt. agencies in identification of projectile recovered from US service member in Iraq.

Hosted meeting with representatives of ATK (Speer and Federal Ammunition).

Hosted demonstration of SureFire suppressors.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

February 6, 2006

Conducted velocity testing of various munitions fired from an M4 carbine. Thereafter created ballistic charts showing projectile velocity and impact at various distances.

Attended SHOT Show, Las Vegas, NV. Attended multiple meetings with manufacturers to discuss ammunition and firearms for FBI use.

Met with two Major Officers of USMC Systems Command.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted penetration and barrier test of Federal 9mm 147gr. HST.

Modified ammunition test database.

Taught Basic Sniper School in Sacramento, Ca.

March, 2006

Assisted USMC with measuring and calculating Minute of Angle adjustments of SR25 rifles .

Conducted tour and discussion of wound ballistics and ammunition/weapon selection for Police Chief from Alexander City, Al.

Met with USMC to discuss appropriate plan for ammunition test they requested the BRF conduct.

Conducted tour and discussion of wound ballistics and ammunition/weapon selection for visiting police officer.

Attended FBI Cultural Diversity Training.

Attended live fire demonstration of HK417 rifles at USMC Scout Sniper Instructor School.

Conducted tour and discussion of wound ballistics and ammunition/weapon selection for 5<sup>th</sup> Special Forces (Airborne) Master Sgt.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy Associates.

Completed Information Security training.

#### April, 2006

Served as ranking member on Career Board for vacant SSA position.

Assisted Federal Game Warden with eradication of deer from airfield.

Assisted Henrico County, Va. with diagnosis of pistol malfunctions they were experiencing when utilizing weapon-mounted lights.

Taught Basic Sniper School in Tuscaloosa, Al. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

#### May, 2006

Conducted troubleshooting investigation of Nikon D2H camera used at BRF.

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.

Conducted high speed video of disruptor used to counteract improvised explosive devices.

Conducted debriefing of H&K personnel on the failure of the UMP during acceptance testing.

Troubleshoot and reset Viatran voltage meter on piezoelectric conformal transducer calibration equipment.

Conducted gelatin test for USASOC.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Latin American Law Enforcement Executive Development Society Students.

June, 2006

Conducted velocity test and created ballistic charts for HRT rifles.

Met with Lt. Col from USMC Systems Command regarding ammunition testing done for the USMC.

Attended meeting regarding FBI Body Armor Protocol.

Attended less lethal options meeting at FBI Critical Incident Response Group.

Conducted review of DOD partner's evaluation of 12.7mm Raufous (MK211) ammunition.

Conducted gelatin-test of Winchester .308 Ballistic Silvertip.

July, 2006

Assisted Federal Game Warden with eradication of deer from airfield.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Arabic Language Law Enforcement Executive Development Society students.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Thailand major case seminar participants.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

August, 2006

Provided presentation to FBI Principal Firearms Instructors conference. Topics covered included:

FBI ammunition contracts.

FBI Submachine gun program and UMP failure of same.  
New FBI Body Armor Test Protocol.  
Identification of defective ammunition.  
FBI LE Basic Sniper School "Train the Trainer" program.

Hosted demonstration of Glock G37 (.45 GAP).

Conducted failure analysis of catastrophic destruction of M4 carbine.

Conducted pressure and accuracy testing of frangible ammunition used during catastrophic destruction of M4 carbine.

Performed intentional catastrophic destruction of M4 carbine to aid in investigation.

Conducted research and testing of film intended to make vehicle glass more resistant to projectile insults.

Provided professional consultation and guidance to Indiana State Police in the investigation of a murder which involved a long-range rifle shot.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted gelatin test of 6mm TSWG and H&K 4.6 PDW for USASOC.

Conducted pressure, velocity and function testing of .223 training ammunition sent in by field division and reported as suspected to be causing system malfunctions.

September, 2006

Investigated and located source of FBI information leak over the internet.

Met with USMC Systems Command Major and Engineer regarding 5.56 and 7.62 ammunition.

Calculated maximum range of FBI munitions for FBI Norfolk to use during investigation of claimed projectiles escaping the range used for qualifications.

Completed Hazardous Waste training.

Briefed FBI Safety Officer on the mechanics of airborne lead when firing small arms ammunition and the proposed, but not implemented remedy for use in all weather ranges.

Conducted tour and demonstration of FBI wound ballistic test methods for medical Doctor consulting with the FBI.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Hosted meeting with USMC Systems Command to discuss proposed Phase II testing for USMC alternate caliber program.

Taught Basic Sniper School at Fort Dix, Nj. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

#### October, 2006

Hosted USMC High Risk Personnel instructors to discuss wound ballistics, ammunition and weapon effectiveness and selection.

Completed NSB computer based training.

Provided tour for US Department of State personnel. Discussion included FBI ammunition testing and procurement methods and how the USDOT could participate in FBI contracts.

Conducted standard performance test of Federal 9mm EFMJ.

Conducted body armor test.

#### November, 2006

Conducted high speed video of blood splatter test for FBI Laboratory.

Conducted standard performance test of Federal .40 S&W EFMJ.

Conducted test of ballistic plates for FBI.

Completed FBI Ethics training.

Conducted high speed video for FBI Explosives Unit and the USMC.

Conducted meeting with ammunition manufacturer representative.

#### December, 2006

Attended FBI Firearms Instructor recertification.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Hosted meeting with two Baltimore Police SWAT officers to discuss terminal ballistics, ammunition and weapon selection.

Attended FBI Legal training.

Attended Equal Employment Opportunity training.

Served as Acting Unit Chief of Defensive Systems Unit.

Hosted members of Hazelton PD to discuss wound ballistics and likely reasons for their ammunition performance during an officer involved shooting. Conducted gelatin testing for them to demonstrate FBI test method and wound ballistic theory.

Met with DOD representatives to discuss ballistic research.

Conducted gelatin test of M855 ammunition.

January, 2007

Attended meeting on USMC Alternate Ammunition test plan.

Provided expert opinion of Legal review of ammunition proposed to be used by USASOC.

Performed review of USSOCM Blended Metal IPT report.

Attended meeting regarding proposed build-out of HRT rifle range.

Briefed FBI FTU personnel on Hazelton PD shooting.

Provided presentation on ammunition selection at Operational Tactics SWAT Sniper Symposium.

Conducted meeting with ammunition manufacturer representative.

March, 2007

Conducted velocity testing of projectiles fired from HRT firearms.

Assisted FBI Office of General Counsel with ballistic analysis of testimony to be given by expert witness.

Shot test of ballistic plates.

Hosted meeting with engineers and technicians of ammunition manufacturer to discuss ammunition and test procedures.

Participated in teleconference to discuss USSOCOM Blended Metal IPT final report.

Received training on terminating RG59 cables with BNC connectors.

Hosted personnel from HP White Laboratory to demonstrate BRF methods of high speed video capture.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for FBI Laboratory Firearms Toolmarks Unit.

Conducted ballistic plate test.

March, 2007

Conducted pressure test of 12 ga. Breaching rounds.

Met with USMC Systems Command to provide consultation on creating a gelatin test laboratory.

Taught Basic Sniper School at Eglin AFB. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

Met with representatives of Prince William, Va., Police Department to discuss ballistics.

Reviewed and provided comments on legal review for ammunition requested to be used by USASOC.

Reviewed ARDEC technical report on RBCD ammunition.

April, 2007

Taught Basic Sniper School at Tuscaloosa, Al. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

Conducted accuracy testing of MK262 Mod1 5.56 NATO ammunition.

Met with ammunition manufacturer representative to discuss ammunition issues.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Latin American Law Enforcement Executive Development Society Students.

May, 2007

Conducted gelatin test for Richmond Police Department.

Conducted velocity testing for HRT.

Assisted Federal Game Warden with eradication of deer from airfield.



Attended Sentinel seminar.

Assisted Hazardous Materials Response Unit with chronograph, high speed video and still photography.

June, 2007

Provided demonstration and discussion of wound ballistics to USMC SSIS Advanced course. Measured velocity of projectiles fired from their rifles.

Taught Basic Sniper School at Beaver Falls, Pa. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

Provided tour and explanation of FBI ammunition test method for SSA from Counter Terror Division.

Served as Acting Unit Chief of Defensive Systems Unit.

Assisted USMC with gelatin test of Simunition.

Hosted meeting with representatives from Corning to discuss ballistic glass.

August, 2007

Shot SCAR light and heavy rifles for familiarization and to provide input regarding their function.

Provided tour of BRF, discussion of wound ballistics and FBI test method and live fire demonstration to US DOD Judge Advocate General representatives.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Arabic Language Law Enforcement Executive Development Society students.

Taught Basic Sniper School at Minden, Nv. Contemporaneously conducted "Train the Trainer" course for FBI basic LE Sniper Observer Instructors.

September, 2007

Conducted meeting on .40 S&W and 9mm ammunition contracts.

Completed Performance Appraisal training.

October, 2007

Conducted environmental testing of .40 S&W contract ammunition.

Met with OGC representative to discuss zylon as used in body armor.

Conducted pressure, velocity muzzle blast and accuracy testing of 9mm RFP ammunition.

November, 2007

Conducted test of Body Armor for US Dept. of State.

Observed and recorded FTU instructors function test of 9mm RFP ammunition.

Observed and recorded FTU instructors function test of 9mm RFP ammunition.

Attended bloodborne pathogen training.

December, 2007

Attended FBI legal training.

Photographed Springfield 1911 pistols that experienced catastrophic failures.

Conducted body armor test.

January, 2008

Conducted ballistic demonstration and tour for Dallas and Miami PFIs.

Observed and recorded FTU instructors function test of 9mm frangible ammunition.

Repaired PCB charge amplifier.

Assisted HRT with explanation of .223 wound ballistics.

February, 2008

Attended SHOT Show, Las Vegas, NV. Attended multiple meetings with manufacturers to discuss ammunition and firearms for FBI use.

Shot gelatin test for USASOC.

Conducted manufacturer debriefing for ammunition contract.

Met with representative for manufacturer of ballistic material.

Participated in conference call with the Colorado Bureau of Investigation regarding the catastrophic failure of a Colt pattern rifle. Provided information on logical investigation to pursue.

Conducted velocity testing for HRT Snipers.

Participated in meeting to discuss considerations for formation of Rapid Response Team at the FBI Academy. I was subsequently named a Team Leader.

March, 2008

Conducted ballistic test of DHS armored vehicle.

Hosted Technical Services Working Group members to discuss demonstration.

Met with US DOD personnel to discuss M855LFS.

Shot high speed video of various cartridges impacting gelatin at 10' for inclusion in a composite video to demonstrate potential effectiveness.

Provided tour, discussion of FBI test method and theory and live fire demonstration for members of Government partner agency.

Shot high speed video of the function of a Glock pistol.

Merged multiple high speed videos into a single video to demonstrate the potential effectiveness of various cartridges.

Created a PowerPoint presentation to be given to HRT Operators to assist in understanding the ballistic capabilities of FBI weapon platforms.

April, 2008

Participated in telephone call with USDOD Program Manager regarding the "green" M855 ammunition.

Participated in telephone call with the Explosives Unit regarding armored car testing.

Consulted with OGC regarding suit against the FBI Chicago firing range.

Conducted high speed video recording of tracer ammunition being fired into an earthen berm. This video was used to defend against lawsuit.

Assisted Federal Game Warden with eradication of deer from airfield.

Met with representatives from ammunition manufacturer to discuss ammunition testing procedures.

Met with Army Research Laboratory personnel to discuss new 5.56 projectile.

Conducted briefing on wound ballistics, ammunition and weapon selection for HRT operators.

Conducted manufacturer debriefing regarding ammunition contract.

Hosted meeting with manufacturer to discuss helmet testing protocol.

Conducted tour and discussion of BRF mission and method for USMC Body Armor program representatives and instructors from the Federal Law Enforcement Training Center.

Met with FBI attorney from OGC to discuss defense of lawsuit over Chicago firing range.

Toured Winchester ammunition plant, East Alton, Il.

Traveled to Chicago, Il. To function as expert counsel to FBI during live fire test, ordered by Federal judge, at FBI firing range.

Conducted body armor test.

Participated in telephone call to consult on Chicago range test.

#### May, 2008

Hosted members of the Bureau of Alcohol, Tobacco, Firearms and Explosives to discuss FBI wound ballistic theory and test methods.

Attended Diversity and Cultural Awareness training.

Hosted meeting with representatives from DHS to discuss FBI wound ballistic theory and test methods.

Tested protective steel plates and investigated cause of failures.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for FBI Principal Tactical Firearms Instructor's Conference attendees.

Met with FBI Laboratory Agent to discuss testing of ballistic protective vehicle.

Conducted testing to diagnose failures of ammunition.

Conducted ballistic test of M855LFS for DOD.

Drafted report of observations at Chicago range test.

Attended NDIA Small Army Symposium in Dallas, Tx., to receive Carlos Hathcock Award.

#### June, 2008

Met with DOD Agent to discuss testing of ballistic protective vehicle.

Completed training on "The New Field Intelligence".

Conducted high speed video of Glock 27 malfunctioning with the last two rounds in the magazine.

Attended Quantico Action Response Group (ARG) meeting on "Direct Action" concept for TD and ARG mission for active shooter.

Attended meeting with Secretary of the Army, in his Pentagon office, and JAG representative, to discuss M855 5.56 NATO ammunition. Provided professional opinion at his request.

Conducted high speed video of Glock pistol malfunctions.

Met with HRT Sniper Team Leader to discuss projectile trajectories and a computer program to predict them.

July, 2008

Met with USASOC personnel to discuss M855A1 5.56 NATO ammunition performance.

Conducted ballistic presentation and live fire demonstration for Technical Services Working Group and congressional representatives regarding the Modular Upper Receiver Group project for Colt Pattern Rifles.

Met with LAPD and New Smyrna, Fl, PD executive officers to discuss FBI wound ballistic theory and proper ammunition and weapon selection.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted ballistic test of armored vehicle.

Conducted testing of ballistic protective plates.

Conducted body armor testing.

Met with US AWG representatives to discuss high speed video, FBI wound ballistic theory, test methods and ammunition/weapon selection.

Conducted high speed video for FBI Laboratory Firearms Toolmarks Unit.

August, 2008

Conducted demonstration of potential for new munition to penetrate FBI issue body armor and make request for Finance Division to provide funding for enhanced protection.

Provided counsel to Office of Professional Responsibility Agent regarding the function of the M4 rifle.

Attended meeting regarding 5.56 NATO ammunition procurement.

Met with Department of State representative to discuss wound ballistics and ammunition selection.

Shot ballistic protective plates.

Provided presentation to FBI Firearm Instructor class. Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers

Provided training to FTU instructor regarding high speed video camera.

Conducted velocity test of projectiles fired from HRT rifles.

Conducted high speed video of gelatin testing and muzzle flashes for USASOC.

#### September, 2008

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted high speed video of rifle function.

Hosted meeting of ATK representatives to discuss ammunition testing methods.

Conducted test of Body Armor.

Shot high speed video of HK416 function.

Showed high speed video to H&K engineers. Shot additional video to aid in diagnosing malfunctions.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for Latin American Law Enforcement Executive Development Society.

Shot gelatin test of .223 Partition ammunition thru short barrel M4 carbines.

#### October, 2008

Attended Personal Armor Systems Symposium, Brussels, Belgium. Provided presentation on the FBI Body Armor Test protocol.

Conducted gelatin test of ammunition fired from HK MP7.

Conducted accuracy test of HRT rifles.

Conducted test of SOST rounds for US DOD.

Conducted test of ballistic plates.

November, 2008

Conducted test of 4.6 for HRT.

Attended government issued credit card training.

Conducted training on high speed video equipment.

Consulted with USASOC regarding wound ballistics and ammunition selection.

December, 2008

Conducted gelatin test of foreign threat ammunition.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted test of Sig Sauer P250 for DEA.

Conducted obstructed bore test of Sig Sauer P250 for DEA.

Attended briefing on Technical Services Working Group project.

Served as Acting Unit Chief of Defensive Systems Unit.

Met with USMC CWO4 to discuss terminal performance of M855LFS.

January, 2009

Met with HRT members to discuss potential effectiveness of personal defense weapons.

Met with DOD personnel to discuss issues with M855.

Participated in FBI Career Board.

Conducted quality control testing of .40 S&W and 9mm ammunition.

Conducted tour and discussion of FBI wound ballistic theory and test methods for Canadian Special Operations Forces.

Assisted Federal Game Warden with eradication of deer from airfield.

Conducted body armor testing

Conducted tour and discussion of FBI wound ballistic theory and test methods for members of US DOD JAG.

Conducted test of ballistic protective plate for US DOD.

Shot function test of Glock 23 pistols with FTU personnel present.

Shot vest test for U.S. Department of State.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for USMC CWO (Gunner) class.

#### February, 2009

Shot glass test for FBI and DOD entities.

Conducted velocity measurements for HRT.

Traveled to Afghanistan to exchange equipment.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

#### March, 2009

Consulted with FBI Agent regarding test of armored vehicle.

Met with CWO4 and Colonel from USMC to discuss FBI wound ballistic theory and test method.

Met with DEA Firearms instructor to discuss Glock pistol function issues.

Traveled to Aberdeen proving ground to witness test of 6.8x43 SPC against body armor.

Attended CTTSO/TSWG/TOS Ammunition Initiatives Meeting (AIM). Provided presentation on FBI wound ballistic theory, testing and ammunition/weapon selection.

Met with Winchester Ammunition representatives to discuss ammunition issues.



Conducted examination of LAPD pistols and provide guidance to their armors with respect to likely cause of damage and logical next investigative steps.

Met with US Customs and Border Protection representative to discuss the applicability of the .308 carbine to their mission.

Conducted body armor quality control test.

#### April, 2009

Conducted gelatin test of 10mm ammunition.

Participated in telephone call with United States Secret Service materials engineer regarding body armor and the FBI test protocol.

Participated in first meeting of Military Body Armor Test Standardization program.

Participated in numerous conference calls with ammunition manufacturer to discuss cause of defects experienced and proposed remedy.

Conducted high speed video of Glock pistol function.

Attended function testing of service ammunition.

Conducted gelatin test of service ammunition and high speed video of Glock pistol function.

Conducted accuracy test of training ammunition.

#### May, 2009

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Briefed USMC Weapons Training Personnel regarding ballistics.

Met with members of Fairfax, Va. Police Department to explain FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement use.

Met with members of a DOD entity to discuss projectiles, explain FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement use.

Met with USASOC at Fort Bragg to discuss wound ballistics and ammunition performance.

#### June, 2009

Conducted Gelatin test of .308 projectile.

Conducted ballistic plate test.

Conducted accuracy test of HRT rifles.

July, 2009

Attended training on Domestic Investigation Operational Guidelines.

Tested 5.56 carbine throat erosion suspected to be caused by ammunition.

Conducted accuracy testing of .308 and .223 ammunition.

Conducted body armor quality control test.

Conducted accuracy and velocity test of .300 Winchester Short Magnum.

Photographed carbine that had experienced catastrophic destruction.

Assisted Federal Game Warden with eradication of deer from airfield.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted accuracy test of Winchester 10mm 180 grain bonded ammunition.

Conducted test of Hornady SST Interlock .308 ammunition and Winchester 10mm 180 grain bonded when fired from an MP5-10.

August, 2009

Conducted test of ammunition at extreme temperatures for USASOC.

Shot gelatin test of Winchester 10mm.

Shot 100 yard gelatin test of Winchester 10mm.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for DEA PFI conference attendees.

Attended LWRC armorers course.

Hosted Remington to demonstrate ACR and MSR rifles.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Served as Acting Unit Chief of Defensive Systems Unit.

September, 2009

Served as Acting Unit Chief of Defensive Systems Unit.

Shot velocity test of frangible ammunition used by FBI field office.

Conducted high speed video for DOD entity.

Conducted high speed video training.

Conducted HS video of muzzle movement, tape over the muzzle of a sniper rifle and LWRC piston system function.

Shot ballistic test of protective vehicle.

Assisted Federal Game Warden with eradication of deer from airfield.

Met with Federal Prosecutors to provide ballistic expertise with respect to a Federal prosecution.

Shot gelatin test of 64gr. Gold Dot in 8" barrel 5.56 carbine.

Met with Finnish SUPO officer to discuss FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement applications.

Shot armored vehicle in support of Federal prosecution.

October, 2009

Served as instructor at Alabama Tactical Officer's Association. Classes taught included: Accuracy Expectations, Ammunition Selection, Body Armor testing - the FBI protocol and Weapon Selection.

Conducted gealtine test of Federal .223, 55gr. Trophy Bonded fired from an 8" carbine.

Assisted ATF with conducting accuracy testing of pistols for their procurement.

Conducted high speed video of simunition projectile impacts on safety glasses.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted high speed video of demonstration of effect of bomb for criminal case in the New York Division.

November, 2009

Conducted body armor test of wet vests.

Troubleshoot and repaired Oehler acoustic target system.

Met with USASOC, Fort Bragg, NC.

December, 2009

Served as Acting Unit Chief of Defensive Systems Unit.

Tested training ammunition in M4 carbines for Field Division which had experienced malfunctions.

Hosted meeting to discuss 5.56mm NATO ammunition request for proposal.

January, 2010

Conducted pressure test of .40 S&W ammunition.

Conducted accuracy testing of LaRue OBR.

Met with ammunition manufacturer to discuss issues experienced with their ammunition, observe their technicians firing the ammunition in service weapons and document and diagnose malfunctions.

Conducted velocity measurements for HRT.

Participated in teleconference of Armor Piercing Ammunition Working Group.

Participated in teleconference with engineers of ammunition manufacturer to discuss observations from 01/07/2010 test.

Attended SHOT Show, Las Vegas, NV. Attended multiple meetings with manufacturers to discuss ammunition and firearms for FBI use.

Conducted high speed video of muzzle flashes for HRT.

Conducted tour and terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for United States Air Force Major General.

February, 2010

Conducted ballistic testing for USASOC.

Hosted meeting with ammunition and firearm manufacturer to observe firing of proposed ammunition modification if FBI weapons.

Conducted meeting with ammunition manufacturer representatives.

Conducted test of body armor for HRT.

March, 2010

Hosted Director of Research and Development of AAC Silencers for sharing of high speed video and lighting techniques and their application for ballistic testing.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Designed, modified, retrofitted and tested chronograph setup in attempt to more accurately record projectile velocity.

Constructed fixture to allow precise measurement of projectile time in the bore of a handgun barrel. Ultimately energized the fixture with a 9v battery and recorded electrical changes via an oscilloscope, acoustic microphone and high speed video.

Observed firing of new ammunition. Recorded, documented and investigated malfunctions experienced.

Conducted pressure test of .40 S&W ammunition.

Attended Ammunition Initiatives Meeting II.

Conducted high speed video of primer setback. Discovered and documented cause of breach face damage experienced in FBI and other pistols.

April, 2010

Observed firing of modified ammunition, documented results and investigated any malfunctions which occurred.

Conducted high speed video of primer setback.

Custom loaded ammunition for use in undercover operation.

Provided presentations to the Program Manager's (Principal Firearms Instructor) conference. Topics covered included identification and disposition of defective ammunition, FBI wound ballistic theory and test method, ammunition and weapon selection for FBI use.

Provided training to USMC Precision Weapons Section personnel on operation of the Phantom high speed video camera.

Participated in teleconference of the Ammunition Working Group.

Conducted pressure and velocity testing of .223 ammunition.

Conducted accuracy testing of 5.56 ammunition.

Attended Cultural Diversity training.

Attended live fire rehearsal for congressional demonstration by the USMC.

Discovered postings on an internet forum which jeopardized security of DEA personnel in Afghanistan. Alerted DEA of their existence.

May, 2010

Hosted ballisticsian from projectile manufacturer to discuss FBI wound ballistic theory and ammunition test methods.

Met with ammunition manufacturer engineers and conduct ammunition testing.

Attended meeting with USASOC and manufacturer of Oehler ballistic measurement equipment to discuss potential improvements in data acquisition.

Provided training on Oehler ballistic instrumentation to USASOC personnel.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Conducted gelatin test of projectiles fired from MP7.

June, 2010

Observed New Agent trainees firearms training. Documented and investigated malfunctions experienced.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted velocity measurements for HRT.

Assisted Federal Game Warden with eradication of deer from airfield.

Received training on the use of a small metal working lathe.

Hosted employees from Dayton T Brown engineering and testing laboratory to discuss and demonstrate FBI wound ballistic theory, test method and selection of ammunition and weapons for FBI use. Also discussed and demonstrated FBI Body Armor Test protocol.

July, 2010

Provided consultation to HRT with respect to short barrel 5.56 carbines and the expected effect on the terminal performance of currently issued ammunition.

Attended Firearms Instructor Recertification training.

Assisted Federal Game Warden with eradication of deer from airfield.

Hosted DOD personnel to shoot LaRue OBR rifles.

Participated in teleconference of Ammunition Working Group.

Served as Acting Unit Chief of Defensive Systems Unit.

Conducted vest test for Pennsylvania State Police.

August, 2010

Hosted meeting to discuss 5.56mm NATO ammunition submissions.

Conducted gelatin test of 5.56mm NATO ammunition submissions.

Conducted accuracy test of 5.56mm NATO ammunition submissions.

Conducted muzzle flash test of 5.56mm NATO ammunition submissions.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

September, 2010

Met with Olympus representatives for demonstration of their high speed video systems.

Attended Personal Armor Systems Symposium in Quebec City, Canada.

Attended armorers course on the M4 carbine and hand fitting parts to build a 1911 style pistol.

October, 2010

Observed New Agent trainees firearms training using 5.56mm NATO contract ammunition. Documented and investigated malfunctions experienced.

Met with Training Division Assistant Director and Deputy Assistant Director. Provided tour of BRF and described its creation and mission. Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without

intervening barriers. Also demonstrated FBI body armor test protocol and effectiveness of FBI issued body armor.

Participated in presenting overview of Defensive Systems Unit to FBIHQ personnel.

Provided debriefing of successful competitors in 5.56mm NATO ammunition procurement.

Investigated and documented malfunctions experienced with 5.56mm NATO ammunition.

Spoke at Pentagon retirement ceremony of USDOD Senior Associate Deputy (General Counsel International Affairs) W. Hays Parks.

#### November, 2010

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Consulted with USASOC at Fort Bragg regarding ballistic test methods, measurement of velocity, group size and ballistic coefficient using Oehler M85, M57 and acoustic target. Also consulted on terminal and exterior ballistics.

#### December, 2010

Attended Deadly Force Training at FBI Academy.

Met with HRT Sniper Team Leader to discuss 7.62 carbines.

Attended debriefing of USMC testing of 5.56mm NATO M855A1 and SOST.

Conducted gelatin test of 6.8x43 110 Accubond.

Conducted velocity measurements of HRT rifles.

Assisted Federal Game Warden with eradication of deer from airfield.

#### January, 2011

Conducted body armor test for HRT.

Conducted pressure test of .40 S&W ammunition.

Accompanied DOD JAG personnel to witness live fire testing and provide terminal ballistic opinion on MK211 Raufoss ammunition impacting ballistic gelatin at Aberdeen Proving Ground.



Consulted with Montgomery County, Md., SWAT regarding the Discovery Channel Headquarters incident where an individual with a bomb took hostages. The incident ended with tactical action and a shooting. Consultation was related to the performance of the ammunition used by the SWAT Team.

Conducted velocity measurements for HRT.

Conducted velocity measurements for HRT.

Conducted accuracy test of .308 ammunition.

Met with representative from United Kingdom Home Office Scientific Development Branch regarding FBI wound ballistic theory, ammunition test method and cartridge/weapon selection for law enforcement applications.

Shot velocity test of .40 S&W ammunition.

Met with representative from Danish Institute of Forensic Medicine regarding FBI wound ballistic theory, ammunition test method and cartridge/weapon selection for law enforcement applications.

February 10, 2011 – August 31, 2012

Assisted HRT with concept and development of switch-barrel sniper rifle with both supersonic and subsonic capabilities.

Feb. 2011 – Retirement

Participated in research and development of .300 BLK loadings (both super and subsonic).

February, 2011

Conducted high speed video of buckshot impacts in gelatin for FBI Laboratory Firearms Toolmarks Unit.

Conducted 100 yard gelatin testing of ammunition fired from HK416C.

Met with USMC PWS personnel to discuss ballistic test methods.

Met with USASOC representatives to discuss FBI wound ballistic theory, ammunition test method and cartridge/weapon selection for military purposes.

March, 2011

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Traveled to Fort Bragg to assist USASOC in function test of 5.56 weapon systems. Provided consultation regarding ballistic test methods, measurement of velocity, group size and ballistic coefficient using Oehler M85, M57 and acoustic target. Also consulted on terminal and exterior ballistics.

Met with representatives of the FBI Engineering Research Facility to discuss measurement of firearm reports and possible methods of locating the firearm/shooter acoustically.

Consulted with United Kingdom Ministry of Defence regarding FBI wound ballistic theory, ammunition test method and cartridge/weapon selection for military applications.

Provided presentation on the FBI Ballistic Research Facility, FBI test method and wound ballistics to the Ammunition Initiatives Meeting III, hosted by the Technical Services Working Group in Tyson's Corner, Va.

Conducted accuracy testing of AB39 ammunition for HRT.

Conducted velocity measurements for HRT.

Attended training in calibrating piezoelectric transducers.

Received FBI Performance Management Training.

Attended demonstration of acoustic target system.

Shot accuracy test of .308 carbines for DSU enhanced range carbine program.

Consulted with DHS National Firearms Unit personnel on FBI test methods, high speed video and ballistic research.

Consulted with USASOC representatives to discuss FBI wound ballistic theory, ammunition test method and cartridge/weapon selection for military purposes.

April, 2011

Conducted test of firing pin damage in Glock pistols.

Completed COOP training.

Conducted test of firing pin damage in Glock pistols.

Conducted test of firing pin damage in Glock pistols, met with Gunsmiths to discuss results.

Conducted chronograph and Oehler M83 ballistic computer training for SSA assigned to replace me upon my retirement.

Performed reorganization of chronographs and test of multiple systems.

Participated in "Counsel of Colonels" meeting on medium caliber issues.

Conducted gelatin test of .300 Blackout 110gr. TSX.

Captured high speed video of flex of FBI Sniper rifle mounts during recoil.

Consulted with Technical Services Working Group and Special Operations forces on ballistic instrumentation to record velocity and Ballistic Coefficient. Conducted high speed video of weapon systems while firing.

Conducted load development of .300 Blackout ammunition.

#### May, 2011

Experimented with wireless communication systems for Oehler M83 system.

Attended training on discovery issues.

Tested prototype compact sniper rifles.

Shot high speed video of .308 rounds thru automobile glass.

Tested prototype compact sniper rifles.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Attended Accuracy 1<sup>st</sup> long-range rifle class in Canadien, Texas.

#### June, 2011

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for USMC new CWO (Gunner) class.

Consulted with Texas Rangers SWAT Team Captain regarding wound ballistics and ammunition/weapon selection for law enforcement applications.

Taught class on basic ballistics to HRT Sniper Team.

Consulted with U.S. Department of Commerce (DOC) regarding catastrophic failure they experienced with LWRC 6.8 PSD. Participated in meeting between the DOC, LWRCI and the ammunition manufacturer to attempt to identify the cause of the failure.

Conducted briefing on wound ballistics and the FBI BRF for the Wounded Warrior visitors to the FBI Academy.

July 1, 2011

Provided consultation to DEA FAST Unit regarding .308 rifles and .338 Lapua Mag rifles.

Participated in the Technical Services Working Group Joint Medium Caliber Working Group at Harpers Ferry, West Virginia.

Consulted with USASOC at Fort Bragg.

Conducted High Speed video of FBI Sniper rifles and Night Vision Mounts.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for FBI Field Firearms Program Manager Conference.

August, 2011

Assisted USASOC with first article testing (accuracy) of 7.62 battle rifle.

Conducted testing of Rock River .40 S&W pistols.

Performed as a voting member on Career Board for Firearms Training Unit SSA position.

Performed gelatin testing of .308 ammunition.

Performed temperature extreme testing of Rock River pistols.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Completed Active Shooter Awareness training.

Consulted with USASOC.

Sept., 2011

Conducted testing for USASOC, to include High Speed Video, at the BRF.

Attended NDIA International Ballistics Symposium, Miami, Florida.

Consulted with Tuscaloosa Metro Homicide on the possibility of a 9mm projectile, fired from approximately 417 yards, to penetrate sufficiently deep to cause a death.

Researched the most probable cartridge used in the homicide, conducted test shots into

gelatin at 420 yards and also downloaded projectiles to simulate extreme ranges.  
Reported results of testing for use in criminal prosecution.

Consulted with personnel from other Govt Agencies on body armor and penetration potential of uncommon cartridges.

Hosted meeting with manufacturer of triggers for Colt pattern carbines.

Met with USMC Range Control personnel to discuss possible BRF range improvements.

#### October, 2011

Met with representative of Alcohol, Tobacco, Firearms and Explosives to assist in diagnosis of ammunition issues they were experiencing.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for DOD Director of Testing and Evaluation.

Conducted test of body armor in presence of manufacturer.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Took aerial photos of the BRF and FBI Academy range complexes.

Provided presentation at the USMC Combat Marksmanship Symposium. Subject was the FBI BRF creation and mission and FBI wound ballistic theory, test method and ammunition/weapon selection.

#### November, 2011

Provided presentation at the 57<sup>th</sup> Allied Land Warfare Technical Intelligence Conference at the National Ground Intelligence Center, Charlottesville, Va. Subject was the FBI BRF creation and mission and FBI wound ballistic theory, test method and ammunition/weapon selection.

Successfully completed Domestic Investigations and Operations Guidelines (DIOG) training.

Assisted in identifying differences between GameKing and MatchKing projectiles.

Consulted with USASOC at Fort Bragg.

Viewed mandatory training video "Betrayed"

#### December, 2011

Assisted HRT with HS video of shooting thru glass.

Provided overview of wound ballistics and projectile performance for USMC PP&O at Henderson Hall.

January, 2012

Created foil trigger screens for the Oehler M35P chronograph. Test against M35 skyscreens showed it to be accurately recording velocity.

Assisted other Government Agency with respect to body armor.

Traveled to SHOT Show in Las Vegas. Attended meetings for the FBI and USASOC.

February, 2012

Conducted Gelatin test of .300 BLK loads.

Conducted accuracy and velocity testing of .40 S&W samples.

Conducted gelatin and frangibility testing of .40 S&W cartridges.

Conducted post 2k round accuracy test of 7.62 carbines.

Conducted test of ballistic plates.

Hosted demonstration and familiarization fire of unique rifle brought over by the Laboratory.

Tested current production .40 against procurement .40.

Conducted .40 gelatin tests.

Conducted HS Video of Glock Gen 4 modified ejectors.

Provided ballistic consultation to the SWAT Operations Unit.

Hosted USMC Scout Sniper Instructor School to discuss long range ballistics.

Shot accuracy and velocity and obstructed bore test of the Rock River .40 S&W carbine.

Shot ESAPI plates for the USMC WTBN.

Tested subsonic ammunition for accuracy and velocity.

Provided ballistics brief to the National SWAT Sniper Symposium in Reston, Va.  
Discussed FBI BRF creation and mission and FBI wound ballistic theory, test method and ammunition/weapon selection.

Consulted with USASOC.

March, 2012

Conducted live fire demonstration for NA.

Attended long range training at Accuracy 1<sup>st</sup>, Canadien, Tx.

Hosted USASOC, for gelatin testing and HS video of weapons firing.

Attended AIM IV, Tyson's Corner, Va. Received Service Award from TSWG, TOS, CTTSO.

Conducted HS video of gelatin impacts.

Conducted test of a ballistic shield for SWAT.

Received formal recognition from USASOC for assistance provided and relationship created.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Met with CEO and head ballistcian of projectile manufacturer to discuss projectile design, test methods and terminal performance specifications.

April, 2012

Participated in repeatability test of silencers.

Conducted HS video of obstructed bore test of three rifles for USMC.

Met with Hays parks to discuss a particular cartridge and its application for USASOC.

Met USMS SOG, to discuss FBI wound ballistic theory, test method and ammunition/weapon selection for law enforcement applications.

Met with Pietro Fiocchi and others from Fiocchi to discuss FBI wound ballistic theory, test method and ammunition/weapon selection for law enforcement applications.

Met with USASOC personnel and ammunition manufacturer to discuss test methods and terminal performance standards.

May, 2012

Attended TSWG Next Generation Combat Rifle symposium in Altoona, Pa.

Meet with Training Division Executive Management team. Provided tour of BRF and described its creation and mission. Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers. Also demonstrated FBI body armor test protocol and effectiveness of FBI issued body armor.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

Consulted with HRT PFI on wound ballistics and accuracy.

Assisted Federal Game Warden with deer eradication at a Government installation.

Captured HS Video of muzzle flashes with various muzzle breaks and silencers.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for FBI Firearms Instructor class.

Traveled to Rapid City, SD., to tour Black Hills Ammunition and participate in long range rifle testing/training with members of USASOC.

Received training on operation of new BRF microscope.

June, 2012

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for USMC CWO (Gunner) course.

Participated in .40 S&W procurement testing for Service, Training, Training Reduced Lead and Frangible ammunition.



Traveled to Fort Bragg to film gelatin shots for USASOC and to be recorded explaining wound ballistics for a video training series for their continuing education section.

Assisted USASOC presenter by being available subject matter expert during Wound Ballistics presentation to JSOC Command SgtsMaj. Conference.

July, 2012

Met with HRT Snipers to discuss Sniper Spotting Scope with integral atmosphere and ballistic data.

Met with TSWG and HRT to view prototype Sniper Status System concept demonstration.

Participated in conference call with ammunition manufacturer to discuss issues experienced with their ammunition.

August 2012

Participated in testing for FBI Body Armor Procurement.

Conducted accuracy testing of effect of overall length on the accuracy of service ammunition when fired from service weapons.

Met with United States Secret Service Special Operations Division Counter Action Team representative to discuss FBI wound ballistic theory, test method and selection of ammunition and weapons for law enforcement use.

Assisted Federal Game Warden with deer eradication at a Government installation.

Conducted gelatin test of German ammunition for DOD advisor.

Conducted liaison with other Government agency at their headquarters.

Completed 2012 Continuity of Operations (COOP) Training.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for FBI Firearms Instructor Course.

Conducted terminal ballistic demonstration and discussion of appropriate methods of selecting ammunition and weapons, including live-fire of projectiles into tissue simulant with and without intervening barriers, for National Academy class.

August 31, 2012 - Retired from FBI.

September, 2012

Taught basic sniper school, Tuscaloosa, Al.

October, 2012

Formed Boone Ballistics, LLC

December, 2012

Presenter at Naval Special Warfare Development Group Sniper Symposium.

Topics covered included:

Wound Ballistics

Weapon Selection

Ammunition Selection

Sniper specific ballistics and accuracy facts

April, 2013

Provided ballistic training to Tuscaloosa County Sheriff's Department SWAT Team

Participant in Technical Services Working Group (TSWG) sponsored conference call on Medium Caliber cartridges

May, 2013

Participant in TSWG sponsored conference call on Medium Caliber cartridges

June, 2013

Provided advanced Sniper Training to Tuscaloosa County Sheriff's Department SWAT Snipers

Participant in TSWG sponsored conference call on Medium Caliber cartridges

Participated in Medium Caliber meeting hosted at Fort Benning and sponsored by TSWG.

September, 2013

Taught basic sniper school, Tuscaloosa, Al.

November, 2013

Provided advanced and basic sniper training to Tuscaloosa County Sheriff's Department SWAT Snipers.

December, 2013

Presenter at Naval Special Warfare Development Group Sniper Symposium