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**THE EFFECTIVENESS OF THE SECONDARY WEAPON OF
THE WEST VIRGINIA STATE POLICE**

**Thesis submitted to
The Graduate College of
Marshall University**

**In partial fulfillment of the
Requirements for the degree of
Master of Science in Criminal Justice**

by

Jesse Andrew Davis

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4/24/03

ABSTRACT

**THE EFFECTIVENESS OF THE SECONDARY WEAPON OF
THE WEST VIRGINIA STATE POLICE**

By Jesse Andrew Davis

The present study examines the effectiveness of the West Virginia State Troopers' secondary weapon, Oleoresin Capsicum (OC) pepper spray (CAP-STUN®), as a means of alternative use of force for non-cooperative subjects. The WV State Police have adopted OC in an effort to reduce the number and severity of injuries sustained by suspects. This method was adopted as an optional means to effect arrests through non-lethal force. The use of OC can control and restrain individuals while causing the least possible harm to the individuals without increasing danger to troopers or others. Questionnaires were sent to West Virginia State Troopers for their responses and opinions of the efficiency of OC pepper spray. The study explores troopers' perceptions of OC as a weapon of safe and effective use-of-force.

DEDICATION

Dedicated To My Parents:

James and Debbie Davis

For their support and encouragement through seven long years of college.

ACKNOWLEDGMENTS

The author wishes to thank Dr. Elaine Bartgis and Dr. Deanna Shields for all their hard work and effort in helping me conquer this large and complex project. Their dedication and hard work has given me the strength to finish my graduate studies and thesis. They have pushed me to exceed even more when I thought I was at my fullest potential. Without them, I could not have the ability to come out of this experience with the foresight and understanding I have today. An unknown writer once wrote, “To the world you might be one person, but to one person you might be the world.”

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Again, I would also like to thank my parents, Debbie and James Davis, for their love and patience through the past years. You have always been there for me through hard times and good times. Thank you for sending me to college and helping me become the person I am today. I am blessed to have the greatest parents in the world.

Stress is an ugly thing; it can turn your friends into your enemies and your nightmares into reality. Thank God I am finished.

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CHAPTER I

Introduction

The use-of-force is an essential component of police work. Sometimes, use-of-force has a negative consequence, which is likely to cause death or great bodily harm. Deadly force may be necessary when less-than-lethal force technology does not work. Less-than-lethal weapons are designed to minimize the risk of death and injury to correctional and law enforcement officers, individuals, suspects and the public. From blunt-impact projectiles to baton use, less-than-lethal technologies enable law enforcement officers to temporarily disable individuals while increasing standoff distance and gaining a few precious seconds to secure control of a situation. Moreover, less-than-lethal weapons allow low-level threats to be contained immediately and reduce the threat of a lawsuit (Lane, 1999). Efforts to provide law enforcement officers with less-than-lethal weapons began in 1987 (Schmallegger, 2002). Other weapons that are considered less-than-lethal are: stun guns, tasers, rubber bullets, beanbag projectiles and pepper sprays. Chemical and electroshock weapons, although excruciatingly painful, do not result in lacerations, bruises, broken bones or other visible signs of injury. Physiological effects from CAP-STUN®, such as gagging, loss of breath, burning sensation to the eyes, mouth and nose; usually dissipate within 45 minutes of use (Zarc International Inc., 2002).

In the performance of their duties, troopers at times are called upon to defeat strong physical resistance or terminate acts of violence, regardless of the size and condition of either the trooper or the resisting/violent subject. West Virginia State Troopers have the lawful authority to use force in the performance of their duties in accordance with the mandates of West Virginia State Law of the Department's use-of-force policy. As of 1994, every member of the West Virginia State Police has been issued a secondary weapon called CAP-STUN®, Oleoresin Capsicum (OC) pepper spray, a device used in controlling uncooperative individuals by non-lethal means. All members have been trained and certified to use this weapon. This device could greatly increase public and officer safety by providing an effective non-lethal method of quickly and safely incapacitating violent or resisting subjects during arrest and custodial situations.

Before 1994, Chemical Mace was the secondary weapon of the West Virginia State Police. In order to compare Chemical Mace to the current CAP-STUN®, an oral interview was conducted with Sgt. James A. Davis of the West Virginia State Police. Sgt. Davis has served 17 years with the West Virginia State Police therefore Sgt. Davis was asked to discuss the

differences between CAP-STUN® and Chemical Mace and opinions of the weapons, which he stated:

OC is made up of a mixture of cayenne pepper and alcohol. From what I can remember Chemical Mace is a CN gas, which is tear gas. OC is a much more superior secondary weapon because it has an immediate effect while Chemical Mace takes 5 to 30 seconds to become effective. A lot can happen in 5 to 30 seconds whenever a police officer needs to subdue an individual. In my opinion, OC (CAP-STUN®) has a much better success rate. With my many years of service in the WV State Police, I have had the opportunity to use both of these secondary weapons. The main problem with Chemical Mace was that whenever you sprayed an individual, the stream of spray had to be administered directly in the face. After the individual was sprayed, it contaminated not only the individual but also the area around him. If the individual was then placed in the cruiser, it contaminated the inside of the cruiser as well as the police officer. On several occasions, I have had to drive with my windows down in my cruiser while transporting the individual. On a few occasions, when using Chemical Mace, it just made the individual more belligerent and harder to handle. By that time I had the Chemical Mace on me, whereas OC stays on the individual and has an instant effect once administered. In my opinion, there were few pros resulting from the use of Chemical Mace. When Chemical Mace was first introduced as a secondary weapon, it served its purpose since it was the only product of its kind on the market at that time. However, as I have previously stated, there were some negative issues relating to this product. That being the delayed time in its effectiveness and the contamination factor. I have no complaints with OC. It is definitely an effective secondary weapon. I have used it on several occasions and have witnessed it used on several occasions. I have never seen it fail to date (Personal Communication, 2003).

The previous interview distinguishes the differences between Chemical Mace and CAP-STUN® and the opinion of an experienced trooper. Many other West Virginia State Troopers have expressed their opinions of the weapon for further review, which are analyzed in the findings.

CHAPTER II

Review of Literature

Oleoresin Capsicum (OC) “pepper” spray (CAP-STUN®) has gained wide acceptance as a swift and effective force method to subdue violent, potentially dangerous individuals in the prehospital and law enforcement setting (Chan, Vilke, Clausen, Clark, Schmidt, Snowden, & Neuman, 2002). According to Kaminski, Edwards & Johnson (1999), attesting to its popularity and presumed effectiveness, several national surveys indicate that (OC) spray has been widely adopted by law enforcement agencies all over the nation in the last decade. According to the International Association of Chiefs of Police (IACP), 97% of all U.S. police departments are now using oleoresin capsicum (OC) pepper spray as an alternative means to lethal force (*Top Government Agencies Sign on for New CAP-STUN® Pepper Spray Training*, 2002). The adoption of such spray by police has not been without controversy. Much of the controversy has focused on health risks associated with the effects of (OC) (CAP-STUN® OC Products, 2002). Much of the early enthusiasm surrounding (OC) is linked to its alleged high effectiveness rate. There is mounting evidence that (OC) may not work on violent, goal-oriented, mentally ill or intoxicated attackers (Morabito & Doerner, 1997). Furthermore, (OC) has been implicated as a contributing factor in a number of police in custody deaths (Kaminski et al., 1999). Its formulation is based on Oleoresin Capsicum (OC), a powerful inflammatory agent that occurs naturally in cayenne peppers. CAP-STUN®’s success rate is derived from a variety of factors and ratios related to propellant, solvent, pressure, mixture, and the type of OC (Zarc International Inc., 2002). CAP-STUN® has been manufactured by Zarc International, Inc. since 1976, and was first used in Australia (McCulloch, 2001). Since then, it has been field tested and proven effective without harmful after-effects by numerous law enforcement agencies throughout the United States (Zarc International Inc., 2002). CAP-STUN® is the official name and will be used primarily throughout this study.

Ingredients of CAP-STUN®

According to Zarc International Inc., capsicum is a plant of the genus capsicum, as *C. Frutescens*, the common pepper of the garden, occurring in many varieties that range from mild to hot, having pungent seeds, also ranging from mild to hot, enclosed in a podded or bell-shaped pericarp. Capsicum encompasses twenty species and some 300 different varieties of pepper plants. Oleoresin is a mixture of an essential oil and a resin, found in the dried ripe fruits of

capsicums and contains a complex mixture of highly potent organic compounds. The property that separates the Capsicum family from other plant groups – and the very essence of the chili pepper – is an alkaloid called capsaicin, an unusually powerful and pungent crystalline substance found in no other plant. Capsaicin is a colorless, crystalline, bitter compound present in capsicum. Glands at the juncture of the placenta and the pod wall produce capsaicin. The capsaicin spreads unevenly throughout the inside of the pod and is concentrated mostly in the placental tissue. The seeds are not sources of heat. Capsaicinoids is not a single substance and is found in five different compounds within chili peppers.

According to Zarc International Inc., capsaicinoids are the ingredients that are caused by the burning sensation and inflammation of the mucous membrane. Capsaicinoids are the source of "hotness" in chili peppers (2002). There are five naturally occurring capsaicinoids: capsaicin, dihydrocapsaicin, nordihydrocapsaicin, homocapsaicin, and homodihydrocapsaicin. According to Reilly, Crouch & Yost, while nordihydrocapsaicin, homocapsaicin, and homodihydrocapsaicin are present, they generally contribute little to the total capsaicinoid concentration and pungency of the pepper (2001). The total concentration of capsaicinoids in a pepper ranges from 0.1 to 2.0% (dry weight) and depends upon the variety of the pepper, the growing conditions, and the time of harvest (Reilly et al, 2001). In the 5.5% CAP-STUN® concentration, there is 0.92% of capsaicinoids (Zarc International, Inc., 2002).

What is CAP-STUN®?

CAP-STUN® is an organically based, less-than-lethal aerosol weapon designed to incapacitate, with no lasting after-effects (Zarc International Inc., 2002). In most instances CAP-STUN® 5.5% will immobilize an attacking human or animal for up to 45 minutes (Zarc International Inc., 2002). The 5.5% concentration products are designed for law enforcement and military personnel, and not intended for resale to the general public. The 1 % concentration is available to private security and the general public where use is allowed by law (Zarc International Inc., 2002). The capsaicinoids in the proper dosage will produce an inflammatory effect that produces physiological effects. According to Zarc International Inc., these effects include:

- Eyes: Immediate closing of eyelids
- Respiratory: Uncontrollable coughing
- Skin: Intense burning sensation

Because of the inflammatory agent, CAP-STUN® swells mucous membranes, causing an immediate closing of the eyes, uncontrollable coughing, gagging, and gasping for breath. CAP-STUN® causes a sensation of intense burning of the skin and mucous membrane inside the nose and mouth. Applying CAP-STUN® to an assailant should cause a loss of coordination substantial enough to subdue the subject. These physiological effects prevent any further aggressive behavior, resulting in an immediately compliant subject. These effects usually dissipate within 45 minutes (Zarc International Inc., 2002).

CAP-STUN® has different spray patterns. The preferred method of spraying depends on the circumstance of application. Such circumstances include individual control, crowd control, and indoor or outdoor use. The spray patterns used in pepper spray are cone & fog, foam, and stream (Zarc International Inc., 2002).

- Cone & Fog – Spray patterns that atomize and cause a mist in the air are more susceptible to wind movements and are not stable while airborne. The smaller air particles in this spray can be inhaled and therefore affect the respiratory system. This spray requires precision aiming because of the large spray pattern. The physiological effects are faster due to the smaller air particles immediately depositing on mucous membranes (Zarc International Inc., 2002)
- Foam – Foam has similar characteristics to cone & fog but has minimal effect on the respiratory system. This type of spray can be used indoors but due to its soapy nature, it will cause further contamination when it gets on clothing, furniture or patrol car seats (Zarc International Inc., 2002). The potential of vomiting and gagging is evident due to rapid inhalation.
- Stream – The stream has a narrow pattern and is less susceptible to wind movement. Multiple shots may be required because of the difficulty to cover both eyes at once. The drawback to the stream pattern is that the subject can block the shot with his/her arm.

The West Virginia State Police use the standard duty Z-305 spray utilized for spraying one or more subjects. This spray is more potent than the training T-305 spray. The T-305 is recommended for training and at the same time delivers performance to the Z-305 with the exception of the active ingredient OC. According to Zarc International Inc., 2002, the standard duty Z-305 has these characteristics:

Figure 1

Characteristics of Standard Duty Z-305

Oleoresin Capsicum:	5.5%
Capsaicinoids:	0.92%
Carrier:	Isopropyl Alcohol
Propellant:	Isobutane/Propane
Shots:	6 One-Seconds
Range:	4.5m (15 feet)
Pattern:	Cone
Actuator:	Gun Type Trigger
Lock:	Storage and Holster (Trigger Lock)
Holster:	305 Models

According to Zarc International Inc., (2002) the Training T-305 has these characteristics:

Figure 2

Characteristics of T-305

Peppermint:	1%
Oleoresin Capsicum	0%
Capsaicinoids:	0%
Carrier:	Isopropyl Alcohol
Propellant:	Isobutane/propane
Shots:	6 One-Seconds
Range:	4.5 m (15 Feet)
Pattern:	Cone
Actuator:	Gun Type Trigger
Lock:	Storage and Holster (Trigger Lock)
Holster:	305 Models

Law enforcement officers use the model Z-305 because of its powerful ingredients. The training model T-305 has no OC, which allows for no physiological effects with a peppermint fragrance for easy identification while training. Both devices have the same features except for the components that make the spray burn on contact.

Why CAP-STUN®?

CAP-STUN® allows an officer to remain out of reach when utilizing the weapon. When direct contact is not necessary, the user of the spray can be at a safe distance to incapacitate several subjects. The pressure maintained in the canister is always at the highest strength so that maximum range and are ensured. According to Zarc International Inc., a safe distance of 4 to 6 feet is recommended for best results (2002). A one to two second burst to the face of the subject is adequate to control the circumstance. A second application should be considered if the combative subject fails to exhibit signs of submission and continues to display hostile behavior.

The CAP-STUN® composition is based on a food ingredient and has no long-lasting side effects or after-effects. According to Zarc International Inc., in over 15 years of field experience, there has not been any substantiated instance of adverse reaction to the spray by any subject with respiratory illnesses, heart problems, or poor reflexes (2002). As a defensive weapon, mace is

too powerful and may leave residual damage in some cases, prompting lawsuits against the police and private citizens who use it (*Time*, 1990).

CAP-STUN® has been proven to control attacking animals such as dogs, zoo animals, and domestic animals. Attack dogs can be restrained with a one-two second burst to any facial areas such as nose, mouth, and eyes. Comparable physiological effects can be experienced on some species of animals and on humans. The use of such spray is a safe and humane manner of control without having to resort to a more serious course of action.

Justified Use-of-Force

The use of CAP-STUN® is at the sole discretion of the police officer. It causes no permanent injury and could be used in the use-of-force continuum in police departments. There are many use-of-force options available but the officer must determine which option is appropriate in combating an unruly subject. Police officers should not become too dependent on this option but should know this option is deployed. According to Zarc International Inc., critical circumstances should be considered in the use of CAP-STUN® as a way to overcome a hostile individual (2002).

CAP-STUN® is used for the purpose of:

- Providing momentous control over highly aggressive, violent or emotionally disturbed subjects.
- Overpowering those under the influence of alcohol or narcotics that are not obedient.
- Controlling single or multiple subjects who are not compliant.
- Reducing injury from physical contact and other risks from both officer and subject.
- Minimizing the need to heighten levels of force.

CAP-STUN® should be used to:

- Perform an arrest of a disobedient subject.
- Prevent injury to an officer or the subject being arrested.
- Defending an officer in the event of a physical attack.
- Control a subject who is posing a threat to others.

CAP-STUN® should not be used when:

- The subject succumbs calmly to an arrest.
- The subject submits to lawful commands.
- The subject is articulating sheer verbal strife that does not endanger the officer or bystanders (Zarc International Inc., 2002).

Defensive positioning and tactics are vital is the usage of CAP-STUN®. At a normal distance, ranging from 4 to 6 feet, the officer has a reactionary gap in the event of aggressive action. A proper defensive position can maximize officer safety. According to Zarc International Inc., proper defense position is accomplished by approaching or facing the aggressor at a 45-degree angle (2002). While spraying, the weak foot should remain forward while the strong foot should be in the rear of the stance. The spray should be held in the strong hand along side the strong leg. The weak hand should remain open with a slight bend at the elbow (Zarc International Inc., 2002). While at this position, this movement will prevent the aggressor from getting too close to the officer. In certain situations, the weak hand can be used as a support to the strong hand in which the spray is being projected.

The Use-of-Force

In 1967, the President's Commission on Law Enforcement and Administration of Justice recognized the need for written policies to guide and to limit the use of force (Thompson & Dowling, 2001). Law Enforcement agencies have adopted formal policies and training initiatives to achieve this objective. According to Thompson & Dowling, these use-of-force policies outline appropriate behavior in situations where force must be deployed to detain or apprehend a criminal suspect (2001). Well-written documents and policies often fall short of addressing the range of conceivable situations law enforcement officers are likely to encounter. Use-of-force policies serve as general guidelines. Deadly or lethal force is likely to result in death or serious physical injury, but self-restraint may be enhanced by several factors, including the proper use of less-than-lethal (LTL) force such as chemical sprays (McEwen, 1997). According to Sifling-Aardema, historically, a deceased person's representatives would assert that the use of deadly force was not justified. Now in many cases, when it is determined that an officer was legally justified in exerting deadly force, plaintiffs claim that less lethal alternatives should have been used or been available to officers trained to use them (2000).

There has always been a great public debate on police force. According to Smith & Alpert (2000), famous incidents that created debate and led to civil disturbances and police reform were the beatings of Arthur McDuffie in Miami (1979), Rodney King (1991) in Los Angeles, and the beating of Malice Green in Detroit (1996). The beating of Rodney King and Malice Green are deadly force incidents characterized by the misuse of LTL weapons (McEwen, 1997). Because of these situations, police departments have examined their use-of-force, its justifications, levels, and methods (Smith & Alpert, 2000).

The need for a LTL weapon from the perspective of law enforcement arises on several occasions. Particularly some type of coercive action is needed, but not deadly force. The idea behind less-lethal technologies is to help officers stop, control, and restrain individuals and not increase the danger to officers and others (Sifling-Aardema, 2000). These tools give law enforcement officers the option of controlling dangerous suspects in potentially life-threatening situations without resorting to the use of firearms (Belotto, 2001). According to Manning, the most powerful tool of all, words, the “core technology of policing,” is minimized while other technologies-metal batons, martial arts, choke holds, leg grabbers and nets, and more recently the most preferred tool, pepper spray (2000). There is no better way to illustrate the law enforcement community’s total commitment to minimize the effects of force during the course of their duty, than when an officer subdues a dangerous suspect without causing injury to him, even though the use-of-force is appropriate. McEwen advises that scenarios that include close encounters are comprised of: breaking up bar fights, interviewing in domestic disputes, hostage situations, barricades and crowd control (1997). Police officers clearly respond to these situations where LTL force action is appropriate. Therefore, police agencies should provide LTL weapons to their officers, with the necessary training and procedures for weapon use.

All police departments give a definition of lethal or deadly force, and about half include a definition for less-than-lethal force or non-deadly force (McEwen, 1997). There are controversies over lethal and less-than-lethal force. The International Association Chiefs of Police (IACP) definition of deadly force is:

Lethal force shall mean force used with the purpose of causing, or which will create a substantial risk of causing, death or serious harm. The discharge of a firearm will be considered to be use of lethal force, however, lethal force can be expanded to include the

use of non-lethal weapons and force, if the intent in their use is to cause physical injury [emphasis added] (McEwen, 1997).

One police department extends the definition of lethal force as follows:

...any force which is likely to cause death or serious injury, which includes, but is not limited to: (a) the firing of a firearm in the direction of a person to be arrested, even though no intent exists to kill or inflict great bodily harm; (b) the firing of a firearm at a vehicle in which a person to be arrested is riding; (c) the ramming of a vehicle or the use of a stationary roadblock; and (d) the use of any weapon/other force which may likely result in death or serious physical injury (McEwen, 1997).

These definitions of lethal force are not accurate in detailing the use of a chemical agent that shall subdue an individual. CAP-STUN® is not a lethal means of suppressing an individual. According to these definitions of lethal force, the use of a weapon, which in turn may result in death or physical injury, is considered lethal force. Police departments should expand their definitions of LTL force. According to McEwen, one department divides LTL force into restraining force, physical force and defensive force, with the following definitions:

Restraining force: Force limited to holding and restraining persons, including but not limited to, arm lock and takedowns holds, but not including carotid artery holds.

Physical force: Pain-inflicting submission holds to overcome resistance to arrest.

Defensive force: Physical battery with hands, fists, or defensive equipment to overcome violent resistance or to protect self or others from assault or injury (McEwen, 1997).

The advantages of these expanded definitions are that they are more specific about what constitutes lethal and LTL force. Several departments recognize that lethal force can occur with vehicles and LTL weapons, and their policies expand their definitions to make clear that lethal force goes beyond the use of firearms. In addition, several departments recognize that the definition of LTL force should be more than merely “force that is not lethal,” and have expanded their definitions of LTL force accordingly (McEwen, 1997). According to Lumb and Friday in many law enforcement agencies, (OC) spray is placed between the passive or cooperative stage of verbal communication and the assaultive level stages involving some sort of LTL weapon. Also, (OC) is low on the use-of-force continuum because it does not show a tendency for serious medical injury (1997).

West Virginia Code §15-2-25 gives the Superintendent of the West Virginia State Police authority to make and promulgate proper rules and regulations for the government discipline and control of the Department. The use-of-force Policy in the West Virginia Criminal and Traffic Law Manual states:

“that its members shall use only that force that is reasonable necessary to effectively bring an incident under control, while protecting the lives of the member or another” (Cogar, 2002).

Through this policy of the West Virginia State Police, Troopers have the authority to use whatever force is reasonably necessary to bring an incident under control. The use-of-force continuum of the West Virginia State Police is not available for the public and this study. According to Zarc International Inc., CAP-STUN® is not a lethal weapon (2002). Police Departments should change their use-of-force policies to accurately reflect Zarc’s policy statement concerning CAP-STUN®.

Deaths Related to CAP-STUN®

Civil Liability is a potential consequence when police officers use discretion in a decision involving the use-of-force. According to a legal opinion by Trimmer (1993) of the North Carolina Justice Academy, there is a complete absence of reported appellate court cases fixing liability for excessive force in the proper use of (OC) (Lumb and Friday, 1997). There have been serious outcomes following the use of CAP-STUN®. Lumb and Friday found that there were a total of 30 incidents in which the death of a subject occurred following the use of (OC) between August 1990 and December 1993. Through a review of these cases, the IACP was able to obtain police and autopsy reports and concluded that (OC) was not the cause of death in any of the cases (1997). There have been no deaths in connection to CAP-STUN® (Zarc International, Inc., 2002). In an article published by the IACP entitled “Pepper spray and In-Custody Deaths” John Granfield, Jami Onnen, and Charles S. Perry M.D. stated:

Our review concluded that, in these cases, OC (pepper spray) was not a factor in any of the deaths and that something else caused the subject to die. More specifically, it was concluded that in 18 of the 22 cases positional asphyxia was the cause of death, with drugs and/or disease also being the contributing factors. In the remaining four cases, three involved a drug (cocaine) - related death, and one involved a drug (cocaine)

disease-related death. The reviews' results indicate that OC was not the cause of death in any of the cases (2002).

Studies Involving the Use of CAP-STUN®

Despite conflicting perspectives regarding the risks and potential misuse of CAP-STUN®, citizens' groups have tried to restrict or prohibit law enforcement use of pepper spray. Efforts to ban CAP-STUN® pose a dilemma for law enforcement as most studies indicate that it is highly effective in helping officers subdue resistive and violent suspects, and several evaluations suggest the adoption of CAP-STUN® by police departments leads to reductions in the incidence of more serious forms of force: deadly force, impact weapons, fewer assaults on officers, fewer officer-suspect injuries, and fewer excessive force complaints (Kaminski et al., 1999). According to Morabito & Doerner in 1997, it is estimated that 41 percent of major public safety agencies in the country are equipped with CAP-STUN®.

A study was conducted by the Baltimore County Police Department (BCoPD), involving the use of (OC) spray (CAP-STUN®). The spray was introduced into the Department for all the officers over a five-month period in 1993 (Kaminski et al., 1999). The officers were instructed to apply the (OC) when suspects failed to comply with verbal instructions and officers were about to utilize hands-on tactics to defend themselves against active hostile resistance before or after the arrest was occurring. In one portion of the study, officers were instructed to describe a situation involving the application of (OC) and whether or not it eased the arrest. In total, there were 878 incidents available for analysis. Based on the responses, (OC) was classified as: totally effective (28.2 percent) when it incapacitated subjects; effective (42.5 percent) when suspects were submissive after exposure; minimally effective (14.7 percent) when suspects resisted, evaded arrest, or fought with the officers or others after being sprayed, but (OC) still helped to make the arrest; ineffective (10.3 percent) when suspects resisted, fought, evaded arrest and (OC) did not help ease the arrest; and totally ineffective (4.3 percent) when officers reported that it had no effect (Kaminski et al., 1999). In addition, subjective accounts by police officers suggested that mentally disturbed suspects and those under the influence of drugs and alcohol are less susceptible to the effects of (OC) spray. Through this study, the measure based specifically on suspect behavior after exposure produced an effectiveness rate of only 70.7 percent, which is less than the rates reported in previous studies (Kaminski et al., 1999).

The effectiveness of CAP-STUN® also has been examined in Portland Oregon, New Britain Connecticut, and British Columbia (Smith & Alpert, 2000). According to Smith & Alpert, effectiveness ranged from 85 percent in the Portland study to 95 percent in the Connecticut study. During the two-year period prior to the adoption of pepper spray by the Portland police, 69 percent of suspects and 31 percent of officers involved in use-of-force incidents were injured. After CAP-STUN® became available, only 12 percent of officers and suspects were injured during use-of-force encounters. In the Connecticut study, there were no officers injured in the 360 uses of CAP-STUN® (2000).

The New York State Police administered a pilot study of (OC) and the fifty-five documented uses of CAP-STUN® during the three-month period, to whom were there no injuries (Zarc International Inc., 2002). There were minor injuries to the troopers, but only after the suspects were sprayed before the arrest. The pilot study demonstrated that the use of CAP-STUN® provided a cost-effect method of reducing injuries (Zarc International Inc., 2002). Close scrutiny of all incidents reveals the product is equally effective in all situations, regardless of the mental state of the subject or the influence of alcohol or drugs.

Conclusion

Police and suspect contacts often include the officer using his or her authority to invoke force to resolve situation. This force ranges from verbal direction to deadly force. When a suspect becomes confrontational, then the possibility of resistance by the suspect and physical force by the police increases. When this occurs, the police must be provided with tools such as CAP-STUN® to overcome physical resistance without using unreasonable force or causing unnecessary injuries.

Knowledge of the effectiveness of various use of less-than-lethal force is crucial to police policy development. Explaining how and why non-lethal force options are effective is critical to the development of new, non-lethal weapons. Research and personnel must be equipped with the knowledge of existing weapons in order to design and build newer, safer and more effective weapons for the future.

CHAPTER III

Methods

Sample

This study assesses the perceived effectiveness of the secondary weapon carried by the troopers of the West Virginia State Police. The troopers of the West Virginia State Police served as the sample because they are the primary law enforcement agency in West Virginia. The survey was mailed to 586 Troopers throughout the state of West Virginia (See Appendix A).

Instrument

The survey instrument has three sections that include questions regarding demographics, perceived effectiveness, both factual and opinionated, and an open-ended question. The survey has the three demographic questions are examined through comparative analysis, consequently many of the demographic questions, such as female-male respondents, years served, and age were analyzed through cross-tabulations. The five perceived effectiveness questions are opinions from the troopers, ranging from the unavailability of CAP-STUN to the possibility that their secondary weapon lessens physical injury to the offender. The demographic questions and two effectiveness factual questions of CAP-STUN® were examined through chi-squares. The two factual questions asked if the trooper had ever used their secondary weapon, CAP-STUN® to effect an arrest and did it effectively incapacitate the individual enough to effect the arrest. The open-ended question depicted a pattern of described events depict the use of CAP-STUN®, therefore such patterns of CAP-STUN® use increased in the summer months and evening hours between 4 P.M. and 12 A.M (See Appendix B).

The expectation of the research was to obtain a survey return of approximately two-thirds enabling more accurate estimate of the effectiveness of CAP-STUN® as a secondary weapon. The response rate of the surveys was 62.1%. Of those surveys, 45.8% contained the survey option.

Procedure

The purpose of the survey is to determine the effectiveness of the secondary weapon, CAP-STUN®, of the West Virginia State Police, thus a survey was mailed to all of the West Virginia State Troopers to complete. Along with the survey, an attached copy of the informed consent was sent to each trooper at his/her office address and attached was a self-addressed, stamped envelope for return of the survey and incident description (See Appendix C). As an

option, the respondents were encouraged to briefly describe the events of an incident involving the use of CAP-STUN®. The incident included date, time, and troop number and was completed anonymously hence the survey itself was kept anonymous, confidential and was destroyed upon completion of the project.

A letter for permission to study the effectiveness of CAP-STUN® involving uncooperative suspects was sent to Colonel Howard Hill of the West Virginia State Police (See Appendix D). Colonel Hill (Superintendent) and Lieutenant Colonel Carl G. White (Deputy Superintendent) granted permission to pursue the research. After the permission was granted, Lieutenant Colonel White forwarded a memorandum and a copy of the survey by fax to each detachment of the WV State Police encouraging cooperation with the research (See Appendix E).

Marshall University granted consent to allow the request for approval of human investigation (See Appendix F), in which case the surveys were mailed on October 4, 2002 to all the members of the West Virginia State Police. While seeking permission from Colonel Hill from the West Virginia State Police, Zarc International, Inc. was contacted for written information regarding the product to be researched. Zarc International Corporation is a US Office of Defense Trade Control registered munitions manufacturer and the world leader in non-lethal incapacitating weaponry for law enforcement and military application (Zarc International, Inc., 2002).

Research Questions

Based on previous research, one can assume the following research questions: Is there any significance between years served in the West Virginia State Police, age and gender of trooper and if the trooper has ever used CAP-STUN® as a secondary weapon? Also, is there any impact between years served in the WV State Police, age and gender of trooper and if the trooper did utilize CAP-STUN®, was it an effective weapon? In addition, is CAP-STUN® an overall effective secondary weapon of the West Virginia State Police?

Data Analysis

Qualitative data collected through the survey option were analyzed through content analysis. The intent of the data was to describe an incident involving the use of CAP-STUN® that would verify the effectiveness or non-effectiveness. All the quotations of the survey option are actual and factual data to interpret the effectiveness of the secondary weapon.

The analysis of the survey data related to demographic and perceived effectiveness questions were translated through frequencies and percentages. Furthermore, to analyze the quantitative data, chi-squares were used where appropriate.

CHAPTER IV

Results

Introduction

This chapter arranges and summarizes all the information obtained from the mailed survey. The survey has three sections that include questions regarding demographics, perceived effectiveness, and an open-ended question. First, detailed demographic information is included, followed by the three factual questions, then three opinionated questions. The three factual questions include information about CAP-STUN® to effect an arrest and did it effectively incapacitate the individual enough to effect the arrest and also, if the trooper has ever taken a hit of CAP-STUN® voluntarily. The eight opinionated questions asked about CAP-STUN®, with or without the secondary weapon. Finally, the respondents' incidents involving the use of CAP-STUN® are identified and discussed.

Quantitative Data

The survey was mailed to 586 West Virginia State Troopers throughout the state of West Virginia. The overall response rate was 362 surveys (N=362), which totaled 61.7% of the 586 mailed surveys. The response rate for the survey option was 166 (N=166), which totaled 45.8% of the returned surveys.

Frequencies were obtained of the demographic variables in order to describe the obtained sample (See Table 1). The response to the questions regarding the number of years the member had in the West Virginia State Police measured 362 responses. There were 27.6% responses that were employed 1-5 years. The number of responses that were employed 6-10 years was 33.3%. The reply rate for 11-15 years was 12.4%. For 16-20 years, the rate was 16.3%. The category that was 21+ years, the response rate was 9.4%.

The second question dealt with the age of the member of the State Police. There were 2.8% of troopers whose age was between 21-25. Of the troopers whose age was 26-30, 20.2% responded. The age of 31-35, 35.4% replied. The age of 36-40, the percentage decreased to 19.1%. The age of 41+, there were 22.7% who responded.

The next question was the gender of each trooper. There were 97.2% male troopers who replied compared to 2.8% females. All ten female troopers employed by the West Virginia State Police replied to the survey.

Table 1

Demographic Characteristics of TroopersYears

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
1-5	100	27.6	27.6
6-10	124	34.3	61.9
11-15	45	12.4	74.3
16-20	59	16.3	90.6
21+	34	9.4	100.0
Total	362	100.0	

Age

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
21-25	10	2.8	2.8
26-30	73	20.2	22.9
31-35	128	35.4	58.3
36-40	69	19.1	77.3
41+	82	22.7	100.0
Total	362	100.0	

Gender

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Male	352	97.2	97.2
Female	10	2.8	100.0
Total	362	100.0	

A second section of the survey pertained to factual responses. Table 2 lists if the trooper has ever used CAP-STUN® to effect an arrest. There was a 68.8% response rate of “yes” asking if the member has ever had to use their secondary weapon, CAP-STUN®, to effect an arrest, in turn 31.2% of troopers have not used CAP-STUN® to effect an arrest.

Table 2

Used To Effect Arrest

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	249	68.8	68.8
No	113	31.2	100.0
Total	362	100.0	

Of the 68.8% of troopers who have used CAP-STUN® to effect an arrest, 64.6% responded that it did effectively incapacitated the individual enough to effect the arrest. Only 2.8% of the time did CAP-STUN® not incapacitate the individual enough to effect the arrest which 29.8% had a reply of non-applicable. Furthermore, 2.8% of the troopers did not respond to the question (See Table 3).

Table 3

When Used, Was it Effective?

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	234	64.6	64.6
No	10	2.8	67.4
N/A	108	29.8	97.2
Missing	10	2.8	100.0
Total	362	100.0	

Table 4 lists if the trooper has ever voluntarily taken a hit of CAP-STUN®. Many trooper cadets in the academy take a hit of CAP-STUN® to feel and know the effects. There were 66% who have taken a hit of CAP-STUN®. Of the 362 surveys, 33.7% have not taken a hit of CAP-STUN®. There was 0.3% that did not respond.

Table 4

Taken Hit of CAP-STUN®

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	239	66.0	66.0
No	122	33.7	99.7
Missing	1	0.3	100.0
Total	362	100.0	

Of the members who responded to question six, 80.9% of the members who answered the question regarding the absence of the secondary weapon to assist them in an unruly arrest, one in which they felt their safety could or would be jeopardized. Only 14.6% of the applicants replied that their safety would not have been jeopardized. Finally, 4.4% of the respondents did not respond (See Table 5).

Table 5

If Not Used, Was Safety Jeopardized?

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	293	80.9	80.9
No	53	14.6	95.6
Missing	16	4.4	100.0
Total	362	100.0	

Table 6 illustrates about the nonappearance of CAP-STUN® in which troopers felt that there would be more complaints filed against them for brutality. The response rate was 75.4% in which there would be more complaints filed. Of those 75.4% who responded “yes,” 22.7% of the members commented that there would not be more complaints lodged against them for brutality. Finally, 1.9% did not respond to the question.

Table 6

More Complaints of Brutality

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	273	75.4	75.4
No	82	22.7	98.1
Missing	7	1.9	100.0
Total	362	100.0	

As seen in Table 7, there were 93.1% of the troopers who responded that the use of CAP-STUN® would lessen the injury to an offender. Only 5.2% of the troopers commented that it would not lessen the injury. There were 1.7% of respondents who did not respond to the question.

Table 7

Does CAP-STUN® Lessen Possibility of Injury to Offender?

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	337	93.1	93.1
No	19	5.2	98.3
Missing	6	1.7	100.0
Total	362	100.0	

The next question relates to in which CAP-STUN® is currently better than the previously used Chemical Mace. Many troopers currently in the department were not employed before 1994 when Chemical Mace was still in operation. CAP-STUN® was introduced and launched in 1994. In Table 8, of the 362 respondents, 42.5% said that CAP-STUN® is better than Chemical Mace which in turn 56.6% responded as non-applicable. There were .6% whose responded that Chemical Mace was better than CAP-STUN® and .6% who did not respond to the question.

Table 8

Is CAP-STUN® Better Than the Previous Issued Chemical Mace?

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	154	42.5	42.5
No	1	.3	42.8
N/A	205	56.6	99.4
Missing	2	.6	100.0
Total	362	100.0	

The last question of the survey is relevant to the general purpose of the study. The last question is an opinion question that is the main element of the study. An overwhelming majority of 98.3% believe that CAP-STUN® is an effective secondary weapon in the West Virginia State Police. There were only .8% of the members believed that CAP-STUN® was not an effective weapon. Finally, .3% of the members did not reply (See Table 9).

Table 9

Is CAP-STUN® an Effective Secondary Weapon?

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Yes	356	98.3	98.3
No	3	.8	99.2
Missing	3	.8	100.0
Total	362	100.0	

To adequately explore the effectiveness of CAP-STUN®, a chi-square test was calculated to determine the effectiveness of CAP-STUN® between years served in the West Virginia State Police and if the trooper had ever used the secondary weapon to effect an arrest. The results of the chi-square $\chi^2(1, N = 362) = 60.887, p < .001$ is reported in Table 10. A Cramer's V statistic of .41 indicated that there is a moderate association between years served and if the trooper has ever used CAP-STUN® to effect an arrest.

Table 10

Used to Effect Arrest/Years with WV State Police

		Cross Tabulation					Total
		Years with WV State Police					
		1-5	6-10	11-15	16-20	21+	
Used to effect	Yes	62	106	40	32	9	249
arrest	No	38	18	5	27	25	113
Total		100	124	45	59	34	362

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	60.887a	4	.000
Likelihood Ratio	61.868	4	.000
Linear-by-linear			
Association	15.030	1	.000
N of Valid Cases	362		

a. 0 cells (.0%) have expected count of less than 5. The minimum expected count is 10.61.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by	Phi	.410	.000
Nominal	Cramer's V	.410	.000
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 11 looked at the relationship between the age of the trooper and if he/she had ever used the secondary weapon, CAP-STUN® to effect an arrest. A chi-square statistical test was calculated on these variables. The results of the chi-square O^2 (1, $N = 362$) = 40.723, $p < .001$ is reported in Table 11. A Cramer's V statistic of .33 indicated a moderate association among age and if used to effect an arrest.

Table 11

Used to Effect Arrest/Age of Trooper in WV State Police

		Cross Tabulation					Total
		Age of Trooper in WV State Police					
		21-25	26-30	31-35	36-40	41+	
Used to effect	Yes	7	47	109	50	36	249
arrest	No	3	26	19	19	46	113
Total		10	73	128	69	82	362

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.723a	4	.000
Likelihood Ratio	40.993	4	.000
Linear-by-Linear Association	12.695	1	.000
N of Valid Cases	362		

a. 1 cell (10.2%) has expected count less than 5. The minimum expected count is 3.12.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by	Phi	.335	.000
Nominal	Cramer's V	.335	.000
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic error assuming the null hypothesis.

The West Virginia State Troopers responded to the question of gender and if they had ever used CAP-STUN® to effect an arrest. A chi-square was run on responses to these variables. The results of the chi-square $O^2(1, N = 362) = .370, p < .001$ is reported in Table 12.

Table 12

Used to Effect Arrest/Gender of Trooper in WV State Police

		Cross Tabulation		
		Gender of Trooper with WV State Police		
		Male	Female	Total
Used to effect	Yes	243	6	249
arrest	No	109	4	113
Total		352	10	362

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	.370b	1	.543		
Continuity Correction (a)	.069	1	.793		
Likelihood Ratio	.354	1	.552		
Fisher's Exact Test				.510	.382
Linear-by-Linear Association	.369	1	.544		
N of Valid Cases		362			

a. Computed only for a 2x2 table

b. 1 cell (25.0%) has expected count less than 5. The minimum expected count is 3.12.

Symmetric Measures			
		Value	Asymp. Sig. (2-sided)
Nominal by	Phi	.032	.543
Nominal	Cramer's V	.032	.543
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

To more sufficiently explore the effectiveness of CAP-STUN®, a chi-square statistical test was calculated on responses to the variables of years served in the West Virginia State Police and if the secondary weapon effectively incapacitate the individual enough to effect the arrest. The results of the chi-square $O^2 (1, N = 362) = 67.753, p < .001$ is reported in Table 13. A Cramer's

V statistic of .25 indicated a low association between years served and when used, was it an effective weapon.

Table 13

When Used Was It Effective/Years With WV State Police

		Cross Tabulation					
		Years with WV State Police					
		1-5	6-10	11-15	16-20	21+	Total
When used	Yes	61	97	36	32	8	234
was it effective	No	1	4	4		1	10
	N/A	36	18	5	27	22	108
	Missing	2	5			3	10
Total		100	124	45	59	34	362
		Chi-Square Test					
		Value	df	Asymp. Sig. (2-sided)			
Pearson Chi-Square		67.753a	12	.000			
Likelihood Ratio		70.905	12	.000			
Linear-by-Linear Association		13.113	1	.000			
N of Valid Cases		362					

a. 10 cells (50%) have expected count less than 5. The minimum expected count is .94.

		Symmetric Measures	
		Value	Approx. Sig.
Nominal by	Phi	.433	.000
Nominal	Cramer's V	.250	.000
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic error assuming the null hypothesis.

Table 14 includes the reported responses of age of trooper and if the secondary weapon, CAP-STUN®, to effect an arrest. To better explore these variables, a chi-square statistical test was administered. The results of the chi-square $O^2(1, N = 362) = 44.398, p < .001$ is reported in

Table 14. A Cramer's V statistic of .20 specified a low relationship between ages and when used, was it effective.

Table 14

When Used Was It Effective/Age of Trooper in WV State Police

		Cross Tabulation					
		<u>Age of Trooper in WV State Police</u>					
		21-25	26-30	31-35	36-40	41+	Total
When used	Yes	7	47	100	45	35	234
Was it effective	No			4	5	1	10
	N/A	3	25	19	18	43	108
	Missing		1	5	1	3	10
Total		10	73	128	69	82	362
		Chi-Square Test					
		Value	df	Asymp. Sig. (2-sided)			
Pearson Chi-Square		44.398a	12	.000			
Likelihood Ratio		45.905	12	.000			
Linear-by-Linear Association		11.695	1	.001			
N of Valid Cases		362					

a. 11 cells (55.0%) have expected count less than 5. The minimum expected count is .28.

		Symmetric Measures	
		Value	Approx. Sig.
Nominal by	Phi	.350	.000
Nominal	Cramer's V	.202	.000
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Finally, to further explore the effectiveness of CAP-STUN®, a chi-square test was calculated on responses to variables of gender of each trooper and if CAP-STUN® effectively incapacitate the individual enough to effect the arrest. The results of the chi-square $O^2(1, N = 362) = 5.222$,

$p < .001$ is reported in Table 15. There was no significance of variables in Table 15, perhaps because of the small quantity of women troopers employed by the West Virginia State Police.

Table 15

When Used Was It Effective/Gender of Trooper with WV State Police

		Cross Tabulation		
		Gender of Trooper with WV State Police		
		Male	Female	Total
When used	Yes	230	4	234
was it effective	No	9	1	10
	N/A	104	4	108
	Missing	9	1	10
Total		352	10	362

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.222a	3	.156
Likelihood Ratio	3.799	3	.284
Linear-by-Linear Association	2.569	1	.109
N of Valid Cases	362		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .28.

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.120	.156
	Cramer's V	.120	.156
N of Valid Cases		362	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Qualitative Data

The last section of the survey provided an option in which the trooper could briefly describe an incident involving the use of CAP-STUN®. The survey option incidents included date, time, and Troop number, but remained anonymous. There were 166 survey option incidents involving the use of CAP-STUN® that the troopers commented on. Out of these incidents, 6.6% were day shifts ranging from 8 A.M. to 4 P.M. In the evening hours from 4 P.M. to 12 A.M., 36.7% of incidents occurred. The midnight shift ranging from 12 A.M. to 8 A.M., which resulted in 16.3%. Of the 166 responses, 40.4% didn't specify time (See Table 16).

Table 16

Time of CAP-STUN® Use

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
8 A.M.-4 P.M.	11	6.6	6.6
4 P.M.-12 A.M.	61	36.7	43.3
12 A.M.-8 A.M.	27	16.3	59.6
Missing	67	40.4	100.0
Total	166	100.0	

The earliest date of CAP-STUN® use is May 1994, according to the survey option that in turn the latest date of use is September 28, 2002. Table 17 presents the frequencies and percents of specific years of CAP-STUN®'s use.

Table 17

Years When CAP-STUN® Was Used

<u>Year</u>	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
1994	13	7.8	7.8
1995	9	5.4	13.2
1996	14	8.4	21.6
1997	8	4.8	26.4
1998	11	6.6	33.0
1999	9	5.4	38.4
2000	27	16.3	54.7
2001	13	7.8	62.5
2002	22	13.3	75.8
Missing	40	24.2	100.0
Total	166	100.0	

Table 18 provides frequencies and percentages of months when CAP-STUN® was used by troopers in the survey option.

Table 18

Months When UsedMonth

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
January	6	3.6	3.6
February	3	1.8	5.4
March	2	1.2	6.6
April	8	4.8	11.4
May	6	3.6	15.0
June	12	7.2	22.2
July	11	6.6	28.8
August	12	7.2	36.0
September	16	9.6	45.6
October	5	3.0	48.6
November	8	4.8	53.4
December	5	3.0	56.4
Missing	72	43.6	100.0
Total	166	100.0	

Although close to half the respondents didn't specify month of use, a pattern appears to emerge from the remainder. The summer months had a slight increase of use than the winter months.

Finally, table 19 offers frequencies and percentages of specific incidents involving the use of CAP-STUN® described in the survey option.

Table 19

Incident Involving Use of CAP-STUN®Incident

	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative %</u>
Domestic violence, resisting arrest, male alcohol-related	14	8.4	8.4
Domestic violence, resisting arrest, male	23	13.9	22.3
Domestic violence, resisting arrest, female alcohol-related	2	1.2	23.5
Domestic violence, resisting arrest, female	2	1.2	24.7
DUI, resisting arrest, alcohol or drugs related	27	16.3	41.0
Assault on a police officer	32	19.3	60.3
Resisting arrest	66	39.7	100.0
Total	166	100.0	

Many troopers provided statements on the survey incident option. Several were in support of CAP-STUN® in which the incident expressed. Various incidents included:

Summer, 2002, approximately 1630 hrs, Troop 2 – I observed a subject in which there was felony warrants for. When I pulled in the driveway to serve the warrants, the subject attempted to flee. Once I caught the fleeing subject and had him handcuffed, his girlfriend came up, was yelling at me, and was causing him to become very combative. While I was attempting to get him in the cruiser, he would stiffen up and would not get into the car. I tried knee strikes and different pressure points without any luck. When I would attempt to throw him off balance so that he could be put into the car, his girlfriend would shut the car door. After approximately 15 to 20 minutes of wrestling around with the two subjects, I used my CAP-STUN® on the male subject who immediately went to the ground. I then arrested his girlfriend, put her in the car, and was able to control him and get him into the car also. My only regret is not using my CAP-STUN® sooner.

Another trooper mentioned these comments:

07/96 0300 AM, Troop 5 – I responded to a domestic dispute involving a mother and her 20-year-old son. Immediately upon pulling into the scene, the 20 year old ran to my

cruiser and began to pound his fists on the hood, shouting for me to “C’mon”.

Immediately upon me getting out of the car he wrestled me. I got to my CAP-STUN® and immediately sprayed him. Even so, he continued to fight and even kicked me over the back seat with his foot during transport. If not for the CAP-STUN® he or I would have been seriously injured in a certain fistfight.

In addition, a different trooper said:

04/97, exact date and time unknown, Troop 1 – Suspect was in his residence hiding due to Troopers having arrest warrants for the suspect. Suspect’s wife let the Troopers in the residence and consented to the Troopers searching for her husband (suspect). Suspect rushed out from a closet, running at the Troopers with his fists clenched. Suspect was sprayed with CAP-STUN® and arrested after a brief struggle. There were no physical injuries to the suspect or the Troopers. The CAP-STUN® has been a “vital” tool to the West Virginia State Police. I believe it has resolved situations in which severe injuries would otherwise occur to the Troopers or the suspect(s). I highly recommend all law enforcement organizations utilize such an important tool.

Finally, one more trooper stated:

8/02/00, 2:00 PM, Troop ____ - Member responded to a complaint from a mother that her son was intoxicated causing a disturbance with several family members in her residence. Upon member arriving on scene, the intoxicated male ran from the mother’s residence to an adjacent abandoned mobile home and crawled underneath behind the underpinning. After several commands from the member, the male refused to come out. This officer used his CAP-STUN® and sprayed two (2) bursts in the area where the male was laying. After a few seconds the male came out and was placed under arrest. No one was injured. *The availability of the CAP-STUN® allowed the member to handle this situation in a safe manner. If I didn’t have it, the likelihood of injury on the officers and suspect’s part greatly increased.

A few troopers commented that CAP-STUN® did not incapacitate the individual enough to effect an arrest. These events include:

10/98, 2300 hrs, Troop 6 – Responded to a call of Domestic Battery and intoxicated female. Female had left the scene. As I left the scene, I observed the female in a vehicle and stopped her. The female subject struck me with her hand and did not want to be

handcuffed. She fought me and was sprayed. It closed her eyes, but did not incapacitate her and I was forced to physically subdue her. The female was mental and high on narcotics and alcohol.

Another negative effect of CAP-STUN® comprised of:

01/01/01, 0430 hrs, Troop 3 – Member responded to a domestic situation and encountered female subject who was thought to have been the victim. This incident occurred in a populated public place. Female was upset and crying. Member asked if female was ok and she acted confused and intoxicated (or drugged). Female did not appear to be old enough to consume beer, liquor, etc. Member requested female's operators to verify age. While member was looking at the operators, female became belligerent and smacked members arm twice. Female was advised not to make physical contact with officer at which time female struck officer again. Member advised female that she was under arrest and she became combative. Female was eventually sprayed with CAP-STUN® in the facial area. Female indicated pain from the CAP-STUN®; however, she became more combative. Ultimately, three officers were able to subdue female and effected an arrest. No injuries noted.

Furthermore, another trooper stated:

08/96, approximately 1400 hrs, Troop 6 – After responding to a domestic violence incident, the member was encountered with aggressive and non-compliant behavior from the male subject involved. This quickly escalated to the point that CAP-STUN® was sprayed into the male subject's face at which time the wind also blew some of the CAP-STUN® into the member's eyes. The male subject was relatively unfazed by the CAP-STUN® and told the member that it did not bother him, and began fist fighting the member. He was eventually taken into custody after a lengthy altercation. There were no injuries. The CAP-STUN® seemed to escalate this subject's aggressive behavior.

As a final point, one trooper responded:

12/08/96, 1520 hrs, Troop 6 - trooper tried to effect an arrest on a white male that led troopers on a 20 mile pursuit. Suspect was sprayed with CAP-STUN® after a violent attack on trooper. This did nothing to slow down the suspect. The suspect was finally wrestled to the ground, handcuffed, "hog tied", and then processed.

In summary, there were a total of 166 survey option incidents descriptions that were returned. Based on the responses, 95.7 % could be classified as effective in turn 4.3% were non-effective. An overwhelming number perceived CAP-STUN® as an effective secondary weapon of the West Virginia State Police.

CHAPTER V

Summary and Conclusion

The purpose of this study was to explore the perceived effectiveness of the secondary weapon, CAP-STUN®, of the West Virginia State Police. Throughout the study, the overall perception of CAP-STUN® was positive. As the results indicated, 98.3% of the respondents believed that CAP-STUN® was an effective secondary weapon. Of the 166 survey options, a remarkable 95.7% stated that the secondary weapon was effective.

The chi-square statistical test showed several significant relationships between the variables such as demographic questions of years served, age, if the trooper had ever used CAP-STUN® to effect an arrest and if used, whether it was effective. A Cramer's V statistic of .41 indicated that there was a moderate association between years served and if the trooper had ever used CAP-STUN® to effect an arrest. A Cramer's V statistic of .33 indicated a moderate association between age and if used to effect an arrest. A Cramer's V statistic of .25 indicated a low association between years served and when used, if it was an effective weapon. A Cramer's V of .20 specified a low relationship between age and when used, if it was perceived as effective.

A limitation of the study included that there was a small number of women troopers employed by the WV State Police. There are only 10 female troopers currently employed by the West Virginia State Police. This small sample size could have had a negative effect on the chi-square statistical test of gender and if the trooper has ever used the secondary weapon and if the trooper has, was it effective in effecting an arrest. There was no significance between the variables of gender, if the trooper has ever used CAP-STUN®, and if used, whether it was effective.

Recommendations for further study include using a five point Likert scale, which would be more appropriate for this type of survey. Not every application of CAP-STUN® is equally effective as another. A large number of respondents received stated that CAP-STUN® assisted in effecting the arrest. This Likert scale would more accurately define effectiveness, from non-effective to very effective. Also, the future survey should ask the troopers to describe the actions of the suspect after the submission of CAP-STUN®. Another recommendation for further study would include why, in the trooper's opinion, CAP-STUN® is an effective weapon. In addition, the effects of CAP-STUN® on suspects which are intoxicated, under the influence of drugs, or mentally disturbed should be examined. If one could gain access to use-of-force reports by the

law enforcement agency, it would enable more accurate results through analyzing the incidents involving the use of CAP-STUN®. Every West Virginia State Trooper who resorts in the use of CAP-STUN® must file a use-of-force report. The use-of-force reports from the West Virginia State Police were not available for this study.

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Appendix A: Survey

Thesis Survey – The Effectiveness of CAP-STUN®

**** This Information Will Be Strictly Confidential and Anonymous. ****

Please answer ALL of the following:

1. How many years have you been in the West Virginia State Police?

_____ _____ _____ _____ _____
 1-5 6-10 11-15 16-20 21 +

2. What is your age?

_____ _____ _____ _____ _____
 21-25 26-30 31-35 36-40 41 +

3. What is your gender? _____ Male _____ Female

4. Have you ever had to use your secondary weapon, CAP-STUN®, to effect an arrest?

_____ Yes _____ No

5. Did the CAP-STUN® effectively incapacitate the individual enough to effect the arrest?

_____ Yes _____ No _____ N/A

6. Without the secondary weapon of CAP-STUN® to assist you in an unruly arrest, do you feel your safety could or would be jeopardized? _____ Yes _____ No

7. Without the use of CAP-STUN®, do you feel there would be more complaints filed against Troopers for brutality? _____ Yes _____ No

8. Do you believe the use of CAP-STUN® lessens the possibility of physical injury to the offender? _____ Yes _____ No

9. Is the CAP-STUN® you currently use better than the previous issued Chemical Mace?

_____ Yes _____ No _____ N/A

10. Have you ever voluntarily taken a hit of CAP-STUN®? _____ Yes _____ No

11. In your opinion, is CAP-STUN® an effective secondary weapon?

_____ Yes _____ No

Appendix B: Survey Option Incidents

05/00, 1200 hrs, Troop 3 – Officer was called to local fast food business for a disturbance involving a mental patient. The officer approached the business and observed the white male, age 50, screaming and yelling. The officer approached the suspect who took an offensive position, but as the officer got close, turned and ran. This officer chased the suspect and used a one (1) second burst of CAP-STUN® on the suspect. He immediately fell to the ground and was handcuffed. It was later learned the suspect was extremely violent and not taking his medication and had caused serious harm to other officers. The suspect had been riding in a car with his ex-wife from North Carolina in route to Pennsylvania. When the car stopped at the drive-thru, he jumped out of the car and ran. A mental hygiene hearing was conducted on the suspect at a local hospital due to his violent behavior and having to be restrained on a hospital gurney. There were no injuries to any party as a result of the use of CAP-STUN®.

01/15/96, 8:00 PM, Troop 6 – I responded to a domestic disturbance between a husband and a wife. Upon arrival, this member observed the husband acting in a violent manner. The husband was screaming obscenities to his wife and began to approach her with his fist clinched. This member, in an attempt to gain control, began to talk to the husband in a calm voice. This member then attempted to lead the husband away from the wife. The husband then became combative and began to run to another part of the residence. This officer felt threatened due to the husband's action and violent behavior and began to pursue the husband into the kitchen of the residence. The husband then became combative. This member then utilized a one spray of CAP-STUN® to subdue the husband and place him under arrest for obstructing an officer and domestic violence.

Aug. 2001, Troop ____ – a violent male fled after beating another male. A pursuit engaged and road spikes were used to stop the vehicle. The suspect got out of his car and attacked this officer. He was sprayed and taken to the ground and handcuffed. He later was again arrested, and stated he did not fight, because the CAP-STUN® was too painful when he was previously sprayed.

5/15/00, 5:00 PM, Troop 5 – Went on a domestic where a girlfriend had struck a boyfriend with a glass vase over the head. Upon arrival, female had huge pit bull in front yard and when I put

two feet on the ground that thing was running full throttle at me. I pulled my spray, with my pistol ready, and sprayed the dog. The dog ran off and hid and I never saw it again. I then effected an arrest. Note – I've been lucky during my tour and have not had to use CAP-STUN® myself to effect an arrest. Although, I've sprayed a ton of dogs for my safety.

1994, 1300 hrs, Troop 5 – Call to a Sig52 domestic in Boone County. Suspect was told he was under arrest, at which time he advised he wasn't going to jail. Suspect got up off couch at which time this officer had already removed CAP-STUN®. Suspect drew his fist back in a threatening manner. This officer sprayed the suspect in face with a short burst. Subject fell to ground, was handcuffed and arrested. No injuries. This is the only time I have used CAP-STUN® due to working plain clothes for seven years and later being promoted to Troop XO.

08/01, 5:30 PM, Troop ____ - Member responded to domestic involving intoxicated male. Male intoxicated with alcohol and drugs. Subject physically assaulted Trooper by jumping on Trooper's back. Trooper deployed CAP-STUN® at which time subject was incapacitated and was arrested without further incident. No injuries to Trooper or subject. Also acted as deterrent from second subject becoming involved and assaulting Trooper.

08/03/01, 8:45 PM, Troop 2 – Member observed suspicious occupants of a vehicle parked in a known drug trafficking area of town. Upon approaching to investigate, the vehicle fled. Subsequently, a foot pursuit ensued to a dead-end alley. As a result of being left without an escape route, the suspect became combative. The suspect was forcibly taken to the ground after swinging towards member when apprehension was attempted. The suspect continued swinging while on the ground. Therefore, the suspect was sprayed and handcuffed without further incident. There were no serious injuries to member or suspect.

Summer of 2000, Troop 4 – This officer responded to a disturbance at a local hotel in Jefferson, WV. Upon arrival this officer attempted to speak with an intoxicated male subject. This subject was irate with his girlfriend who had fled to the motel office. The subject, who later was found to be a jail escapee, did become violent toward the officer. The subject threw a telephone at the officer. The subject then charged and tried to physically attack the officer. This officer administered a burst of CAP-STUN® at the male. The male was stunned and became compliant. This officer then took the subject into custody.

Date? – Troop 5 – Disorderly female arrested and transported to Old Mingo County Jail.

Became extremely out of control, tearing my shirt and ripping off my badge. Female began to

undress herself. Attempted to escort the female to the holding cell and place her on a bed at which time she grabbed my pistol and attempted to remove it from my holster. For her efforts, she received a burst of CAP-STUN®. She immediately began to scream and cough. She then calmed down. Water was used to dilute her face and eyes and she presented no further problems. 01/22/00, 8:00 PM, Troop 6 – Defendant was holding his spouse at knifepoint, with knife to spouse's abdomen. Defendant ordered on several occasions to drop knife and release spouse. Defendant appeared to begin to get more angry and agitated. Defendant was sprayed with a burst of CAP-STUN®. Defendant immediately released spouse (victim) at which time several officers took him to the ground. Knife was retrieved and defendant was taken into custody without further incident. No injuries to defendant or officers. The CAP-STUN® possibly saved the defendant's life due to officers not having to use deadly force.

11/13/95, 2250 hours, Troop 1 – The undersigned responded to a domestic scene where a 14 or 15-year-old boy had threatened his mother and then initial responding officers with several large kitchen knives. Upon my arrival the other officers had gotten the mother and two other kids from the home, but the defendant was still inside ranting for everyone to leave. When officers tried to approach, he wielded the large butcher knife and threatened to cut anyone who came near. The undersigned finally managed to get close enough, even though the subject was swinging the knives and threatening to throw one. I administered a good burst of CAP-STUN® to his face. The subject immediately dropped to the ground releasing all the knives and the units were able to easily subdue him without anyone being injured. Just prior to my arrival, the suspect had approached a Deputy with the knife raised and the Deputy later said he was closer to squeezing his trigger on his weapon than he had ever been before, but opted to back out quickly rather than shoot the youth.

Date unknown (winter months), time unknown (early morning hours), Troop 5 – Several years ago while working in Wayne County, I was notified of a car accident on WV Rt. 152. Upon arrival, I found a small car in the ditch with the motor running and the driver still behind the wheel "asleep". As I opened the door, it was obvious that the driver was intoxicated. The driver was a large man, approximately 6'3" to 6'5" and 250 to 275 lbs. As I attempted to wake him, he began swinging his fists and cursing me. I stepped back and again advised him I was a Trooper with the WVSP. I advised him to calm down and exit the vehicle and he became more belligerent in his verbal and physical threats. At this time he was warned of the impending

chemical agent and he continued his actions. I deployed the CAP-STUN®; the suspect immediately began following instructions and apologizing to me and begging for some relief from the pain. The suspect was subsequently placed under arrest without further incident. Suspect faced a multitude of criminal and traffic charges. No injuries.

Date and time unknown, Troop 5 – I responded to a residence to serve a misdemeanor warrant. The suspect was intoxicated and refused to comply. I started to handcuff the suspect and he pulled away, causing the suspect and me to fall in the floor. There were two other subjects in the house one was intoxicated. The subject that was intoxicated made statements to me that caused concern. I sprayed the suspect with CAP-STUN® to effect the arrest quickly. The CAP-STUN® disabled the suspect and he became submissive. This allowed me to arrest the suspect without injury and before the other two subjects could become involved.

Date unknown, time approximately 4:00 PM, Troop 5 – First year we were issued CAP-STUN®. Called to a large street fight involving multiple combatants. Responded alone in single officer vehicle. Upon arrival, two males were down in the street fighting with 15 to 20 spectators. Separated subjects and told both they were under arrest for battery and put them on hood of car. One of the subjects was 6’6” tall. Prior to doing pat down and handcuffing either subject, a third male (also large) came out of crowd and attempted to attack one of the subjects I had on the hood of the car. I used CAP-STUN® on this individual after verbal commands failed to stop him. He immediately became compliant with my instructions. All three were arrested and taken to jail. Nobody was injured.

1994, late night, Troop ____ - Made traffic stop. Subject would not move hand from jacket. Member used CAP-STUN®; subject complied and was arrested for driving revoked, felon w/firearm. He had his hand on the trigger of the firearm and admitted that he was going to shoot the member if he had not been CAP-STUN® and able to be subdued. No injury.

9/25/02, 2200 hrs, Troop 1 – Member responded with other member to a juvenile who reportedly threatened suicide with a knife. Juvenile also reportedly stated he would do what ever it took to get the police to shoot him. This officer and the other member located the individual in his bedroom in bed. The juvenile refused to roll over and cooperate. The other member was involved in a short physical confrontation with the juvenile. Both officers were in fear that the juvenile still had possession of a knife. This officer produced an approximate one-second burst

of CAP-STUN® to the facial area of the juvenile. The juvenile immediately was compliant and stopped resisting.

11/12/99, 7:30 PM, Troop 3 – Member responded to a domestic complaint. Suspect was intoxicated and resisted arrest by struggling with the officer. The subject was taken to the floor, but refused to place hands behind the back by inter-locking the fingers under the chest. A short blast of CAP-STUN® was administered at which time the subject became compliant. The arrest was made with no injuries.

Unknown date, approximately 6 yrs ago, evening hours, Troop ____ - Destruction of Property complaint at an apartment complex. White, male, mid 20's was intoxicated and was destroying neighbor's apartment. CAP-STUN® utilized, which was effective. Subject was then decontaminated and placed at Northern Regional Jail.

06/23/98, 7:00 PM, Troop 6 – After processing, I was transporting defendant to the Southern Regional Jail. The defendant was riding in the front passenger seat with his hands cuffed behind him. The defendant became combative and slipped his cuffed hands under his legs, enabling him to get his hands in front of him. The defendant was then able to unlatch his seatbelt, which allowed him to interfere with my driving. I pulled the patrol car over to the roadside, removed the defendant and sprayed him with CAP-STUN®. The defendant became submissive and was transported to the Regional jail without further incident. No injuries.

06/95, 2300 hrs, Troop ____ Subject engaged in a verbal altercation with another subject in a bar parking lot. Trooper arrived on scene. One of the two involved ran toward the woods. Trooper yells for him to stop and then engages in a foot pursuit. I then caught the subject running. Subject turned to fight trooper. Subject was sprayed with CAP-STUN® and was blinded at which time the Trooper made an arrest using a lessened amount of physical force.

05/02, 0030 hrs, Troop 2 – Conducted traffic stop for speeding. Female drivers license came back suspended for DUI. Male passenger had been a problem for officers in the past for domestic violence w/weapons. Knew subject would become hostile. Officer had female driver get out of truck. Brought female to rear of truck to effect an arrest. Female resisted. Male passenger/boyfriend exited vehicle and charged officer. Officer sprayed male passenger and arrested him. Once sprayed, passenger was no longer aggressive just upset because he was sprayed.

06/02, 12:30 PM, Trooper 2 – Male subject approached officer in an aggressive / disorderly fashion using profanity in a fuel station parking lot. Subject was advised to be quiet and leave in the car he got out of or he would be arrested. Subject refused and became louder and more obnoxious. Subject was advised he was under arrest. Subject then walked away from officer. Entering the store, officer followed and grabbed his left arm. Subject swung around and attempted or appeared to want to strike officer. Officer used CAP-STUN® on the subject and arrested him. A subsequent physical search found a Marijuana smoking device.

09/07/02, 1730 hrs, Troop 2 – While responding to a domestic battery, the defendant would not allow this officer to enter the residence. Upon forcing entry to the residence, the defendant tried to keep officers from arresting him; he became very aggressive. The defendant was sprayed with CAP-STUN®. After a brief struggle, he gave up. The subject had a minor injury. CAP-STUN® was effective in this arrest.

11/00, time unknown, Troop ____ - This officer rolled upon a two (2)-vehicle crash. Upon approaching the vehicle, this officer learned the driver of one (1) of the vehicles had fled from the scene on foot and was very intoxicated. This officer began a search of the fleeing suspect and located the suspect hiding behind bushes of a nearby business. This officer gave verbal commands for the suspect to come out from behind the bushes. The suspect refused. The officer attempted to detain the suspect from behind the bushes, at which time the suspect became very combative. This officer then released a (1) one-second burst of CAP-STUN® on the suspect's facial area. This officer was then able to effect the arrest on the suspect with no further incident or injury.

Winter 1997, 2300 hrs, Old Company B – A fight broke out in the parking lot of a strip club. The fight involved approximately 8 people. Upon officer's arrival, the fight had stopped, but tensions were still high and it appeared the fight was about to start again. This officer attempted to remove an unruly participant. This officer was then physically assaulted by the subject and after a physical struggle, arrested this subject. Another subject then advised this officer to let his friend go and became aggressive. This officer then removed his CAP-STUN® and advised the subject to go home. The subject came towards this officer to get his friend out of custody. The subject did not heed any commands and began to grab this officer and at the same time the subject under arrest began struggling again. This officer used CAP-STUN® on the second

subject, which was very effective as he stopped and dropped to the ground enabling this officer to control the first arrest and effect a second arrest.

Summer 00, 1300 hrs, Troop 5 – Male involved in crash refused to exit vehicle. Subject pulled a large knife out and sat in vehicle stating he would cut this officer if he attempted to remove him from vehicle (vehicle crashed in creek bank). Subject then asked this officer to kill him. Subject slashed knife in air at this officer. This officer utilized CAP-STUN® when subject exited vehicle with knife still slashing at air. Officer backed away and subject remained in control of knife, but could not see. Officer then tackled subject from behind and removed knife with assistance of second Trooper. Subject and officers received no injuries.

11/22/00, 1930 hrs, Troop 3 – Responded to a fight call involving knives. Upon arrival, officer observed a male juvenile, which was involved with fight. Officer attempted to place male under arrest. Male jerked away. Not knowing whether male was going for a knife, officer used secondary weapon. Effectuated arrest. It should be noted that a crowd of approximately 15 to 20 people were also causing problems. Once secondary weapon deployed, bystanders cleared. Officer's closest backup was 30 to 45 minutes away.

08/28/01, 2200 hrs, Troop 3 – Responded to domestic complaint. Accused male subject, intoxicated, became belligerent, verbally and physically. Space and time frame of events would not initially allow use of CAP-STUN®, so physical strikes were delivered. Suspect was then taken to ground where he started to resist again. Suspect was eventually handcuffed, but continued to spit blood and kick at assisting officers. Orders to stop were ignored. Assisting officer sprayed CAP-STUN® upon the subject and compliance gained.

07/30/02, 1930 hrs, Troop 6 – Officer was dispatched to a mother/daughter domestic allegedly occurring in a local store parking lot. Upon arrival, officer spoke with the accused that almost immediately became defiant and assumed a combative posture. Officer attempted to speak with the accused at which time she became combative and approached officer rapidly with closed fists. Accused was ordered to “calm down” and move away, at which time she attempted to strike officer. The accused was then sprayed with one burst of chemical agent. She then became compliant and subsequent arrest occurred with no further incident.

07/30/00, 11:30 PM, Troop 5 – After responding to a fight call at a local bar, this member recognized an intoxicated male causing much of the problems. As this member approached the male to effect an arrest, the male came violently toward this member. Feeling the situation could

increase, this member discharged the issued CAP-STUN®, which immediately took effect and ultimately effected the arrest. This violent drunk quickly became subdued and forgot about fighting. No injuries were received by anyone involved.

12/29/95, 2230 hrs, Troop 1 – Member and Deputy responded to a domestic dispute. Husband was intoxicated and refused to cooperate with directions to stay seated (several guns in living room and available to him if he moved about). Subject became threatening if we did not leave his house. Subject was large and physically strong. When told he was under arrest, he refused to comply and was sprayed before hands-on force was used. CAP-STUN® helped us control him enough to cuff him and transport. No injuries.

Date and time unknown, Troop 6 – Subject was arrested for DUI. Subject was handcuffed in frontal position and seated in rear of cruiser, passenger side. While traveling on State Rt. 20 in route to the Southern Regional Jail, subject in rear became combative and attempted to place handcuffs around members neck in an attempt to choke member. After getting the vehicle stopped, the member then sprayed the subject in order to regain control, which worked without further incident or injury.

04/99, 5:00 PM, Troop 3 – Member responded to assist another Trooper in regards to an investigation in which the Trooper was going to question two (2) brothers. An agreement ensued with one (1) of the brothers stating that he was “going to kill the Trooper.” The brother started toward the truck, where firearms were located. A fight ensued with the Trooper and the two (2) brothers. Both brothers were sprayed with CAP-STUN®. Both subjects became compliant and were taken into custody. One (1) brother received medical attention for a broken nose.

04/13/01, 2:00 PM, Troop 6 – Member was present at a sexual assault trial at circuit court. Jury was reading a guilty verdict. Family members of the male subject on trial became aggressive towards officers present in courtroom and began causing a disturbance. Officers were attempting to subdue family members. At this time, the male subject who was on trial attempted to come to the aid of his family members. A Deputy attempted to physically restrain the male subject. The male subject knocked the Deputy down and was on top of him on the floor actively fighting the deputy. This officer came to the aid of the Deputy and sprayed the male subject. Male subject immediately stopped fighting. He was handcuffed and removed from the courtroom.

Time and date unknown, Troop ____ - Approximately 5 years ago, a member stopped a stolen vehicle and I went to assist. There were four occupants in the vehicle and a puppy. Occupants

were under the influence of alcohol. One of the occupants became unruly and attempted to get into the vehicle. A scuffle ensued and the unruly subject attempted to take my flashlight. He was placed against the stolen vehicle with his hands on the hood for a pat down search and to be placed in handcuffs. He started to beat the hood of the car with his fists and turned towards this officer. I sprayed a short burst of CAP-STUN® in his face. He became somewhat calm and settled down considerably. Upon arrival of the victim, this same suspect got into an argument with the victim, but settled down when confronted with CAP-STUN® again.

Summer 1998, early AM hours, Troop 4 – Responded to a fight in progress with shots fired. Upon arrival, I confronted a white, male subject, 6’8” and 370 lbs, with a second white male, approximately 5’3”, 150 lbs, raised over his head. Upon demands to release the smaller man, the giant promptly threw him through the windshield of a parked car. My partner, 5’5”, 150 lbs, drew his service weapon and ordered the man to the ground. The demands were refused. While the behemoth was distracted, I snuck to within 3 feet, perfect striking distance. I hit the gentleman in the shoulder and he looked my direction. He opened his mouth to bellow mightily, to which I promptly deployed a three second burst of CAP-STUN® into the gaping cavern. The suspect immediately dropped to the ground and began crying like an infant. He was taken into custody with no further incident.

Date and time unknown, Troop 4 – After responding to a fight call between two brothers at a local restaurant, a 250 lb linebacker for a college football team was discovered in the back of a moving van attempting to slit his wrist with a hunting knife. He was told to drop the knife, but would not and he stated, “Go ahead and shoot me.” We were fortunate enough to have two Troopers on the call and both of us used the CAP-STUN®. The subject dropped the knife and was taken to a local hospital. Physically, he was okay and neither Trooper was injured.

09/97, 0400 hrs, Troop 7 – Hitchhiker intoxicated and trying to get ride with tractor-trailer drivers. Was climbing into stopped trucks. When confronted, very abusive verbally and would not shut up, got handcuffed. Transported to office where teachers and children were present. He was cussing and not wanting to keep quiet. It was disturbing to the children to hear such filthy talk. Subject was instructed verbally to keep quiet, but he would not comply. He was sprayed with CAP-STUN® and his whole demeanor changed. He then listened to verbal commands.

08/00, Troop ____ - Member was directing traffic with another member at the WV State Fair. The other member was struck by a motor vehicle. The vehicle attempted to leave the area but

was “blocked-in” and stopped by traffic. The driver had to be removed physically by the other Trooper. Once outside of the vehicle, the defendant, who was extremely intoxicated, battered the other Trooper. A scuffle ensued and the defendant attempted to gain access to the Trooper’s gun (holstered). I physically attempted to incapacitate the subject by wrestling with him and eventually CAP-STUN® was employed onto subject. He then became very passive and quit resisting so arrest could be effected. CAP-STUN® works!

Unknown date and time, Troop ____ - I pursued a vehicle for another violation for approximately two miles when he stopped, exited his vehicle and fled on foot. I pursued and caught him on foot. He then wanted to fight and would not respond to verbal commands. I then sprayed him with CAP-STUN® and effected the arrest without incident.

Unknown date and time, Troop ____ - I responded to a domestic disturbance near Pikeside Bowling Alley. The suspect was located inside the victim’s residence and passed out due to a heavy consumption of alcohol. Upon waking the suspect, the suspect was placed under arrest as a result of the investigation and was secured in my cruiser. While speaking with the victim inside his residence, the suspect attempted to flee from the cruiser on two occasions. The suspect, when caught the second time, was resisting any attempts to control and swinging his extremities wildly. The suspect was then sprayed and properly detained.

Unknown date and time, Troop ____ - I responded to a fight near Kwek’s Market. The suspect party fled on foot prior to my arrival. Upon searching and locating the suspect, the suspect was extremely intoxicated and began shoving and pushing this officer. The suspect was then sprayed, controlled, and apprehended.

1996, exact date and time unknown, Troop 1 – I responded to a domestic dispute between a man and a girlfriend (the girlfriend was approximately 35 years of age). Upon arrival, this officer spoke with the complainant who had been struck several times to the facial area. She had bruising to her eye and requested that her boyfriend be removed from the residence. The man, approximately 40 years of age, had been drinking liquor prior to my arrival. He was also a drug user. Upon hearing the complete situation from the complainant, the boyfriend the asked to turn around and place his hands behind his back. He refused. Then another officer arrived on scene with me. There were approximately five Troopers on scene during the whole situation. The man became combative as we attempted to place him in one car. He stiffened his body, preventing us from placing him in the back of the cruiser. He became even more combative, at which time we

warned him that if he did not obey the order, then we would spray him. Upon ignoring our orders, we sprayed him. He dropped to the pavement at which time we handcuffed him and placed him in the cruiser. We then assisted him in rinsing his eyes. The girlfriend pressed charges.

Summer 1996, exact date and time unknown, Troop 1 – Subject that was involved in a traffic crash became very unruly to the point where CAP-STUN® was used on him. It turned out that just prior to the crash he had committed a burglary and arson. Worked fairly well, but subject remained somewhat combative. No injuries. Subject arrested.

04/30/02, 4:00 PM, Troop 1 – After becoming involved in a vehicle pursuit, the assailant fled onto his family's property and exited his vehicle and fled on foot into a wooded area. While attempting to locate the assailant, these officers along with another trooper were confronted by the assailant's brother. The assailant's brother became very argumentative towards the Troopers while explaining the reason for being on the family's property. The assailant's brother then pushed the other Trooper and became violent. The assailant's brother was placed under arrest for battery on a police officer. While attempting to arrest the defendant, he would not comply with verbal commands that were given by the Troopers to place his hands behind his back. The defendant refused to be handcuffed and interlocked his hands and arms between a window frame. The defendant was sprayed and then became totally compliant and was taken into custody.

09/19/02, 2200 hrs, Troop 4 – A male subject was taken into custody based upon public intoxication and obstructing by not following directions. Throughout processing and subsequent transport to the regional jail, the subject continued to elevate his anger and frustrations. The subject became combative by kicking at this officer from the rear seat. This officer stopped the cruiser and was required to administer CAP-STUN® as a result of non-compliance and further combative actions. The CAP-STUN® was very effective in reducing further aggression from the subject. No injuries sustained.

11/94, 2230 hrs, Troop 1 – This unit was assigned to police a WVU football game. WVU was playing Syracuse. This unit, along with ten other units, was ordered to protect the goal posts from vandalism. Whenever the game ended, approximately 1500 to 2000 students converged on the goal post that we were defending. As the students approached the goal post, this unit removed his CAP-STUN® from the holster and at that time one student struck this officer in the

face. I immediately sprayed him in the face with CAP-STUN® and turned to my left and sprayed another individual who was preparing to strike me. Two other units utilized their CAP-STUN® on two students at the same time. Within 2 to 3 seconds after we utilized the CAP-STUN®, the mob of students very quickly began to disperse. Within 15 to 20 seconds, the entire football field was cleared. This unit was unable to apprehend the student that struck me in the face due to the fact that some of his friends quickly dragged him off of the football field.

09/01, 1630 hrs, Troop 6 – Male subject with a knife holding officers at bay. I responded to assist and was able to distract the subject long enough to spray him with CAP-STUN®. Another officer sprayed him again at which point he dropped the knife and was physically taken to the ground. The subject then had to be handcuffed, both hands and feet, but remained belligerent.

The subject threatened the Judge when arraigned. Subject was mental and on narcotics.

I responded to a complaint that a vehicle had evaded a toll southbound along the West Virginia Turnpike. After I located the vehicle, a pursuit ensued that eventually lead to a foot pursuit of two suspects into a wooded area. I caught up with the first suspect and upon trying to place him into custody; he became violent, jerking, pulling and fighting with me in an attempt to avoid being placed into custody. I successfully sprayed him with CAP-STUN® and he immediately became compliant. I left the first suspect and continued to chase the second. After a brief struggle and the use of CAP-STUN®, I was able to successfully apprehend him as well. The first suspect was still incapacitated allowing me to easily handcuff him and both were taken into custody without further incident. No injuries were sustained as a result and it would have been impossible for one officer to apprehend both suspects without the use of CAP-STUN®. It was later discovered that the vehicle had been stolen from the Charleston area.

1996, Troop ____ - Subject intoxicated, being disruptive at social gathering. Told to leave and walk home. Would not, got in officer's face. Told under arrest, resisted being handcuffed. Hit officer in scuffle. Used CAP-STUN®, still resisted, but officers could control enough to handcuff. After settling down, he started up again and told if did not settle down, he would be sprayed again. He calmed down.

Appendix C: Cover Letter to Trooper

September 12, 2002

Dear Members of the West Virginia State Police:

RE: **Thesis Survey**

I am currently a graduate student in the Criminal Justice Program at Marshall University and have elected to conduct research for a thesis option. I have received permission from Col. Howard Hill to send you this survey.

I have selected the West Virginia State Police for this study because they are the premier law enforcement agency in the State of West Virginia. My father, J. A. Davis is MVI Sergeant stationed at the Moorefield/Petersburg Detachment. I have always respected and admired the Troopers for their hard work and dedication.

I have chosen to study the effectiveness of CAP-STUN® as the secondary weapon for the West Virginia State Police. To do this, I need your cooperation in completing the enclosed survey. In addition, please describe the events of an incident of CAP-STUN® use. A form has been included in the packet for your convenience. The incident should include date, time, and Troop number but shall remain anonymous.

Please complete and return the enclosed materials **as soon as possible**. A self addressed stamped envelope is provided for return of the survey and incident description. To ensure accuracy of the data, your response is critical. The survey will be kept anonymous, confidential and destroyed upon completion of my project.

Thank you for your consideration, time and cooperation.

Respectfully,

Jesse A. Davis

Appendix D: Cover Letter to Col. Hill

July 29, 2002

Colonel Howard Hill,
Superintendent
West Virginia State Police
725 Jefferson Road
South Charleston, WV 25309-1698

RE: Thesis Survey

Dear Colonel Hill:

I am currently a graduate student in the Criminal Justice Program at Marshall University. I have elected to conduct research for a thesis option.

I have chosen to study the effectiveness of CAP-STUN® as the secondary weapon for the West Virginia State Police. To do this, I need the Troopers to complete a survey that includes demographics questions and questions regarding the use and effectiveness of CAP-STUN®. As an option, I would also like the respondents to briefly describe the events of an incident involving the use of CAP-STUN®. The incident should include date, time, and Troop number but shall remain anonymous. I am requesting permission to mail this survey to the members of the Department. A copy of the letter that accompanies this survey to the Troopers is enclosed. I am also requesting a mailing list of the Troopers names and home addresses. If there are costs involved with providing a mailing list, please contact me. The mailing list as well as the survey will be destroyed at the completion of my project. The survey will be kept anonymous and confidential. After completion of my thesis, I will provide you with a copy of my research.

I have chosen to do my thesis with the assistance of the West Virginia State Police because they are the premiere law enforcement agency in the State of West Virginia. I have always respected and admired the Troopers for their hard work and dedication. If you have any questions, concerns or suggestions in regard to this request, please contact me as soon as possible at 1301 Airport Road, Fairmont, WV 26554, or (304) 363-6460. Thank you for your consideration and cooperation.

Respectfully,
Jesse A. Davis

Appendix E: Permission from Colonel Hill.



West Virginia State Police
725 Jefferson Road
South Charleston, West Virginia 25309-1608
Executive Office

Mark Wise
Governor

September 6, 2002

Colonel H. E. Hill, Jr.
Superintendent

Members of the West Virginia State Police,

Mr. Jesse A. Davis is herewith authorized to contact members of the West Virginia State Police to conduct research into the effectiveness of CAP-STUN; members are authorized to provide Mr. Davis with the information necessary to complete his survey into the effectiveness of CAP-STUN in controlling uncooperative subjects.

BY AUTHORITY OF THE SUPERINTENDENT

Handwritten signature of Carl G. White in black ink.

Lieutenant Colonel Carl G. White
Deputy Superintendent

Equal Opportunity Employer

Appendix F: Permission from IRB

Marshall University
Institutional Review Board
Cabell Huntington Hospital
Institutional Review Board
Department of
Veterans Affairs
Human Studies Subcommittee
St. Mary's Hospital
Institutional Review Board

COORDINATOR
1542 Sunny Valley Drive
Huntington, West Virginia
25704
(304) 666-7520
Fax: (304) 690-7391

September 19, 2002

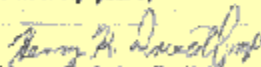
Jesse A. Davis
The Woodlands, Apt. #1
1301 Airport Road
Fairmont, WV 26354

Re: EX03-0012 - The Effectiveness of the Secondary Weapon of the
West Virginia State Police/THESES

Thank you for the submission of the above non-risk study. The purpose
of the study is to research the true representation of the effectiveness
of the secondary weapon (CAP-STUN) carried by the members of the
West Virginia State Police and will consist of an anonymous survey.

The study as submitted would be exempt from IRB review and approval
in accordance with 45 CFR 46.101 b.

Sincerely yours,


Henry R. Driscoll, M.D.
IRB Chairperson

HKD/tjs

00120012sept02

Curriculum Vitae

- Education: Marshall University
Master of Science in Criminal Justice, expected May 2003
GPA: 4.0/4.0
Thesis: The Effectiveness of the Secondary Weapon of the West Virginia State Police
Fairmont State College
Bachelor of Science in Criminal Justice, 2001
Minor in Psychology
- Internship: Arson Investigator May-July 2002
West Virginia State Fire Marshals' Commission, Charleston, WV
- Investigated fire scenes to determine if arson was primary cause of fire
 - Conducted fire scene sketches
 - Performed interviews with witnesses, both oral and via telephone
 - Photographed crimes scenes of arson and accidental fires
 - Attended preliminary and sentencing hearings
 - Worked undercover in purchasing illegal firecrackers which resulted in arrests and convictions
 - Received certification in "Arson Detection for the First Responders"
- Work Experience: Graduate/Teaching Assistant February 2002-Present
Marshall University, Huntington, WV
- Assist the faculty of the social sciences department
 - Lecture, distribute test, present films, conduct presentations and grade exams/papers
 - Complete office duties
 - Perform research in the area of new academic programs
 - Address daily concerns of graduate students
 - Assisted in the publication of the West Virginia Criminal Justice Education Association 2001-2002 Conference Journal

- Teach Introduction to Criminal Justice on an independent status in which I prepare, administer and grade exams, lecture, and organize class debates and discussions on Criminal Justice topics and Constitutional Amendments.

United Parcel Service

April 2001-February 2002

Preloader/Delivery

- Loaded 4-6 trucks per day
- Assisted and delivered parcels during peak seasons
- Sustained a safe work environment by inspecting conveyer belt emergency shut-off controls

Fairmont State College

August 1999-May 2001

Dormitory Monitor

- Conducted tours for incoming students
- Provided security by shifts on a 24-hour basis
- Maintained a safe lobby and residence for students
- Assisted Resident Advisors in investigations and raids of prohibited behavior
- Distributed mail and packages in mailboxes of residents

Honors:

Alpha Phi Sigma

- National Criminal Justice Honor Society

Dean's Honors List

- Spring 2001

Delta Lambda Tau

- Criminal Justice Fraternity

Lambda Alpha Epsilon

- American Criminal Justice Association

Computer Skills:

Microsoft Word, Publisher, Excel, PowerPoint, WordPerfect and SPSS 10.0.

Required Classes for Master of Science Degree that I have taken:

- CJ 603 Criminal Justice Planning
- CJ 604 Advanced Theory in Criminal Justice

- CJ 621 Advanced Criminal Law and Procedure
- CJ 655 Research Methods in Criminal Justice
- CJ 656 Applied Statistics in Criminal Justice