The Bill Blackwood
Law Enforcement Management Institute of Texas

Less Than Lethal Options
Pepper Ball System
"A safer Option"

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ABSTRACT

American law enforcement agencies are faced with decisions of force options on a daily basis that have ultimately affected civilians, officers, and other agencies around the world. The purpose of this research is to select a safer force option within the Intermediate classification and provide informative data about its use and advantages to both civilians and Law Enforcement officials. Some equipment used in comparisons included Aerosol Pepper Spray, Impact rounds, Tasers, and the PepperBall System. The finding of this research include the SA200 Launcher from Jaycor Tactical Systems (JTS) and its non-lethal munitions as a safer and more flexible option to be used in the field of Law Enforcement. Two major components, Oleoresin Capsicum (OC) and the use of reduced kinetic energy rounds are discussed. History and testing relating to OC products and the use of kinetic energy is highlighted to provide a more comprehensive and objective overview of its current use. Conclusion of this information revealed that reasonable decision-making by Law Enforcement agencies reduces serious injuries and deaths. Those statistics were supported by the use of safer equipment versus traditional equipment. Some agencies have been shown to deviate from police principles by not using the minimum amounts of force to achieve objectives. This has resulted in an increase in the number of deaths and serious injuries caused by the overuse of LTL equipment as compliance tools, rather then alternatives to deadly force. Data in this research provides supportive information that gives better reference for development of policies and procedures within the Brazos County Sheriff's Office and other Law Enforcement agencies.

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Introduction

The law enforcement community is an entity that is held to higher standards of ethical behavior than the general public. The manner in which its duties are performed is often scrutinized based on the actions of individual officers rather than the agencies they represent. The negative perceptions that are formed from the actions of an unethical officer continue to discredit the Law Enforcement community. For example, the Rodney King incident in Los Angeles, California in 1991 was one of the biggest setbacks against modern-day policing. This incident gained international notoriety and drew responses from both local communities and other Law Enforcement agencies. Many questions were raised about proper Police policies and procedures subsequent to this incident. The acceptable standards for use of force in the Law Enforcement community were re-assessed then placed under extreme scrutiny by the general public and Law Enforcement researchers. This incident compelled agencies to place better emphasis on the training of officers (especially with regards to ethical decision-making) and on the choices of use of force equipment being used in the field.

The purpose of this research is to compare use of force equipment and explore the most recent data within the category of Intermediate force. There are compelling benefits for the use of some Less Than Lethal (LTL) applications as opposed to the traditional applications of force. Some of these traditional applications can potentially cause serious bodily injury and even death. The question arises then as to why these applications are still being used. In seeking to answer this question data will be provided attesting to the advantages and disadvantages of Intermediate force equipment currently being used by Law Enforcement agencies. In particular the PepperBall System from Jaycor Tactical System (JTS) will be evaluated based on the simplicity and flexibility of its application, its cost-effectiveness, and the degree of safety it

provides in the Law Enforcement field. This paper will also provide data that will better explain the origin of Oleoresin Capsicum (OC) and how it is derived. A comparison will be made between the old and new technologies used in the measurement of the pungency of OC. Research information will be accessed from Internet resources such as the JTS website, Use of force manuals, and Law Enforcement Journals and News Publications. It is hoped that the data presented here will be utilized in policy development both for reducing liabilities and providing improved safety in the work place. It is also the intent of this research that pro-active policies and procedures supporting the use of force alternatives in the Intermediate force classification will be developed. Equipped with a better understanding of available LTL options Law Enforcement officers will be able to make decisions based on what is reasonable. In conclusion this paper will provide the Brazos County Sheriff's Office and other Law Enforcement agencies with data to be used in developing policies and procedures within the Law Enforcement field.

Review of Literature

In the development and the evolution of Less Lethal munitions two main principles have factored into play. The first is the use of Kinetic energy involving weapons such as clubs, spears, and arrows. These were all accepted and widely used during the early policing years but due to modernization, citizens' concerns about humane treatment of arrestees, and potential violations of civil liberties, the use of those devices was discontinued. The second principle involves the application of incapacitating substances. In the very early years of development many different ethnic groups used these substances in warfare. Examples of these substances were dead diseased animals, hot oils, and fire, which were propelled into enemy territories during times of war. Another incapacitating substance, Oleoresin Capsicum (OC), which is derived from red pepper,

has been in use for over 2000 years. The Chinese used this red pepper in ancient warfare against their enemies by placing it in rice paper and introducing it into the enemy territory. Contact of OC with the facial area produces disabling conditions, thereby distracting the enemy and providing a window of opportunity for an outright attack (JTS.) The applications of OC use has not been arbitrary but has been extensively researched and evaluated. From as early as the 1900s the United States Army conducted research on the use of OC with military personnel. In the1973, OC became available as an aerosol spray and was used by FBI personnel and U.S mail carriers to incapacitate humans and animals on a temporary basis (NIJ). Police Products of Florida introduced OC aerosol spray into the US civilian market in the 1980s. This competed with "mace" a more toxic aerosol, which was already in use.

Even after its introduction into the market further studies were still being done into the use and application of OC. Studies were conducted at California San Diego University concerning OC usage in a control laboratory setting. Areas tested were the combined effects of OC exposure and positional restraint on the respiratory and pulmonary functions. The finding suggested that OC spray did not pose a significant risk to subjects' respiratory and pulmonary functions. The finding also indicated OC did cause a small rise in blood pressure (NIJ, 2001). Further studies into this observation showed that this increase was due in large part to the fact that these particular subjects had alcohol and other drugs in their blood system. Based on this and several other studies almost all modern Police Agencies, the Military, Institutional and private sectors have adopted OC as one the most widely used irritant products in their arsenal Jaycor Tactical Systems (JTS).

Aside from OC there is an abundance of other "Less Than Lethal" (LTL) products on the market today. However, there is a marked discrepancy between the availability of these products and the frequency with which they are used. These weapons are only as good as the officer

behind them and the policies being approved (Henry.) In 1991 the Los Angeles Police Department went from being one the most highly esteemed Police Departments to being one of the most scrutinized in the nation. The infamous Rodney King incident was one of the most renowned police and civilian confrontations ever caught on film. It was televised nationwide shortly after it unfolded. In this incident King was repeatedly beaten with batons by four LAPD officers. Subsequent to the beatings, King filed a lawsuit against the LAPD. The court acquitted all four of the white police officers on assault charges and use of excessive force. This acquittal triggered a ripple affect of violence and rioting throughout Los Angeles. This riot was recorded as one the worst in U. S history (Chambers). Fifty-five people were killed, 2,383 others injured and more than 8,000 arrested. Damage to property was estimated at $1 billion. In a civil lawsuit in 1993 two of the officers were found guilty and served 30 months in federal prison (Eight Amendment). The City of Los Angeles paid out a settlement of $3.8 million to King. This event was a major cause for reform throughout Los Angeles and other Law Enforcement agencies across the United States and other countries (www.cnn.com/2001/LAW/03/02breating.anniversity.king.02/).

In retrospect the Los Angeles incident with Rodney King could have been possibly avoided if technology such as the SA200 PepperBall Launcher was accessible at the time of the incident (Henry.) The SA200 PepperBall Launcher is used to deliver an OC powder irritant and transfer of kinetic energy to subjects, thereby incapacitating them. OC aerosol spray was available on the market during that time but was not standard issue to LAPD officers. This would have been the first force option to be used to possibly disable or incapacitate King, making it possible for the officers to move in and establish better control (Henry.) The unavailability of other options such as the SA200 Launcher resulted in an automatic escalation of force that ultimately led to the excessive use of the Side-handle batons. Officer Powell, one of the main

LAPD officers involved in the incident, was charged and sued for using excessive force. He had also failed a qualification test for using his baton on a stationary target two hours prior to using it on King (www.salon.com).

There is an abundance of other Less than Lethal munitions being used throughout the Law Enforcement field that are being used for specialized and general services, but more focus should be placed on officer's levels of training rather than the use of non-lethal products. Questions asked should be related to the use of reasonable force, justification to use force during the window of opportunity, how much force should be used and the situations that mitigate force. The decisions made by officers in the field have made an even greater impact on the Law Enforcement community then the actual use of LTL technology. The United States Constitution and several case laws have shaped the guidelines for determining the standards for force while upholding the rights of citizens. Some of these cases have had a profound impact in the way that force tactics are deployed in Law enforcement today (Johnson v Glick.)

On November12, 1984 a diabetic North Carolina citizen by the name of Dethorne Graham was having an insulin reaction. Along with a friend named Berry he went into a convenience store to purchase some orange juice. Because the store was overcrowded he decided to go to the nearby house of another friend to try to find something to drink. Both Graham and Berry exited the store speedily and hurried to their car to make their way to their friend's house. While they were making their speedy exit from the store a North Carolina Police Officer Conner witnessed Graham leaving the store. Assuming that something suspicious had just transpired in the store he followed the car and ordered Graham and Berry to pull over. During the stop, Berry tried to explain to Conner that Graham was having an insulin reaction and needed to get some sugar into his system. Upon hearing this Conner responded by requesting additional information from the store. During this time Graham exited the car, ran around it twice, and then passed out

briefly. Conner immediately radioed for backup. When Police assistance arrived as back up they rolled Graham over onto his side and applied tight hand restraints behind his back. Berry repeatedly attempted to explain that Graham needed sugar. The officers ignored all that was said. At several instances they called him a “drunken M.F”. He was lifted up while in restraints and placed on the hood of Berry’s car. Graham at that time requested that the officer remove a diabetic decal from his wallet. The officers responded by slamming his head into the hood of the car (Tennessee v Garner.) He was then thrown head first into the back seat of a Police Car. Graham’s friends brought orange juice to the car but Police continued to refuse Graham any reasonable medical assistance. Shortly after arresting Graham Conner received confirmation from the convenience store that no problems had occurred. Graham was then taken home by the officers and released from their custody. Graham sustained a broken foot, cuts on his forehead, cuts on the wrists, and an injured shoulder. The case was analyzed under the Fourth Amendment’s “objective reasonableness” standards, rather than under a due process standard (Graham v Conner). The outcome of this case had the potential to greatly influence the manner in which officers respond in similar situations and their choice of weapons in trying to restrain a suspected individual. However, the information regarding this case has not been made widely available to officers in the field as a training tool.

Organizations such as the American Civil Liberties Union (ACLU) have surfaced in an effort to protest Police actions and some of the LTL equipment being used in the field today. Some of the main issues that are being addressed are the choices of less-lethal equipment and when it should be used. The Colorado Police Chief has come under scrutiny and it has been requested that his officers be limited on the use of Tasers to situations presenting a true threat to human life or safety. Currently Denver officers are being allowed to use Tasers as compliance tools in situations that do not justify deadly force. Tasers have been cited as a contributing factor

in some deaths- three in 2001, ten in 2002, sixteen in 2003 and four during 2004- in the nation. If there is not a serious threat and these agencies are applying this non-lethal option, then it will and should be evaluated under what is reasonable (ACLU). On February 2001 a Deputy Sheriff in Dallas deployed a Taser thereby averting tragedy in a domestic violence situation. The situation had a peaceful ending. The incident dictated a life-threatening situation and the officer made a reasonable decision based on what was taking place at that time. In December 2003, an Arlington Police officer attempted to stop a civilian from jumping from an overpass to commit suicide. The subject was shot with the Taser and he jumped a few minutes later following the contact. The department was put in a position that required an investigation to see if the officer made a reasonable decision (Police One.com).

In Texas at least seventy law enforcement agencies have tested Taser technology and have not committed to use it. Taser is an acronym for Thomas A. Shift's Electric Rifle, a reference to inventor John Cover's favorite book. The gun-shaped, battery-powered weapon shoots two wires attached to what resembles straightened fishhooks that are negative and positive. Taser International of Scottsdale, Arizona manufactures it. The probes deliver a 26-watt, 50,000-volt charge for five seconds. The effects from the Taser interfere with the nervous communication between the brain and muscles causing temporary paralysis. The Tasers have to be deployed at a distance of approximately 20 feet or more of the target. The cost is approximately $400.00 per unit for law enforcement agencies (Police One. com). The Taser is one of the most widely used tools in the (LTL) arsenal. With the currently available data regarding the impact of Taser use on the rising number of deaths of suspects around the nation and the legalities associated with this tool the use of the Taser for general police duties is highly questionable. This equipment should be used with specialized trained units such as S.W.A.T. and rapid response units (Henry.)

With the history of OC and a reduced use of kinetic energy the SA200 PepperBall System from JTS is a safer option to be used in the Intermediate classification. This system employs three applications making it one of the most flexible options in the arsenal today. It has the flexibility to be used as a delivery system that carries both munitions and irritants and it allows for the transfer of kinetic energy that administers pain compliance and a psychological advantage over assailants (JTS.) With the application of OC the officers in the Law Enforcement field and Institutional setting are placed in a safer position to perform their jobs in a more proficient manner.

Standards for force options are based on the following acceptable scale that is used in training and guidelines for justification. The Pepper Ball system falls in the Intermediate level (Levels 4 and 5) and can be used as a soft or hard application, depending on the target saturation (area) or the specific target (individual).

TCLEOSE Use of Force Continuum

1. Professional presence (marked car, demeanor, uniform, etc.)
2. Verbal commands
3. Weapon control and restraint (arm bar, pressure points, etc.)
4. Chemical, electrical (OC, stun gun, Taser, etc.)
5. Impact weapons (nightstick, collapsible baton, etc).
6. Deadly force (TEEX Training manual.)

The force continuum has been shown to be a practical and objective tool that provides consistency and reasonableness that has been shown to be acceptable by law enforcement agencies nationwide.

The types of incidents and equipment that have been discussed motivate safety first, reassuring the Brazos County Sheriff's Office of less risk to officers and presenting arguments in

favor of focusing on better training of officers and on using safer LTL equipment. The remainder of this research will be focused on “Safer options” within the LTL options.

Methodology

This research was designed to examine force options that are safer and less complex to use in the law enforcement field and some of the factors supporting the selection of the SA200 Launcher. The development and history of the components make the SA200 flexible and provide versatility for its use in different aspects of Law Enforcement, military, institutional and private sectors by allowing multiple munitions for different situations and the ability for fewer officers to do more. The SA200 has advantages that are not duplicated by other equipment in the field of LTL. With safety in mind its design allows both close and long-range usage. Studies indicate that most long-range projectiles are not accurate after 75 feet (NIJ). The SA200 is accurate up to 30 feet and can be used for area saturation at 100 feet (JTS). Additionally, the launcher can administer OC powder as well as rounds designed to deliver kinetic energy, glass braking capabilities and die rounds for marking specific targets. This application gives officers more flexibility to manage single or larger crowds. The cost of a single system is approx $300.00 for Law Enforcement use. OC is another factor that makes the SA200 rank a step above conventional launchers such as the 37-38mm gas gun, with a cost of approximately $600.00, and the 12 Gauge shotguns. The SA200 deploys a powder form of OC versus the conventional aerosol or foam application, giving it the distinct advantage of being able to be delivered at a maximum distance of 100 feet using only 8 to 10 feet pound pressure. This gives the officer the additional and advantageous option of having no contact with hostile assailants while still having the ability to incapacitate and thus control them.

Safety is the number one factor within the Law Enforcement field that compels us to search for better and safer technology to safeguard lives. More then 14,000 law enforcement officers have been killed in the line of duty. Over 6,000 have been killed since 1960. Two Police Officers are shot everyday in the United States. Each year 68,985 officers are assaulted (www.anglefire.com). With the disclosure of this information agencies' concerns should be driven by these statistics to better train officers and provide equipment in the field that is safer and more versatile. Other than being equipped with better and safer equipment, factors determining outcomes will always revert to reasonable officers' decisions. Other factors can be attributed to complacency on the job. Complacency is defined as a false sense of security while being unaware of potential danger (Webster). A large number of officers in the field find themselves in situations of over-familiarization and burn out leaving themselves open to attacks and compromises. Training is usually conducted as a requirement rather than a necessity to enhance officers' performance (City of Canton, Ohio v Harris). Solutions to complacency should be focused on better training of officers and more proficient supervision. Officers should be required to maintain higher levels of training related to his/her position in the field. For example, some agencies only measure fitness levels upon pre-hire status and there is limited physical requirement after employment. Some agencies do not require any levels of physical fitness. This has also been shown to be a contributing factor to officers' safety. Some LTL equipment being used in the field has somewhat the same principles attached to their daily use. Whenever safe equipment is used in the field incorrectly or in an inappropriate manner it becomes excessive force. So the question remains- are it the equipment being used or the decision being made that contributes to serious injuries or deaths? The answer is both. Law Enforcement officers and administrators need to take a more pro-active approach to assessing policies and determining

how force is applied. A more pro-active approach is needed to be equivalent with today's technology.

Findings

The basis of the SA200 Launcher by JTS was founded on two principles that have been shown to be significant in its development and success. OC use and Kinetic Energy comparisons were conducted on several LTL applications and equipment including the PepperBall Projectiles and Launcher (SA200), Pepper Spray, Impact Rounds and Tasers.

Non-Lethal Weapon *******	Muzzle Safe	Minimum Safe Distance	Maximum Effective Range	Kinetic Impact	On-Board Inhibitor	Multiple Effects
PepperBall Projectile	YES	0	30' to 100'	YES	Pepper Powder	YES
Pepper Spray	YES	0	10'	NO	Pepper Liquid	NO
Impact Rounds	NO	10' to 50'	30' to 150'	YES	NO	NO
Tasers	NO	2'	20	NO	Electrical Shock	NO

(JTS.)

SA 200 Advantages

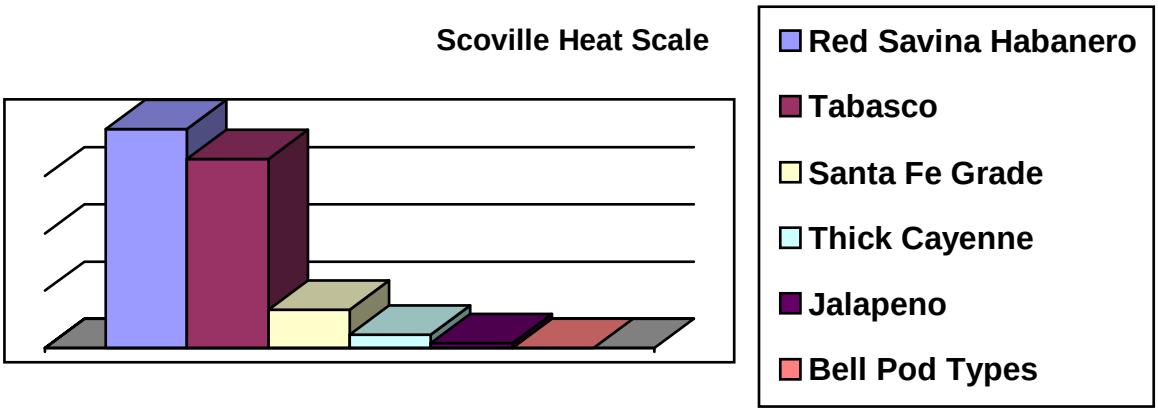
- Non-Lethal
- Simple and quiet operation
- Safe at point blank range
- Diminished consequences during police and citizen crossfire
- Little recoil and highly accurate
- High capacity capability

- Fewer officers to handle larger numbers of people
- Provides realistic training
- Inexpensive for training
- Easy decontamination
- Multiple types of rounds (JTS.)

Munitions used in the SA200 or hard plastic frangible .68 calibers rounds are constructed of hard plastic. The plastic shell (sphere) weighs approximately 0.5 grams and carries approximately 1.5 grams of OC powder. The OC powder is 5% strength, which is measured at 1 million Scoville heat units. The system will operate other PepperBall rounds for specific functions: dye marker round, non-toxic (green), and inert training round also used for kinetic transfer of energy (purple/clear). These additional rounds are all proportionate to the OC round (JTS.) The SA200 energy source is a standard 13 cubic inch air filled bottle that needs no yearly pressure certification. The system is user friendly and inexpensive to use in training exercises. The cost of the system for Law Enforcement agencies is approximately $350.00 per unit. Some findings indicate that there are no recorded deaths or life threatening injuries attributed to the use of the PepperBall system. Other studies have shown that OC was a contributing factor in the deaths of two arrestees, but also other contributing factors like drugs and alcohol were present in the bloodstream in both cases. The arrestee deaths may have also been associated with excessive struggling with officers and being placed in an Asphyxia position (NIJ). In the 1990s the University of California- San Diego did extensive studies on OC use in controlled laboratory settings. The pool of test subjects consisted of people of different ages, weights, and health states including some who were obese and others who presented with respiratory challenges. Subjects were tested with high and low dosages of OC and placebo under various conditions. The study included having the subjects restrained in different positions- standing, sitting, and laying down-

thereby limiting and restricting their movement and breathing. The results showed that there were no adverse effects of OC use on the respiratory system even in those who presented with respiratory problems prior to being subjected to OC. The only finding in this study that raised some concern was the observation that some subjects showed an increase in blood pressure (10 - 15% NIJ.) Further studies into this observation showed that this increase was due in large part to the fact that these particular subjects had alcohol and other drugs in their blood system. The actual OC exposure did not produce any statistically significant change in heart rates or blood pressure when compared to a similar group that was exposed to a placebo. In 1994 a total of 63 fatalities were reported in cases involving the use of OC on subjects in custody. Two of these were directly related to the use of OC and sixty-one were related to the interaction of the OC with drugs, pre-existing disease states, and positional asphyxiation (NIJ). A 2003 study of OC was also conducted in North Carolina and revealed similar results under the equivalent conditions. Some findings changed slightly due to the amount of test subjects used in the study, but the results were consistent with the 2001 findings (NIJ, 2003).

OC is derived from chili peppers. Two of the most common of the Capsaicinoids it contains are Capsaicin and Dy-hydrocapsaicin. Together they make up 80-90 % of the total Capsaicinoid content which is so strong that one single drop in 10,000 drops of water can produce heat that is very noticeable. High levels of capsaicin have been reported to cause nerve damage and possibly death of pain fibers. Heat is measured Scoville Units in multiples of 1000. The following list of chilies put in scale to show pungency levels and Scoville Heat Units (Tech 3).



(Henry.)

“Red Savina” Habanero...577,000

Tabasco……164,900

Santa Fe Grande……33,555

Jalapeno……...4,350

Bell Pod Types…0 (www.egconsult.com)

The Scoville Organoleptic test was replaced due to criticisms from the American Spice Trade Association and International Organization for Standardization. The computerized High-Performance Chromatography test (HPLC) is now being utilized instead. In this procedure, chili pods are dried then ground. The chemical responsible for the pungency is extracted, and the extract is injected into the HPLC for analysis. This type of testing is more expensive then previous tests but gives better results. This test also determines the amount of capsaicinoids (chemical compound) that are present. Pungency is measured in multiples of 1000 units. This test is more objective and more acceptable for scientific data (www.egconsult.com). The ability to provide factual data supporting this force equipment (SA200 Launcher) makes it more accountable for Law Enforcement use (Henry.)

Another component that has influence the popularity of the SA200 Launchers is its lower levels of kinetic energy. The greater the degree of energy applied the higher the risk of injuries.

Additionally, the firmer the material being projected the greater the chance of sustaining more serious injuries. The PepperBall System operates on 12 times less kinetic energy than beanbag rounds shot from a 12-gauge- shotgun (JTS). Studies indicate that it takes an average of 3 to 5 beanbag rounds to stop a subject (NIJ). Additionally, the 12-gauge shotgun is considered a lethal platform versus the SA200 Launcher. All rounds that can be loaded in the PepperBall System are non-lethal.

Findings revealed that OC products are safe to use in the Law Enforcement Community and have an excellent safety record. The use of kinetic energy in the SA200 sets a better standard for use on civilians as compared to lethal platforms (12ga shotgun) that can cause serious injuries. Findings also support the availability of greater flexibility to officers with limited resources in using the SA200. The SA200 is adaptable to use different and specialized rounds in the field to control smaller and larger groups (JTS.).

The amount of kinetic energy generated by an object of mass, **m,** moving with a velocity, **v,** can be calculated from the following formula: Kinetic Energy (K.E.) = ½ **mv2.** This formula has practical applications in determining the amount of kinetic energy that is applied in incapacitating an assailant. The munitions (plastic spheres) used in the SA200 measures 0.5g and carry approximately 1.5g of OC powder. Upon impact this powder dissipates into countless numbers of fragments (JTS.) The K.E. generated by the application of a 0.68 caliber of OC moving at 110m/s is 110 Joules. The typical size of a Beanbag round used in the 12ga shotgun is 56g, which is 28 times the size of the rounds used in the SA200. Added to this difference in mass is the fact that the beanbag is fired at a velocity that is 12 times greater than that of the SA200 (Henry.) It is clear then that K.E. generated by the PepperBall rounds is far less than that generated by a shotgun. The SA200 Launcher by JTS has earned the right to be titled as a “Safer option”.

Discussion/Conclusion

The purpose and mission of this research was to evaluate safer options within the LTL Intermediate force classification by highlighting some of the comparisons between widely used technologies in the Law Enforcement field. The objective of the research was to select a safer option that would serve the Brazos County Sheriff's Office and other Law Enforcement agencies by aiding in the development of policies and procedures. Research indicated that some Less Than Lethal equipment contribute to higher risk of serious injury or death when applied as a compliance tool rather than an alternative to deadly force. The Taser is considered excellent technology in the field of Law Enforcement, but when used liberally it has become a controversial tool in the arsenal. The Taser is showing an increase in serious injuries and deaths related to excessive use. Law Enforcement was built on moral objective thinking; therefore the minimum amount of force to gain any objective should always be the lower ladder of force.

The question was asked: Why would some technology that seriously injures or kills citizens continue to be used in the Law Enforcement field? The answer to that question isn't a one-part answer. Some agencies are driven by training and restrict specialized equipment to special units. This allows them to be more successful and confident in the equipment being used. Others are simply behind with being educated to new technology that is available in the field. Also, with state budget restrictions some agencies are forced to use older technology in order to cut or minimize costs, therefore making sacrifices to safety. Some agencies have abandoned the use of some LTL technology that has been shown to cause serious injuries or deaths and others have restricted the use to Deadly force options only (Henry.)

Research indicated LTL technology administered to citizens with higher levels of kinetic energy poses a significantly higher risk of injury or death. The SA200 Launcher has a tremendous reduction of kinetic energy with its projectile use that causes only abrasions and bruising in some situations. The use of OC powder has complimented and enhanced an established product that has been in use in Law Enforcement since 1980 (OC aerosol). Better clarity of its source and chemical make-up was highlighted along with the development and clinical results of tests performed on humans.

Emphasis was placed on ethical and reasonable decision-making and how its affects can cost agencies both criminally and civilly. In Canton, Ohio v Harris references were made concerning appropriate training of officers. This was one of the most important points made. Agencies that fail to properly train or offer appropriate training in the field of Law Enforcement have ultimately suffered great pecuniary losses and loss of lives (Canton, Ohio v Harris). This is an important issue that can prevent the inappropriate assignment of improperly trained officers to duties for which they are not adequately trained. It will also encourage agencies to become more pro-active in their training regimes to ensure that all officers are adequately prepared for the tasks they may be called upon to perform. Ultimately, this will prove to be less costly for future development and growth (Henry.)

This research provided the necessary information to make an objective decision on a safer option within the LTL classification. It was not the objective to highlight the faults of the Taser, Impact rounds, or lethal platform systems being used in today policing but merely to add safer and better options. This information will also provide support resources to Law Enforcement personnel for training purposes and aide in the selection process of safer equipment.

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APPENDIX

PepperBall References:

Alaska State Troopers- Wayne Bortz – Lieutenant
Tel: 970-269-0390

Douglas County (WA) Sheriff's Dept- Robbin Wagg, Chief Criminal Duty
Tel: 509-884-0941

Los Angeles County Sheriff's Dept- Greg Sisneros, Sergeant
Tel: 661-295-8813

Los Angles Police Dept- Lou Salseda, Sergeant
Tel: 818-832-3741

Monroe (LA) Police Dept- Kirk Petterson, Lieutenant
Tel: 318-329-2588

New York City Police Department- Thomas Graham, Deputy Inspector
Tel: 718-293-3443

San Diego (CA) County Sheriff's Dept- Charlie Campe, Sergeant
Tel: 858-565-3070

U. S Coast Guard- Brandon Snader, Petty Officer
Tel: 956-761-2669

U.S. Border Patrol- Randy Hughes, Senior Patrol Agent
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