

THE IMPACT OF LESS THAN LETHAL TECHNOLOGY ON  
SPECIAL WEAPONS AND TACTICS TEAMS  
IN MID-SIZED AGENCIES

Article

By

Lieutenant Tony Farrar  
Rialto Police Department

Command College Class XXXII

Sacramento California

June 2002

## THE HISTORY OF SWAT

### History of Special Weapons and Tactics Teams (SWAT)

Several events in police history have demonstrated how law enforcement agencies at every level are at times too poorly prepared, organized, trained and equipped to cope with increasingly more violent and sophisticated criminal elements. Special units to support or enhance police operations are not a new concept. Stakeout units, investigative units, detectives, narcotic, street crime, gang, and organized crime units have been with law enforcement for many years.

Special Weapons and Tactics (SWAT) teams are now moving into the fourth decade of their existence and have been adopted as an absolute necessity in virtually every western nation and emerging eastern block countries such as Russia, Hungary, and Czechoslovakia. Far East and Middle Eastern countries as well as our Federal Bureau of Investigation, the United States Secret Service, and the United States Military have also adopted this concept (Brock, 2000). These countries and organizations have recognized the need for a trained, technically proficient, disciplined, and controlled response to extreme violent actions that occur in their jurisdictions.

There is no part of the United States, urban or rural, rich or poor, heavily or sparsely populated that does not need a SWAT response. There is no neighborhood, town, county, suburb, or city immune from a violent offender or a group of criminals. Any community can be a victim of a major violent incident and there must be a system in place to respond to such incidents as rapidly as possible.

The fact that any area or community in the United States can fall victim to a mad man killing innocent people in a post office or a mentally deranged suspect in a school murdering children does not mean that every police or sheriff's department should have a SWAT team. It does, however, mean that a law enforcement agency must have a system in place that is viable and very quickly available to respond to major violent incidents.

The concept of Special Weapons and Tactics teams started in the City of Los Angeles in the 1960s, after the police shoot-outs with the Black Panthers. But until recently they were largely non-controversial, specialized teams trained to deal and negotiate with armed or mentally disturbed persons holding hostages or otherwise barricading themselves in buildings (Kolman, 1982).

Now, after more than a decade of America's drug war, the number of teams has dramatically increased. They still handle those high-risk, or major call out type incidents, but mostly they knock down the doors of suspected drug dealers. They accompany officers who execute drug arrests and search warrants if the suspects are known to have violent histories or are known to carry or use weapons.

Smaller departments are dispatching SWAT teams at a time when bigger city crime has increasingly trickled to smaller communities – and at a time when some larger departments have switched to more labor-intensive, undercover, non-confrontational approaches to snagging suspects. Nationwide, more than sixty-five percent of small community forces now have their own SWAT teams, according to a survey released in Justice Quarterly Magazine. Another twenty-eight percent report they will form one within the next few years (Randall, 1999).

This same survey, reported in an article entitled “Militarizing Mayberry: Making Sense of American Paramilitary Policing”, covered 473 departments serving towns and cities with populations between 25,000 and 50,000. The departments have steadily increased the number of call-outs to which they dispatch a SWAT team. Only seven percent of these calls match the work with which we normally associate SWAT work: hostage situations, civil disturbances, and terrorist incidents. The vast majority involved narcotic raids (Randall, 1999).

This new mission for America’s smaller and mid-sized police agencies crystallizes a growing chasm between two trends in American law enforcement. Trend one is non-confrontational community policing, in which police officers become part of neighborhoods to prevent small problems from turning into big ones without resorting to arrests or violence. Trend two is zero-tolerance. Iron fisted attacks on all suspects, small time and major, to claim the streets for the good guys.

In a study conducted in 1997 by Peter Kraska, a professor of Police Studies at Eastern Kentucky University, and his colleague, Victor Kappeler, there was a dramatic increase in the number of SWAT teams and a rapid expansion of their roles.

Kraska said his research showed that the rise in SWAT teams and their activities closely follows the increase in resources used to fight the anti-drug effort. Kraska surveyed 690 law enforcement agencies serving cities with populations of more than 50,000. According to his survey, 90 percent have active SWAT teams. In the early 1980s, only 60 percent of these cities had such teams. The researchers found that even in smaller cities and rural communities, two of every three police departments had SWAT teams, a trend he calls militarizing Mayberry (Kraska, Kappeler, 1997).

In addition to an increase in the number of SWAT teams, the underlying questions are: What do we want our police officers to be? How can they best achieve maximum success with minimal injury or destruction of property? And, what advancement in technology will, or could, change the future of SWAT?

### The Need for SWAT

In today's society and culture, violence, unfortunately, is prevalent in the everyday activities of life. No enterprise is safe from the many forms of violence that permeate communities of any size and make-up. Schools, businesses and community buildings as well as state and federal structures are the targets of disgruntled individuals and anti-government groups. Narcotics traffickers with exotic weapons and well-armed criminals, no longer fearing law enforcement and willing to confront and enter into deadly conflicts with the police, have created a need for highly trained and specially equipped tactical teams and/or units.

Police agencies, no matter what size, must have the proper tactical options readily available to them if they are to successfully resolve crisis incidents. SWAT is necessary to protect the lives of innocent citizens and police officers, as well as suspects. In furtherance of this justification, state and federal case law has in fact recognized SWAT as a legitimate use of force. The presence of a highly skilled, highly trained police tactical unit has been shown to substantially reduce shooting incidents and the risk of injury and loss of life to innocent citizens, police officers, and suspects. SWAT enhances the safety of everyone involved in an incident (Gray, 2001).

From the middle and late 1960s and early 1970s to the present, social and technical factors have been at work to change the complexion of law enforcement in general and tactical policing in particular. First, the war in Viet Nam and other conflicts resulted in a quantum increase in the number and variety of weapons available for law enforcement. Unfortunately, criminal elements throughout the world continue to have access to the same technology without the legal, social, and economic constraints endured by law enforcement (Dobson, Payne, 1982).

Second, America's space exploration program and its by-products have also had an impact on the technology of law enforcement and criminality. Third, the frequency and magnitude of special threats have increased beyond the imagination of the beat cop of a few decades ago. Regardless of the size of the law enforcement agency's jurisdiction, it is very naïve for a police administrator to ignore the possibility of extreme violence.

Finally, the effects of the technical sophistication were accelerated by the development of criminal groups from all points on the spectrum. These groups have often joined forces through networks and share, exchange and provide information to each other for mutual gain (Mullins, 1997).

### The Responsibility of SWAT

The primary responsibility of SWAT is to respond to barricaded persons, hostage incidents, emotionally disturbed persons who pose a threat to the community, and sniper incidents. In addition, SWAT functions as a mobile, flexible force for special

police problems, which require a highly trained, disciplined unit. These problems include, but are not limited to the following:

- Civil disturbances.

- Surveillance.

- Security details.

- Fugitive apprehension.

- High risk warrants.

- Crisis negotiator response.

In order to carry out these tasks, SWAT personnel must be trained to handle the following:

- Determine the goals and objectives of the incident.

- Gather available information and convert into intelligence.

- Analyze intelligence and develop a course of action.

- Weigh course of action against mission goals (risk assessment).

- Select course of action and implement.

- Conduct after-action review and debriefing.

Recognizing that SWAT operations are hazardous and that a successful resolution of an incident may involve the need for decisions that may affect the lives and safety of persons involved, the following shall always be a priority of life during a SWAT operation:

- Hostages.

- Citizens.

- Hostage takers.

SWAT can function as a stand-alone unit or mutual aid unit. Accordingly, decisions must be made as to whether the department's unit will be full time stand-alone a part time collateral duty unit, or a mutual aid unit.

## Public Perception

Critics of the rise in SWAT policing fear it increases the dangers for police officers and citizens alike. They see SWAT as part of a trend toward turning police officers into soldiers who attack a community instead of becoming part of it. They see the rise in SWAT drug related raids as the product of an unwinnable drug war that values short-term battlefield victories over more difficult long-term medical solutions. They view social programs that could truly reduce the supply and demand of street drugs as the only solution.

Police officers and many citizens who support SWAT raids counter that criminals have become so well armed and wanton in their use of violence that police need special training and weapons to protect their own lives. Some even portray SWAT teams as a form of community policing – and use federal community policing dollars to fund them. The argument: SWAT can prevent violence by overpowering a violent person with sonic booms and massive displays of surprise force, preventing that person from shooting in the first place.

As usual, the police are caught between contradictory public demands: lock up all the drug dealers. Show us proof that you're out there, in charge of the streets. Respect our civil rights and liberties. Don't scare us. Send in the Army. But don't

attack or involve us. Protect our lives in a dangerous world, but don't make it more dangerous.

## Equipment Assessment

The acronym, SWAT (Special Weapons and Tactics), has traditionally suggested the police use of sophisticated weaponry to overcome unusually violent, well equipped, technically proficient, and highly motivated criminals. However, many times the perpetrators of incidents requiring more than a routine police response have enjoyed the element of surprise, fortified positions, and numerical advantages. Thus, at times the police response has been hindered by limited physical assets, restrained by a genuine concern for the safety of the victims and other innocent persons, and impeded by an inability to gain useful information concerning an exact location, condition, and activities of the persons committing the crime.

Advancements in technology available to the police have resulted in law enforcement's limited ability to employ graduated responses, at least in certain instances. Not as headline or newsworthy as the big shootout, but having the likelihood of a peaceful negotiated surrender. In many cases, these advancements in technology and in available police equipment have come from modifying developments in other fields and applying these developments to immediate law enforcement needs. This is intended to increase the number of options available for police officer response through an expansion of the use-of-force continuum, enhanced intelligence-gathering methods, and improved officer protection.

## The Evolution of Police Tactical Equipment

Even the least sophisticated of today's SWAT teams possess equipment that generally exceeds the quality of its parent police agency. The original SWAT teams were outfitted in machine-washable utility uniforms and baseball caps to allow more mobility than the amount allowed by a traditional police uniform. In many cases the utility uniform was not specifically designed for the wear and tear of law enforcement, as some SWAT officers took the appearance of jump-suited gas station attendants (Mijares, McCarthy, and Perkins, 2000).

Shoulder weapons ranged from pump shotguns to fully automatic M-16 rifles. Some tactical units carried M-1, .30 caliber carbines made available through the National Rifle Association's Director of Civilian Marksmanship. Handguns could range from an American made .38 Special Revolver to a .45 caliber military Model 1911 A1 Pistol. Less than lethal munitions only consisted of variations of tear gas, either thrown by hand after activating a Bouchon fuse, or fired from a single shot 37 millimeter launcher or gas gun.

The MP-5 submachine gun, made by Germany's Heckler and Koch, is generally considered to be the shoulder weapon of choice. However, many police departments have elected to purchase less expensive weapons as a wide variety of automatic and semi-automatic weapons remain in the law enforcement realm. In step with the semi-automatic handguns and the fully automatic rifles has been the gradual move toward larger caliber rounds. Over the past ten years, incidents of deadly force have all too often seen multiple shots fired with little immediate effect upon the suspect.

Surveillance equipment was limited to hand held mirrors, often removed from the handlebars of bikes or dental mirrors. Communication equipment was so heavy, limited in its transmission and reception capabilities, and unreliable when used indoors or around electrical equipment. Equipment vehicles were second hand delivery trucks that were often modified and painted by the officers without the necessary financial assistance from the police department. Decreased funding and budgetary constraints are some of the reasons for these financial issues.

### New Developments in Tactical Equipment

Contemporary SWAT teams have evolved from an accent on unusual and sometimes exotic weaponry to an emphasis on tactics and life-preserving technology. This evolution has largely been influenced by court decisions, community standards, and the recognition by criminal justice academics and practitioners alike that technology in many varying fields has grown dramatically; and that with creative and insightful minds, this technology can be applied directly to tactical situations. It cannot be overstated that the most important factor contributing to the successful resolution of a tactical incident is the training and discipline of officers associated with the selection process. However, there can be no doubt that the increase in technical options has resulted in an improved ability of tactical units to resolve complex and extremely violent situations with a decrease in casualties among victims, bystanders, police, and even the suspects who initiate these violent and hostile situations.

## Increasing Options Through Less Than Lethal Technology

Traditionally, law enforcement officers who were required to use force were limited to very little between the risky and the very often, unpredictable use of a nightstick and total commitment to the lethal force of a firearm. While tear gas has been in the police arsenal for several years, today's technology has begun to introduce a small additional number of graduated responses that allow the officer to complete a mission while keeping all risk factors to a minimum.

One of the most hazardous procedures of law enforcement is the neutralization of a barricaded suspect, especially if the suspect has a hostage. During the noise, excitement, and confusion of a rescue operation, hostages may not hear, understand, or heed the directions of rescuing law enforcement personnel. They may also attempt to flee the scene and become caught in a crossfire between rescue forces and the hostage takers. Various law enforcement and military technicians recognized this in the early 1970's when hostage seizures became an international epidemic (Mijares, McCarthy, and Perkins, 2000). They also recognized the need to devise a method to incapacitate both the hostages and the hostage-takers temporarily without permanent injury until rescue personnel could safely take all parties into custody.

A non-fragmenting hand-delivered device called a Flash Bang, was developed to meet this need. Activated by a standard Bouchon fuse with a one second delay, the device was composed of a cardboard canister containing a mixture of magnesium and gunpowder, which when ignited by the fuse, would immediately produce 20,000 footcandles of light and about 220 decibels of explosive noise. Flash/sound diversion

devices used by contemporary American law enforcement are specifically designed to produce less than 180 decibels (Tophoven, Verlag, and Verlag, 1984).

The less lethal flash/sound option affords an opportunity to examine a broader level of the legalistic waters concerning police choices of weaponry. Because firearms are inherently lethal, they are justified only in the most extreme conditions of immediate threat to human life. It must be also foreseen that shots fired at an assailant may miss or pass through the target or ricochet, so that while intended to disable the assailant, they may have dire consequences for the innocent (Waddington, 1990). Paradoxically, for police tactical units operating in the types of situations necessitating their mobilization, incapacitation of suspects must be both total and immediate.

To what extreme a situation must rise or thereafter remain before tactical units can finally justify applications of deadly force is a question that may be fraught with specters of civil liability. Since immediate and grave decisions will become necessary during an armed confrontation, the dangers to innocent persons can only be minimized by tactics that seek to avoid all-out confrontations (Franscell, 1996).

## Technology Developments

Technology has also begun to play a large role in SWAT operations. With the availability of less than lethal weapons and munitions, SWAT teams now have additional tools to use when dealing with potential dangerous situations. Advancements in less than lethal technology such as bean-bags, rubber bullets, rubber pellets, wooden dowels, sticky foam, pepper spray, capture nets, electric tasers, laser dazzlers, and microwave or laser guns, make for a optimistic future. In addition to these

advancements in less than lethal technology are the advancements in surveillance equipment, listening devices and other night vision options.

Funded with just 34 million dollars in 1998, the Joint Non-Lethal Weapons Program has begun to gain some progress in this area. Electromagnetic weapons may soon stop vehicles or even ships on the high seas. Microwave guns could trigger high fevers in adversaries. Researchers are working on laser dazzlers that could cause disorientation without permanent eye damage and heat induced energy beams that would have the same effects as touching a hot light bulb (Phinny, 2001). And don't forget things like stickums, slickums, super-acids, goop guns, aerial stink bombs, metal eating microbes, and computer viruses, along with experiments in acoustic energy and radio waves.

While many of these weapons are highly effective, they have also raised considerable concerns among some scientific organizations, as well as human rights groups. First, some of these groups say there is no guarantee that less than lethal weapons are always non-lethal, and even non-lethal advocates agree with that. Some technologies used under the wrong circumstances or without proper training could easily kill. What's more, some are capable of inducing effects such as permanent blindness. Many are also being developed in secret and are not being tested to the satisfaction of human rights groups.

Even within the military strategic and policy community, there is criticism that non-lethal force, is at best, only useful in highly specific situations such as where chaotic crowds can easily be dispersed or where there is no organized force prepared

to retaliate with lethal force. In some instances, non-lethal force could be counterproductive.

As with any type of device or weapon, there is always fear it will fall into the hands of criminals. Stun guns and other temporary immobilizers would give criminals a powerful new option to commit crimes without the fear of capital reprisals or life sentences they would risk if using a firearm. However, many police organizations and the military clearly believe this emerging, non-lethal technology has a place in the wars against crime and the enemies of the future. The question to ask is: to what extent will these less than lethal weapons affect special weapons and tactics teams in the future?

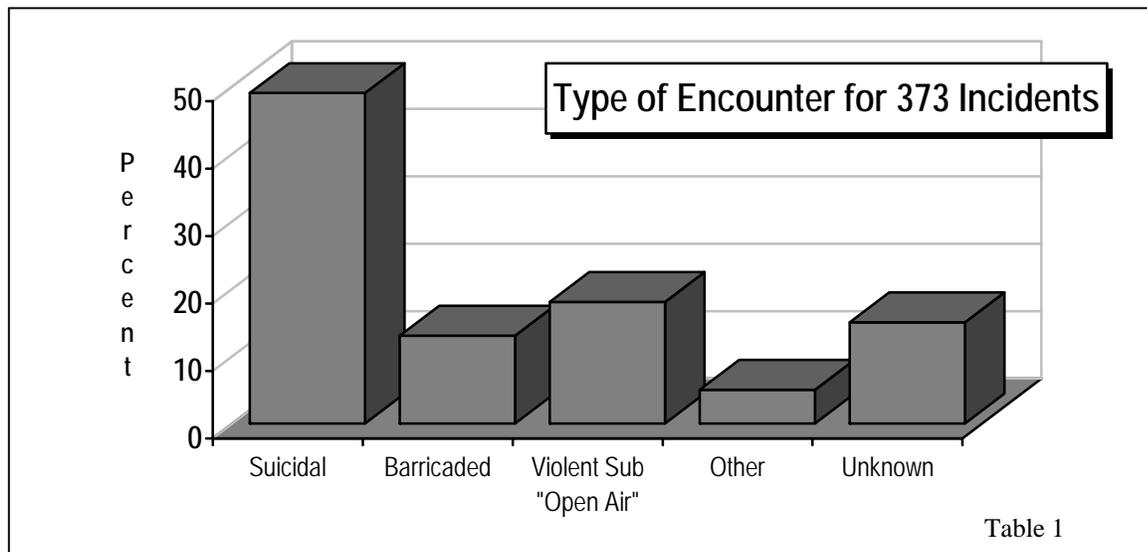
#### Current Use of Less Than Lethal Technology

The use of force by police officers has undergone increased scrutiny in both the legal community and the public arena. This has heightened the need for non-lethal or less than lethal weapons to control combative suspects. The police beanbag is the latest alternative to deadly force. The police beanbag is a synthetic bag filled with lead pellets that is fired from a pump shotgun. Although it was first developed in the early 1970s, it has only been in use in the United States since 1994. In the 1970s, the US Army used mathematic models and anthropomorphic dummies to investigate the weapon's morbidity and mortality. In this investigation, it was theorized that the liver and the spleen would be vulnerable to the weapon if impacts occurred directly to them.

In the following study, members of The National Institute of Justice (NIJ), The City of San Diego Police Department, the California Tactical Officers Association (CTOA), and the University of Houston, conducted a twenty-four month study on the

effects of less than lethal weapons, to include bean bags. Information was collected via a survey of North American law enforcement agencies that include less than lethal technology in their weapons inventory. The data collection process yielded reports on 373 separate incidents where police officers fired at least one impact projectile at citizens. This report focuses on what the analysis of these 373 cases discloses about using impact munitions against citizens and discussed the implications of these findings for contemporary law enforcement (Hubbs, Klinger, 2000).

As indicated in Table 1, one of the aspects in which impact munitions are used is the type of problem confronting the involved officers. Impact munitions have received a great deal of attention from law enforcement as a possible means of de-escalating numerous types of violent encounters, and thus minimizing injuries to both citizens and officers.



Although this has proven to be true, the research concluded that impact munitions do not always succeed in accomplishing their intended goal of resolving

violent police-citizen encounters short of deadly force. Because impact munitions are not 100 percent effective in resolving crisis situations, police officers need to ensure that they have lethal force readily available to protect themselves and others, should the weapon have no intended effect.

Respondents of this survey were also asked to indicate where on the suspect's body each projectile that hit its intended target landed. Those that did not strike the subject were reported as misses and hits were reported by placing marks on data collection sheets. As indicated in Table 2, these marks were then grouped together and placed into categories.

**Table 2: Number of Munitions Striking Subjects in 313 Cases**

<i>Number Fired</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Percent</i>
0	1	.3	.3 <sup>5</sup>
1	135	43.1	43.5
2	69	22.0	65.5
3	52	16.6	82.1
4	26	8.3	90.4
5	14	4.5	94.9
6	7	2.2	97.1
7	1	.3	97.4
8	0	---	---
9	4	1.3	98.7
10	2	.6	99.4
11	0	---	---
12	1	.3	99.7
13	1	.3	100.0
<b>Total</b>	<b>313</b>	<b>100.0</b>	

The sub 100 percent effectiveness, combined with the eight deaths attributed to impact munitions, suggests a second conclusion. The on-going search for effective less than lethal weapons for law enforcement use should continue. In recent past, some next generation impact projectile delivery systems have come available to law

enforcement. These include new types of beanbag projectiles, 40mm sponge rounds, and the pepper-ball system. The Jaycor, pepper-ball system, consists of a modified paintball launcher which can fire projectiles containing OC powder. These are designed to rupture on impact, delivering a blow to the subject and dispersing the chemical irritant on and around the body. The CTS 12 gauge beanbag consists of a fabric bag filled with 42 grams of lead shot and tied off in the middle to contain the shot. Defense Technologies has developed a sponge round projectile that is receiving considerable attention from law enforcement. This 40mm projectile is made from high-density sponge material and appears to deliver two very important requirements, long range accuracy and consistency.

Respondents to the survey also reported on injuries caused by 782 of the munitions that impacted the suspects. As indicated by the figures in Table 3, bruises were by far the most common injury sustained, occurring in 51 percent of the munitions strikes.

**Table 3: Injury Sustained by Subjects from 782 Projectile Impacts**

<i>Injury Sustained</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Bruise	398	50.9	50.9
Abrasion	239	30.6	81.5
Laceration	43	5.5	87.0
Fracture	27	3.5	90.5
Penetration	14	1.8	92.3
Death	10	1.3	93.6
None	51	6.5	100.0
<b>Total</b>	<b>782</b>	<b>100.0</b>	

Fortunately, the current study also developed enough information to draw several other conclusions about the use of impact munitions.

1. Impact munitions are safe as measured against the likelihood of fatal injury when officers shoot citizens with lethal munitions. It is clear that impact munitions rarely produce fatal injuries.
2. Impact munitions are effective as measured by the standard of resolving high-risk encounters without having to resort to deadly force. In current data, 93 percent of the incidents were resolved without the use of lethal fire.
3. Training in the proper use of the impact munitions is critical.
4. Impact munitions should be clearly identifiable.
5. Impact munitions can save lives. Deadly force could reasonably have been used in nearly all of the incidents involving suspects armed with deadly weapons (90 percent).

#### Problems to be Encountered by SWAT Units in the Future

A review of the Uniform Crime reports over the past several years may suggest a decrease in the crime rate among the adult population. However, a similar review would produce evidence that the tendency among juvenile offenders is the opposite. A particularly disturbing aspect of this projection is the observed increase in acts of violence involving multiple victims perpetrated by juveniles against other juveniles. These acts have been manifested through school shootings in Pearl, Mississippi; West Paduch, Kentucky; Jonesboro, Arkansas; and Littleton, Colorado. They have also been seen among the youthful participants in the fiercely competitive culture of gangs and drug sales. Finally, most young criminals surrendered to the superiority of responding police units in previous incidents. Tomorrow's youthful offenders may increasingly

refuse to lay down their weapons and may show little reluctance to stand fast as a situation escalates into full scale armed combat with the police.

Suicide is hardly a new phenomenon. As early as 580 B.C. the poet Sappho is said to have killed herself over her unrequited love for a boatman. Vexing circumstances and dramatic human conditions sometimes become subjects that require the action of police officers for resolution. Too often spurious theories, ill-conceived opinions, and incomplete research have forced ridiculous policies and impossible procedures on responding officers.

Approximately 25 percent of all police shootings are suicide by cop cases (Hutson et al., 1998). More suicidal subjects have become aware of the phenomenon of law enforcement assisted suicide and deadly force. Hutson and Associates also found that 70 percent of these suicide by cop situations concluded in less than thirty minutes. This time frame would obviously make it extremely difficult for law enforcement officers to summon professional help that probably is not readily available.

In a completely independent study, Kennedy and Associates (1998) agreed that police responders may become involved in shootings motivated by suicidal suspects more often than commonly anticipated. This study found evidence of probable and possible suicidal motivations in 16 percent of the 240 incidents collected and analyzed. By far, pointing or firing a firearm at a responding police officer was identified as the precipitating factor.

Until recently, law enforcement has been relatively unconcerned about weapons of mass destruction and the likelihood of such an event occurring. The threat of an individual or group using a chemical or biological device to cause mass injuries, panic,

and long term fear has now taken on an air of reality. Should such events occur, they could be catastrophic and only with cooperative response can the situations be managed. If such an incident were to take place, it is suggested that SWAT personnel would have specific duties such as to keep the peace and order, provide security, preserve evidence and other similar tasks.

Let's not forget the possibility of additional burdens being placed on the line patrol officers. Should this technology be developed, there could be an expectation to have patrol officers handle more dangerous situations than in the past.

#### Projections of Future Tactical Equipment and Technology

Like all other aspects of modern society, police operations in general and especially tactical operations in particular will be greatly affected by advancements in technology. Equally important, changes in society, fluctuations in the economy, variations in political demands, and continuous modifications of the law will also have an impact.

Police administrators must stay cognizant of the continuous developments in technology in all fields. Except for the invention of the automobile, law enforcement technology remained relatively unchanged over the previous century until the mid 1960s. Since the evolution of the space exploration program, many products were developed for one field have been applied to many others, including law enforcement. It can be reasonably assumed that these developments will continue and there will be some legal issues to be addressed (Mijares, McCarthy, and Perkins, 2000).

Based on the past history and current state of technological development in tactical operations, a variety of conclusions can be made. First, it must be accepted that, even with the current state of technology being in a fledging condition, devices such as less than lethal weapons and surveillance equipment do possess a large measure of efficiency. However, there is a potential for misuse, abuse and associated injuries. Consequently, at least until necessary safety and legal features are developed, these devices cannot be considered part of the personal arsenal of every police or SWAT officer. Nonetheless, they can be employed by law enforcement personnel who have been specifically trained by certified police instructors.

Second, every attempt must be made to develop standards for the industry. The standards of the industry and standards of care expected by law enforcement SWAT teams will always change as technology provides improved equipment that can enhance positive resolution to violent events. Thus far, the information on sensory enhancing weapons, to include lasers or heat and brain-wave guns, has not been sufficiently accurate and reliable. At best, the information has only provided an approximation of the facts. Because of the potential for misuse of any kind of these weapons, either through misfeasance or malfeasance, specific guidelines for proper use must be developed.

Finally, the police equipment industry must be encouraged to develop useable and close to foolproof innovations that will help accomplish an agency's mission without undue exposure to danger for police personnel, bystanders, hostages, and even the criminals. Currently, the largest inhibitor to the development of new and sophisticated equipment is the fact that law enforcement is a limited market place compared to the

military or general population. The “phaser” weapons of the Star Trek television show may be only science fiction. However, experiments with non-intrusive weaponry such as sound pulses and focused microwaves are being conducted (Mijares, Perkins, 1995).

## The Future of SWAT

There are several answers to these issues however, it is the author’s opinion that creating and maintaining new standards for the profession, modifications in approaches to training, and conducting continuous research regarding technology and less than lethal weapons are at the forefront. To many, the word research may conjure images of scientists in white lab coats and ties who may be geniuses in their respective fields but who often lack common sense and certainly lack the real world experience.

In reality, scientific research is an organized search for the truth involving problem identification, parameter definition, data collection and analysis, and the realization of a research decision. In a field such as criminal justice, the tactical operations in particular, applied research could address issues such as techniques, technology, and legal issues. While there might not be a legal requirement specifically mandating any form of research, the ability to display and document a continuous effort to find solutions for improving SWAT responses is certainly a helpful approach in promoting the image of any tactical unit and its management.

Although we continue to see many developments in less than lethal technology and know of several more weapons or systems currently being tested, the fact remains until these devices become available, law enforcement SWAT teams must still perform their functions. Even when we reach the pinnacle of technology and some of these

devices are readily available, factors to include training, policy and procedure, legal mandates, judicial review, cost, and misuse must and will be addressed. In short, even with advancements in technology, there will still be the need for oversight, training and all of the other factors we experience today. After all is said and done, there will still be a need for those specially trained units whose advanced training and expertise is needed to overcome an objective through a means other than a traditional police response. There is still a need for assessment, planning, and decision making when it comes to high-risk incidents, and oversight of such incidents is critical.

As for how the advancements in less than lethal technology affect leadership, a true leader personifies the organization and the responsibility for the success of the organization rests with the leadership within. Depending on one's perspective, the blessing, or curse of the leadership role is the increase of options available for problem resolution and the discretion to choose and use the appropriate action.

Organizational leaders have assumed a greater importance than ever before because of influential factors outside the immediate environment of the organization. Because of rapid development in technology and the formal recognition of social diversity, today's society and its component organizations and institutions are characterized by continuous change.

With this in mind leaders must not only be open to change, but be willing to research and explore technology as it relates to less than lethal weapons. They must be visionaries who forecast for future events and trends, and not just be satisfied with the status quo.

So how will the advancements in less than lethal technology affect the role of special weapons and tactics teams in mid-sized agencies? One thing is clear, the move toward a technology that is capable of aiding tactical units in the fulfillment of their mission is an endeavor certainly worth pursuing.

Past and current trends can provide a reasonable projection of likely scenarios and conditions under which tactical operations will be conducted in the future. Like all other aspects of modern society, police organizations and tactical operations in particular will be greatly effected by advancements in technology. Equally important, changes in society, fluctuations in the economy, variations in political demands, and continuous modifications of law will also make an impact on police conduct.

## Bibliography

- Brock, S. (May 2000). SWAT Justification and Preservation. *The Tactical Edge Journal*, Fall, 2000, (page 63).
- Dobson, C. & Payne, R. (1982). *The Terrorists: Their Weapons, Leaders, and Tactics*. New York: Facts on File.
- Esensten, T. (2001). Organizational Effectiveness Consulting. Building Strategic Organizations, POST Command College Class 32; September.
- Franscell, G. (1995). Impact of Civil Liability on SWAT Operations – Part 1. *The Tactical Edge Journal*, Fall, 1995 (page 11).
- Franscell, G. (1996). Impact of Civil Liability on SWAT Operations – Part 2. *The Tactical Edge Journal*, Winter, 1996 (page 72).
- Franscell, G. (2000). Liability for not Having SWAT. *The Tactical Edge Journal*, Winter, 2000, (page 86).
- Gray, A. (2001). Narrowing the Occupational Perimeter; The Need for Standards. *The Tactical Edge Journal*, Spring, 2001 (page 67).
- Hubbs, K. & Klinger, D. (2001). Impact Munitions and Use and Effect. National Institute of Justice Study, University of Missouri-St. Louis.
- Hutson, H., R., Anglin, D., Yarbrough, J., Hardaway, K., Russell, M., Strote, J., Canter, M., & Blum, B. (1998). Suicide by Cop. *Annals of Emergency Medicine*, 32, 6.
- Kolman, J., A. (1981). *The Guide to the Development of Special Weapons and Tactics Teams*. Springfield, IL: Charles C Thomas.
- Kraska, Kappler (1997). Less Than Deadly Force - New World of Conflict Calls for Non-Lethal Weapons. *The Tactical Edge Journal*, Winter, 1997, (page 12).
- Mijares, T., & Perkins, D. (1995). Police Liability Issues: Tactical Units and the Use of Specialized Equipment. *Police Liability Review*, 7.
- Mijares, T., McCarthy, R., & Perkins, B. (2000). *The Management of Police Specialized Tactical Units*. Springfield IL: Charles C Thomas.
- Mullins, W. (1997). *A Sourcebook on Domestic and International Terrorism*. Springfield, IL: Charles C Thomas.

Perkins, D. (2001). The Management of Police Specialized Units. Southwest Texas State University Winter 2001.

Randall, T. (1989). SWAT Teams for Smaller Departments. The Tactical Edge Journal, Winter, 1989, (page 14).

Simon, C. (2001). Transition Management in a Strategic Organization. POST Command College 2001.

Tophover, R., Verla, B., & Verla, G. (1984). GSG-9: German Response to Terrorism. Bonn, Germany: Neue Stalling.

Yaukey, J. (2001). Non-lethal Weapons Being Developed. Gannet news Service, Inside Technology (page 2).