

Taser

A View into the Future of Law Enforcement Technology



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What is a Taser? According to Taser International, it is “an electronic control device that is a safer use-of-force option for law enforcement, private security, military, correctional, and personal defense” (Law Enforcement FAQ's).

Over the years and still today, there have been many concerns about the use of Taser devices by law enforcement from different human rights groups to law enforcement agencies across the nation. Some of these concerns have hit close to home, even within my own agency. There are many issues an agency needs to evaluate when introducing a new tool such as the Taser, but more specifically, I feel that most law enforcement agencies main concerns are with liability. This concern is easily detected when looking at an agency's policies and procedures and how restrictive they might be.

I believe that the Taser has been proven to be an effective tool for law enforcement when used to protect life and overall decrease the number of injuries to law enforcement officers and suspects alike. From my own personal experience in using the Taser, it is a very effective and necessary tool that every law enforcement officer should have at their disposal.

In this writing, I will discuss the history of Taser, Taser technology, different types of Taser devices and how they work, and the legal and medical aspects of Taser.

History of Taser

The Taser was originally developed by a NASA scientist named Jack Cover in the mid 1970's. The first model was named the TF-76. It fired two darts up to a

distance of 15 feet that remained attached to two thin wires. The propellant for the TF-76 was gunpowder, and due to this, it was classified by the Bureau of Alcohol, Tobacco, and Firearms. After this device was classified, it became restricted to law enforcement use. The manufacturing company, Taser Systems, collapsed shortly after.

A new company emerged that was formed from Taser Systems named Tasertron. This company developed two devices, the seven and eleven watt models, although only a limited number of devices entered law enforcement.

In September 1993, ICER Corporation was formed. This company was started by the current CEO of Taser International, Rick Smith, and his brother, Tom Smith. Their mission was to “develop future non-lethal electronic weapons” (Smith, 2007). In conjunction with the original developer, Jack Cover, a new non-firearm version of the Taser was developed that used compressed air (nitrogen) as the propulsion system. Cover joined the company as an employee to help develop the new Taser devices. Shortly after, the company’s name was changed to Air Taser Incorporated.

In December 1994, the company developed the Air Taser model 34000 (2nd Generation Device) which used the same electrical output as the original model TF-76, but used compressed air for the propulsion system. A new technology used with this system was AFID, which stands for anti-felon identification. AFID’s are small serialized confetti tags that are dispersed on the ground when a cartridge is fired. By including serial numbers with each cartridge, law enforcement would be able to identify the purchaser of the cartridge in cases of misuse. These AFID’s were also made from Mylar, making it harder for a criminal to pick up the AFID evidence.

Shortly after the development of the Air Taser model 34000, the company was sued by Tasertron. A non-compete agreement was signed by Air Taser agreeing not to sell their product to law enforcement and military markets in North America. Due to this, they were only allowed to sell the devices to the civilian market until the agreement expired in 1998.

In 1995, a demonstration was conducted by Air Taser for the Czech Police. During this demonstration, they learned that a determined person was able to overcome the effects, or pain, of the model 34000. After this demonstration, the company set out to develop a more effective device when they introduced the 3rd Generation in Taser devices, the M26. The company also changed its name to Taser International with this transition.

The M26 model was “designed to cause significant, uncontrollable muscle contractions capable of incapacitating even the most focused and aggressive combatants” unlike the earlier model which only caused a “strong shock sensation” (Smith, 2007). This new technology was called EMD, Electro-Muscular Disruption. Today, the name of this technology has been changed to NMI, Neuromuscular Incapacitation. Along with NMI and AFID technology introduced with the M26, new accountability control technology, also known as the dataport, was created. This function allows the M26 to record the date and time of every trigger pull.

In May 2003, the company came out with the 4th Generation in Taser devices, the X26, which is the current model carried by law enforcement today. This device was based on new technology called Shaped-Pulse Technology. Shaped Pulse is a more efficient power supply, which made it possible to design the X26 smaller and lighter than

the M26. It was also tested and shown to increase muscular contractions by 5% over the M26, which resulted in a more effective device (Smith, 2007).

Taser Technology

Shaped Pulse Technology

Shaped Pulse is made up of two phases. The first phase is called the Arc phase. This phase generates higher voltage to penetrate barriers, i.e.: clothing or skin. This higher voltage pulse can arc through a total of two inches of barrier or one inch per probe. Once the arc is complete, the second pulse phase is conducted into the body. This second phase is called the Stimulation Phase. The Stimulation Phase or “Stim Phase” then flows across the arc, which provides incapacitation for the human target.

The previous model M26 uses Blunt Pulse Technology, which requires a heavier, larger power source to deliver enough power to penetrate barriers and also sustain a higher level of energy (26 watts) to create the NMI effect. With the development of Shaped Pulse NMI Technology, the X26 was created. This allowed for the device to be made 60% smaller, 60% lighter, and use only 1/5th of the power, while still delivering a higher incapacitating effect than the M26 (Taser Technology, 2008).



Neuromuscular Incapacitation (NMI)

The original stun guns were developed to be dependent on achieving compliance with pain by affecting the sensory nerves. Individuals with a higher level of pain tolerance could potentially fight through this pain, making the device ineffective.

With the development of Taser Technology, similar electric impulses were able to stimulate both the sensory and motor nerves (sensory nerves carry information to the brain and motor nerves carry information from the brain that control muscle movement). NMI enables the Taser to cause involuntary stimulation of the sensory and motor nerves, thus making an individual's high level of pain tolerance irrelevant. This involuntary stimulation causes strong muscle contractions, pain, and incapacitation (Taser Technology, 2008).



Taser Products

Taser X26



The Taser X26 is the most widely carried Taser device by Law Enforcement today. The device uses a replaceable cartridge that deploys two small probes attached to thin insulated wires by means of a built in propulsion system made of compressed nitrogen. When both probes make contact with the target, they create a circuit. NMI impulses are transmitted through the wires and into the target, ultimately causing incapacitation of the suspect. The further apart the electrodes are on impact, the greater the area that is affected.

Another way the device can be used is to drive stun. This is where the cartridge has been removed and the device is pressed into the suspect delivering a painful stimulus. Originally, this was the devices intended method of use when using it to drive stun. Now, the preferred method is to deploy the cartridge at close range and then complete the circuit by drive stunning a different area of the body. This creates wider contact points, which affect more body area. You will see an incapacitating effect instead of just pain compliance.

The X26 delivers 50,000 watts along with 0.004 amps. This device has a built in light along with a laser for aiming. Both functions can be turned on and off. It also has an LCD display, which indicates the duration of each use by counting down from five seconds and the amount of battery life percentage remaining. The device also stores all recorded deployment information, which can be accessed.

There are a wide variety of cartridges that can be used with this device depending on what distance you want to achieve. They include: 15', 21', 25' XP, 35' XP, and the 21' Training Cartridge. Note: XP stands for extra penetration due to longer probes (Taser Products).

Advanced Taser M26



This device was introduced in 1999, and is still being used by agencies today. Like the X26, the M26 uses cartridges to deploy two probes attached to wires that deliver electrical pulses. The same cartridges used by the X26 are interchangeable with the M26 (Taser Products).

Taser XREP



The Taser XREP (Extended Range Electronic Projectile) is the new innovative device Taser International is being introduced in 2008. It is a self-contained wireless projectile that is fired from a 12-gauge shotgun. This device has the same NMI effect as a cartridge deployed from the X26, although it has a 65 foot range.

When the XREP is fired from the shotgun, a ripcord connected to the device and the shell activates the device. Upon deployment, the XREP is activated and the device lasts for twenty seconds, giving officers plenty of time to get the suspect into custody.

When the XREP makes contact with the human target, the four barbed electrodes attach. The blunt force of the impact will cause the suspect to grab hold of the device in an attempt to remove it, thus creating the circuit and causing significant NMI. If the suspect grabs hold of the ripcord, the circuit will also be completed. If the suspect does not initially grab hold of the device, the device will still deliver a painful stimulus to the suspect, hopefully creating the need to remove the device (Taser Products).

Taser Shockwave



The Taser Shockwave is Taser's first Remote Area Denial (TRAD) technology. The device is designed to deploy multiple standard Taser cartridges, covering an area with the ability to incapacitate several human targets. The device can be deployed at a distance of up to 100 meters. Up to twelve separate units can be attached and controlled by one control box. The devices can be stacked either horizontally or vertically to achieve the desired need.

Each device has six mounted cartridges that cover a 20 degree arc, and activate for five seconds. Additional five second bursts can be delivered from the control box, and will activate all deployed cartridges. This unit can also be mounted on a vehicle (Taser Products).

Advanced Taser M18/M18L



The Taser M18 is a consumer model that was designed after the Advanced Taser M26 and uses the same technology as the law enforcement model. The maximum range for this device is 15 feet and has an optional light and laser sight (Taser Products).

Taser C2



The Taser C2 is the newest consumer model designed for personal protection. Again, it is based off of the same technology as the law enforcement models. The C2 utilizes a cartridge that deploys two probes a maximum distance of 15 feet. The device can also be used for direct contact, as a stun gun, to stop attackers (Taser Products).

Accessories

Two other innovative accessories linked to the Taser are the Taser Axon and the Taser Cam.



The Taser Axon is a small computer that is worn by an officer and allows for video and audio recording as well as communications. An audio-video earpiece is used

that creates documentation from the officer's perspective. The device also integrates with radios and headsets for communication (Taser Products).



The Taser Cam is used with the Taser X26 model. It integrates into a rechargeable X26 power supply that is inserted into the handle, and records audio and video once the device's safety is moved into the off position. The information is then downloaded with a USB cable. The device allows for documentation of the incident as well as accountability (Taser Products).

Legal Aspects

In the law enforcement capacity, the Taser is designed to be used as a tool to eliminate or decrease the risk of injury to officers and suspects and preserve life. Because the Taser is used in force applications, there is always risk of civil liability as well as criminal liability for officers in excessive force applications.

According to Douglas E. Klint, Vice President and General Counsel for Taser International, Taser brand devices have proven to reduce the number of injuries to suspects "by up to 79% and an estimated 9000 lives have been saved by the use of the Taser ECD" (Klint, 2007).

Courts have ruled again and again on behalf of officers who have used Taser devices in situations where suspects are fleeing, resisting arrest, displaying assaultive behavior, and acting with aggression when in physical restraints. According to Zigmund, when Electronic Control Devices are used against suspects who are only being passive, it can result in an unconstitutional use of force (Zigmund, 2007).

There is a clear difference between active and passive resistance. Active resistance can be defined as threatening, shoving, striking, wrestling with, and biting an officer. Passive resistance can be defined as remaining seated, refusing to move, and refusing to “bear weight.” In general, ECD’s are allowed to be used when suspects are actively resisting law enforcement officers.

In the case *Draper v. Reynolds* (369 F.3d 1270, 125 S.Ct. 507) (U.S. 2004), the court deemed that the deputy did not use excessive force or violate the driver’s constitutional rights when an ECD was used to subdue the driver during a traffic stop. The court stated that from the time the driver met the deputy at the rear of the vehicle, he was hostile, belligerent, and uncooperative. The driver refused to comply with the deputy’s request to retrieve paperwork (no less than five times), used profanity, paced in agitation, and yelled at the deputy (Zigmund, 2007).

In the case *Willkomm v. Mayer* (No.05C523S, 2006 WL 582044) (W.D. Wis. March 9, 2006), Summary Judgment was granted to officers after three Taser device uses occurred during a traffic stop, two of which were while the suspect was handcuffed. During the incident, the Plaintiff repositioned his handcuffed hands to the front of his body while in the back of the patrol car. The plaintiff was removed from the vehicle, his hands were repositioned, and his legs were secured with flex cuffs. He was

told to swing his legs into the patrol car, and when he didn't, he was warned and then shocked with the Taser device. The Plaintiff tried again to reposition his hands. He was subsequently removed from the car a second time and the Taser device was deployed again in order to reposition his handcuffs. The Taser applications were deemed reasonable by the court (LAAW, 2008).

When a department decides to start issuing Taser devices to its officer, the first thing that needs to be established is an ECD policy within their standard operating procedure manual. After reviewing several different ECD policies, I noticed that most of them were very similar and included a standard or guideline to go by when deciding to deploy the Taser. Another portion that needs to be included within this policy is training. Training is very important to provide before an officer is issued an ECD as well as continued education and training. A lack of training or failure to train can hold a supervisor liable. Specifically, a "supervisor can be held vicariously liable for their subordinate's use of excessive force when there is a causal connection between their acts and omissions and the subordinate's acts that cause injury" (Batiste v. City of Beaumont, 421 F. Supp.2d 1000) (E.D. Tex. 2006) (LAAW, 2008).

Medical Aspects

There has continued to be a widespread controversy over the Taser device being used by law enforcement, and the effects it has when deployed on a person.

According to an independent study conducted by emergency medicine researchers at the Wake Forest University School of Medicine, and led by Dr. William

Bozeman, it suggests that Taser devices are safe, and lead to a low number of serious injuries.

During the study, 1000 cases of Taser use were examined. It was found that 99.7% had either no injuries or mild injuries such as “scrapes and bruises.” In only three cases, injuries required hospital admission. Two of the persons injured suffered from head injuries caused by falling. The third was hospitalized three days later with a condition that was unclear how it was related to the Taser.

The research consisted of examining all Taser incidents occurring at six different agencies. According to Dr. Bozeman, “The injury rate is low and most injuries appear to be minor. These results support the safety of the devices.” Dr. Bozeman also added “this study is the first large independent study of injuries associated with Tasers. It is the first injury epidemiology study to review every Taser deployment and to reliably assess the overall risk and severity of injuries in real-world conditions” (Paddock, 2007).

Another question that is frequently asked is how does the Taser affect Pacemakers and Defibrillators?

According to a study conducted by the Cleveland Clinic, and led by Dr. Lakkiredd, the Taser model X26 “does not affect the integrity of implantable pacemakers and defibrillators and did not trigger an implantable cardioverter defibrillator (ICD) shock in devices programmed to the standard non-committed shock delivery mode.” The study was conducted on a fifty pound anesthetized adult pig using the three major manufacturer’s pacemakers and ICD’s (Cleveland Clinic, 2007).

Conclusion

Since the first Taser device that was developed in the 1970's by Jack Cover, there have been huge advancements in technology. With the development of Shaped Pulse Technology and Neuromuscular Incapacitation, the Taser X26 was born.

Since the inception of the M26 and X26, Taser International has led the industry and provided dependable and effective Electronic Control Devices for law enforcement officers across the country. Now, officers have a more effective means of dealing with aggressive and combative suspects.

With Taser's high demand for technology, they have also created several other very effective ECD's including: Taser XREP, Taser Shock wave, Advanced Taser M18, and Taser C2, along with innovative accessories like the Taser Axon and the Taser Cam. With options like the Taser Axon and Taser Cam, law enforcement officers have accountability on their side.

The courts have ruled over and over that the use of ECD's against actively resisting suspects is reasonable. In the case *Draper v. Reynolds*, the court ruled that the deputy did not use excessive force when an ECD was used to subdue the driver after the driver became hostile, belligerent, and uncooperative. In the case *Willkomm v. Mayer*, Summary Judgment was granted after officers used Taser devices on a suspect three times, two of which were while the suspect was in restraints. When the suspect repositioned his hands while in the back of a patrol unit, he was removed from the unit and his hands were repositioned. When told to swing his feet into the car, and he didn't, the suspect was warned and then the Taser was deployed. The final Taser deployment was used in order to reposition the suspects hands a second time.

There has been wide spread controversy on the use of Taser devices by law enforcement based upon the fear that ECD's cause serious injury to suspects and even death. Several independent research studies have been conducted on the effects of using an ECD. According to emergency medical researchers at the Wake Forest School of Medicine, the research suggests that Taser devices are safe. According to research conducted by the Cleveland Clinic, the Taser X26 does not affect the integrity of pacemakers and defibrillators.

As you can see from the evidence, the Taser is a safe and very effective tool for law enforcement in reducing injuries and preserving life. The question now is, do you carry a Taser? If the answer is no, I encourage you to start!

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** All pictures derived from the site noted directly above **