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Special **REPORT**

Department of Defense Nonlethal Weapons and Equipment Review: A Research Guide for Civil Law Enforcement and Corrections

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Director

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The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

Department of Defense
Nonlethal Weapons and Equipment Review

A Research Guide for Civil Law
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I. Introduction

Under its Less-Lethal Technologies Program, established in 1986, the National Institute of Justice (NIJ)—the research, development, and evaluation arm of the U.S. Department of Justice—provides funds to identify, develop, and evaluate new or improved devices and other technology that will minimize the risk of death and injury to law enforcement officers, suspects, prisoners, and the general public. Many Federal, State, and local civil law enforcement and corrections agencies use less-lethal weapons and equipment to help minimize the loss of life and property. These devices are used to quell prison riots, suppress mobs, and subdue hostile individuals. NIJ has prepared this equipment review to inform Federal, State, and local agencies about the Department of Defense (DoD) Joint Nonlethal Weapons Program and the less-lethal weapons and equipment used by civil law enforcement agencies. This review does not address issues surrounding DoD's Joint Nonlethal Weapons Program or issues related to nonlethal weapons research and development programs.

DoD has deployed less-lethal technology under its Joint Nonlethal Weapons Program since 1995, when civil agencies provided less-lethal weapons and equipment, technical assistance, and training to support the U.S. military's redeployment to Somalia. The technology enables U.S. forces to reduce unintended casualties and infrastructure damage during complex missions; discourage, delay, or prevent hostile action; limit escalation where lethal force is not the preferred option; protect U.S. forces; and temporarily disable equipment and facilities.

Currently used DoD and U.S. Coast Guard nonlethal weapons and equipment are described in sections II and III. Section IV includes representative descriptions of less-lethal devices used by the Chicago Police Department, Los Angeles County Sheriff's Department, Metropolitan Police Department of Washington, D.C., Philadelphia Special Weapons and Tactics (SWAT) team, Seattle SWAT team, and U.S. Marshals Service. The product descriptions include photographs and information about manufacturers, costs, the services or law enforcement agencies that use each product, and each item's operational capability or use. Agencies that lack adequate research and development funding for less-lethal weapons and equipment often rely on private manufacturers to meet this need.

The equipment selection process is discussed in appendix A. The appendix also includes descriptions of DoD's Joint Nonlethal Weapons Program; nonlethal weapons programs in the military branches (Army, Marine Corps, Navy, and Air Force), the DoD Special Operations Command, and U.S. Coast Guard; and civil law enforcement less-lethal weapons. A glossary is presented in appendix B. Typically, DoD uses the term "nonlethal" and NIJ and civil law enforcement agencies use the term "less-lethal" when referring to the same technology.

II. Department of Defense Nonlethal Weapons and Equipment

The prices provided in this section reflect the approximate retail value of these items during 2001 and 2002, based on market research. The prices do not reflect market fluctuations or special price incentives for quantity or frequent purchases; individual prices may vary. In the product descriptions, the abbreviations OC, CN, CS, and CR refer to riot control agents.

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U.S. Army Nonlethal Weapons and Equipment

Nonballistic Face Shield

Nonballistic Body Shield

Riot Shield (Armadillo)

Riot Shield (Paulson)

Portable Vehicle-Arresting Barrier

Nonballistic Riot Shinguards

Ballistic Face Shield

Ballistic Body Shield With Light Kit

Ballistic Riot Shinguards

Wooden Baton

Portable Bullhorn

Ground-Mounted Bullhorn

Individual Voice Amplification System

High-Intensity Light

Individual High-Intensity Light With Carry Pouch

Individual High-Intensity Light Accessory Kit

Batteries

Disposable Restraint System (NIK Public Safety)

Individual Riot Control Agent Dispenser With Carry Pouch (ACALA M36)

Inert Riot Control Agent Dispenser

Midsized Riot Control Agent Dispenser (Defense Technology Corp. M37)

Squad Riot Control Agent Dispenser

Refill Unit Riot Control Agent (Live)

12-Gauge Shotgun With High-Intensity Light Kit

12-Gauge Gunstock Carrier

12-Gauge Utility Pouch

Diversionary/Rubber Ball Grenade Pouch

Caltrops

Riot Training Suit

12-Gauge Dummy Round

12-Gauge Point Round

12-Gauge Area Round

12-Gauge Diversionary/Flash-Bang Round

40 mm Sponge Point Grenade

5.56 Point Round

5.56 Area Round

Diversionary Flash-Bang Stun Hand Grenade

Light Vehicle Obscurant Smoke System (LVOSS)

66 mm LVOSS Canister (Rubber Ball)

66 mm LVOSS Canister (Diversionary/Flash-Bang)

66 mm Riot Control Grenade (L96A1)

66 mm Riot Control Training Grenade (L97A1)

Modular Crowd Control Munition

Marine Corps Nonlethal Weapons and Equipment

Nonballistic Face Shield
Nonballistic Body Shield (Paulson)
Nonballistic Riot Shinguards
Expandable Baton
Portable Bullhorn
High-Intensity Light
Individual High-Intensity Light With Carry Pouch
Individual High-Intensity Light Accessory Kit
Batteries
Disposable Restraint System (Monadnock)
Individual Riot Control Agent Dispenser/Carry Pouch (Defense Technology Corp. MK–4)
Inert Riot Control Agent Dispenser
Midsized Riot Control Agent Dispenser (Defense Technology Corp. MK–9)
High-Volume-Output, High-Capacity OC Dispenser
Refill Unit Riot Control Agent (Live)
12-Gauge Shotgun
12-Gauge Gunstock Carrier
12-Gauge Launching Cup
12-Gauge Utility Pouch
40 mm Carry Pouch
Diversionary/Rubber Ball Grenade Pouch
Caltrops
Roadside Spike Strip
Riot Training Suit
12-Gauge Dummy Round
12-Gauge Launching Cup Cartridge
12-Gauge Beanbag Round
40 mm Foam Rubber Baton Round
Rubber Ball Grenade
Inert Rubber Ball Grenade
Light Vehicle Obscurant Smoke System (LVOSS)
66 mm LVOSS Canister (Rubber Ball)
66 mm LVOSS Canister (Diversionary/Flash-Bang)

U.S. Navy Nonlethal Weapons and Equipment

Nonballistic Face Shield
12-Gauge Point Round
12-Gauge Beanbag Round
40 mm Area Round
Rubber Ball Grenade

U.S. Air Force Nonlethal Weapons and Equipment

Nonballistic Face Shield
Nonballistic Body Shield (Armadillo)
Nonballistic Riot Shin Guards
Wooden Baton
Portable Bullhorn
Disposable Restraint System (NIK Public Safety and Monadnock)
Individual Riot Control Agent Dispenser (Defense Technology Corp.)
12-Gauge Gunstock Carrier
12-Gauge Utility Pouch
40 mm Carry Pouch
Riot Training Suit With Accessories
Riot Training Bag
12-Gauge Point Round
12-Gauge Area Round
12-Gauge Diversionary/Flash-Bang Round
40 mm Area Round
40 mm Sponge Point Grenade
Rubber Ball Grenade
Dissuader Laser Illuminator

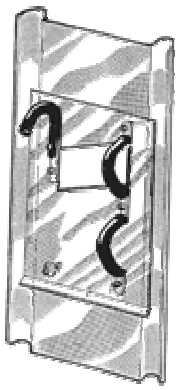
Nonballistic Face Shield

Manufacturer: Paulson
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $29.50 (4 mm);
$49.00 (6 mm with antiscratch and antifog coating)

Participating Services: Army, Marines, Navy, Air Force, Coast Guard

Description: Paulson riot face shields are manufactured from high-quality Lexan plastic. Distinctive features include a top rubber seal to prevent seepage of liquids onto the user's face and a pivot lock mechanism that allows for ambidextrous, single-handed operation. The face shield locks up or down, stays in place, and provides extra clearance for use over a gas mask. It mounts quickly without tools and fits U.S. standard Kevlar helmets. Major differences between the Army and Marine Corps versions include the added cost, increased thickness, and scratch-resistant coating of the Army face shields.

Operational Capability/Use: The nonballistic face shield provides face protection against a wide range of threats (e.g., debris, liquids, hand-thrown objects).



Nonballistic Body Shield

Manufacturer: Armadillo
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $246.00

Participating Services: Army, Air Force

Description: The Armadillo interlocking riot shield shown here is made of Lexan polycarbonate. It is 6 mm thick and has an additional 3 mm clear rear panel. Dimensions are 22 by 48 inches.

Operational Capability/Use: Armadillo riot shields provide a unique interlocking capability and are manufactured in many sizes. A lower handle allows for greater control and maneuverability against rioting crowds. The shield provides body protection against a wide range of threats (e.g., debris, liquids, hand-thrown objects).

Nonballistic Body Shield

Manufacturer: Paulson
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $88.50

Participating Services: Army, Marines

Description: The Paulson polyguard riot shield shown here is 6 mm thick and constructed of optical-grade, transparent virgin polycarbonate that can withstand high impact. It provides for an ambidextrous grip with sufficient padding to protect the forearm from impact shock. Dimensions are 24 by 48 inches.

Operational Capability/Use: The Paulson riot shield is also manufactured in other widths, lengths, and thicknesses. It provides body protection against a wide range of threats (e.g., debris, liquids, hand-thrown objects).

Nonballistic Riot Shinguards

Manufacturer: Champro Sports Equipment
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $60.00 (pair)

Participating Services: Army, Marines, Air Force

Description: These high-impact, nonballistic polyethylene shinguards weigh 2 pounds (0.9 kg) each.

Operational Capability/Use: Champro shinguards protect the legs of riot control forces. These hard plastic guards feature calf and ankle wings, a double reinforced knee, and a full-length padded liner. They provide leg protection against a wide range of threats (e.g., debris, liquids, hand-thrown objects).

Ballistic Face Shield

Manufacturer: Protech Armor Products
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $246.00 (with cleaning kit)

Participating Services: Army

Description: This 3.4-pound face shield, manufactured from acrylic and bullet-resistant materials, provides level-IIIA protection (9 mm and .44 Magnum pistol rounds). It is compatible with the PASGT helmet and M–17/M–40 gas masks.

Operational Capability/Use: Protech's ballistic face shield provides full facial protection for threats up to a 124-grain 9 mm round. The face shield mounts quickly and easily to standard U.S. Kevlar helmets.

Shield light mounted on ballistic shield

Ballistic Body Shield With Light Kit

Manufacturer: Protech Armor Products (shield); Sure Fire Lights (light kit)
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $1,052.00 (shield); $185.82 (light kit)

Participating Services: Army

Description: This 18-pound, 20- by 36-inch shield is manufactured from Spectra Shield bullet-resistant material to provide level-IIIA protection (9 mm and .44 Magnum pistol rounds). The ballistic viewport is 4 by 16 inches. The light kit requires two 3-volt lithium batteries.

Operational Capability/Use: The Protech armored shield has a ballistic Spectra composite blanket covered by a projectile-absorbing lightweight metal alloy skin, an ambidextrous handle and harness assembly with a quick-release feature, and standoff straps to prevent body contact with the backface of the shield.

Ballistic Riot Shinguards

Manufacturer: Protective Materials Co.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $440.00 (pair)

Participating Services: Army

Description: These standard black guards, manufactured from Kevlar KM2, provide level-IIIA protection (9 mm and .44 Magnum pistol rounds). They are available in three sizes and weigh from 7 to 10 pounds per pair.

Operational Capability/Use: These lightweight ballistic riot shinguards provide improved protection against thrown objects and small arms fire up to 9 mm full metal jacket (124-grain bullet at 1,400 feet per second). The guards are primarily used by special reaction teams in forced-entry scenarios and for selected military operations in urban terrain.

Expandable Baton

Manufacturer: Monadnock
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $73.25

Participating Services: Marines

Description: This durable, standard black, shock-resistant baton may be used with either the right or left hand and expands from 23 to 36 inches. It weighs less than 35 ounces and has a 1.25-inch-diameter nonslip handle. A mounting device attaches the baton to the military police ensemble pistol belt.

Operational Capability/Use: This baton is used for fast defense and for holding off crowds in conflict situations. A practice riot baton being manufactured to the same specifications will be added to the U.S. Marine Corps Nonlethal Weapons Capability Set when it becomes available.

Wooden Baton

Manufacturer: Government Issue
Vendor: U.S. Army
Approximate Cost: $15.50

Participating Services: Army, Air Force

Description: This solid hickory 36-inch baton is manufactured with a standard leather carrying strap.

Operational Capability/Use: The baton is used for fast defense and for holding off crowds in conflict situations.

Portable Bullhorn

Manufacturer: Able 2
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $82.00

Participating Services: Army, Marines, Air Force

Description: The portable bullhorn has an acoustic range of 3/4 to 1 full mile while retaining clear voice output. Power output is rated at 15 watts; the maximum possible rating is 20 watts (with limitations). The bullhorn is 14.5 inches long and weighs 3.5 pounds without the required eight dry cell C batteries. This device has a 9-inch-diameter bell.

Operational Capability/Use: The portable bullhorn provides critical communication capability for crowd control. It projects over crowd noise, enabling the user to communicate with crowds and to communicate commands to troops engaged in crowd control.

Ground-Mounted Bullhorn

Manufacturer: Anchor Audio
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $815.00

Participating Services: Army

Description: The power output of the ground-mounted bullhorn is rated at 22 watts. Dimensions are 13.75 by 14.75 by 9 inches; weight is 15 pounds. The bullhorn comes complete with stand and wireless microphone. It contains a 12-volt rechargeable sealed lead acid battery, and the wireless microphone requires one AA battery.

Operational Capability/Use: The ground-mounted bullhorn provides critical communication capability for crowd control. It projects over crowd noise, enabling the user to communicate with crowds and to communicate commands to troops engaged in crowd control.

Individual Voice Amplification System (M7)

Manufacturer: AudioPack Sound Systems
Vendor: Defense Logistics Agency
Approximate Cost: $65.42

Participating Services: Army

Description: The M7 is fitted to the M40 protective mask to aid oral communication and to increase the user's ability to communicate using radios and other equipment. It requires a 9-volt battery.

Operational Capability/Use: This critical communication enhancement device is fitted to the user's protective mask to aid crowd control operations in the presence of riot control agents.

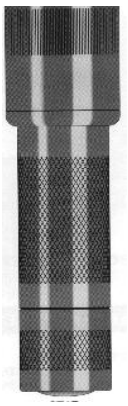
High-Intensity Light

Manufacturer: Xenonics
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $2,795.00

Participating Services: Army, Marines

Description: This high-intensity light, intended for use in low-light or night conditions, projects a beam that enables users to identify individuals up to 1,900 yards away. The light has an adjustable beam spread of 1 to 15 degrees and will run continuously at maximum power for up to 45 minutes. The internal power supply is a Thinline sealed lead battery that requires 4 hours for a full charge.

Operational Capability/Use: The light provides long-range, high-intensity illumination during reduced light conditions. It is readily adapted to a variety of uses and platforms, including unmounted and fixed-mounted platforms, vehicles, boats, and helicopters. The light may be used with or without its internal rechargeable battery; it may be powered from any 12- to 32-volt direct current power source.



Individual High-Intensity Light With Carry Pouch

Manufacturer: Sure Fire (light); Eagle Industries (pouch)
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $40.47 (light); $8.75 (pouch)

Participating Services: Army, Marines

Description: This individual high-intensity xenon searchlight is primarily used to illuminate crowd control operations at night. It requires two 3-volt lithium batteries.

Operational Capability/Use: Compact, lightweight, and convenient to carry in a pocket, pouch, or purse, this light is instantly accessible for routine or emergency situations.

Individual High-Intensity Light Accessory Kit

Manufacturer: Sure Fire
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $11.97

Participating Services: Army, Marines

Description: Replacement lamp for individual high-intensity lights, shield lights, and shotgun lights. The P60 lamp is marked by a blue band and the words "6v … P60."

Operational Capability/Use: Used as a replacement lamp.

Batteries

Manufacturer: Duracell, Rayovac, Ultra Light
Vendor: Commercially available
Approximate Cost: $1.00 (C cell);
$2.85 (lithium); $0.75 (AA)

Participating Services: Army, Marines

Description: Batteries for flashlights, high-intensity lights, shields, shotgun lights, bullhorns, individual voice amplification devices, and public address systems.

Operational Capability/Use: Replacement batteries.

Disposable Restraint System

Manufacturer: NIK Public Safety, Inc.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $0.70 each; $70.00 per set of 100 pieces

Participating Services: Army, Air Force

Description: This lightweight, disposable plastic restraint band with self-locking mechanism at one end is available in both black and white. When threaded, the band circles around the wrists or ankles, impeding and securing the individual. The device requires a cutting tool or other instrument for removal.

Operational Capability/Use: Soldiers use these disposable restraints to immobilize individuals. A single soldier can carry a large number of them.

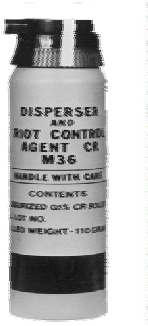
Disposable Restraint System

Manufacturer: Monadnock
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $0.94

Participating Services: Marines, Air Force

Description: The Monadnock double cuffs come in three different models: black, white (writable), and red (reusable/training). These cuffs have a tensile strength of 250 pounds and feature two ½-inch-wide plastic straps that allow for standard handcuffing techniques.

Operational Capability/Use: Soldiers use these disposable restraints to immobilize individuals. A single soldier can carry a large number of them.



Individual Riot Control Agent Dispenser/Carry Pouch

Manufacturer: ACALA (M36 dispenser); Eagle Industries (pouch)
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $12.67 (M36 dispenser); $6.75 (pouch)

Participating Services: Army

Description: This M36 individual riot control agent dispenser contains CR solution. It can deliver twenty-five 1-second bursts out to 12 feet.

Operational Capability/Use: This dispenser is primarily intended for self-defense. Soldiers engaged in crowd control operations or in missions where a noncombatant threat exists use this dispenser to keep rioters out of arm's reach.

Individual Riot Control Agent Dispenser/Carry Pouch

Manufacturer: Defense Technology Corp. (MK–4 dispenser); Eagle Industries (pouch)
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $7.29 (MK–4 dispenser); $6.75 each (pouch)

Participating Services: Marines, Air Force

Description: The MK–4 dispenser contains an all-natural, water-based irritant formula consisting of oleoresin capsicum (pepper spray). It can deliver twenty 1-second bursts out to 15 feet.

Operational Capability/Use: These individual riot control agent dispensers are primarily intended for self-defense. Soldiers engaged in crowd control operations or in missions where a noncombatant threat exists use these dispensers to keep rioters out of arm's reach.

Inert Individual Riot Control Agent Dispenser

Manufacturer: Defense Technology Corp. (MK–4 dispenser); Eagle Industries (pouch)
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $6.07 (MK–4 dispenser); $6.75 (pouch)

Participating Services: Army, Marines

Description: The inert individual training riot control agent dispenser is used for familiarization and training purposes. It simulates tactical use and is marked appropriately.

Operational Capability/Use: Training only.

Midsized Riot Control Agent Dispenser

Manufacturer: Defense Technology Corp.
Vendor: SBCCOM
Approximate Cost: $338.00

Participating Services: Army

Description: Formations primarily use the M37 midsized riot control agent dispenser for crowd control operations. It can deliver eighteen 3-second bursts of oleoresin capsicum (pepper spray) or CS out to 29 feet.

Operational Capability/Use: This lightweight riot control agent dispenser is designed for crowd control and law enforcement operations. It may be operated by one individual and easily refilled/pressurized with available maintenance equipment. This device provides small units with self-defense capabilities against large crowds and an offensive capability to clear crowds from critical areas.

Midsized Riot Control Agent Dispenser

Manufacturer: Defense Technology Corp.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $26.20 (live oleoresin capsicum); $20.10 (inert dye)

Participating Services: Marines

Description: The MK–9 midsized riot control agent dispenser comes with both live oleoresin capsicum (OC) and inert red dye. The MK–9 team OC dispenser has a greater range and capacity than the nominal aerosol units supplied for individual use. The containers are identical with the exception of identification markings.

Operational Capabilities/Use: This lightweight dispenser is designed for crowd control and law enforcement operations. It may be operated by one individual and may be easily refilled/pressurized with available maintenance equipment. The device provides small units with self-defense capabilities against large crowds and an offensive capability to clear crowds from critical areas.

High Volume Output

High-Capacity Oleoresin Capsicum (OC) Dispenser

Manufacturer: Defense Technology Corp.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $106.75

Participating Services: Marines

Description: This MK–46 high-capacity, high-output canister has a range of 25 to 30 feet and contains twelve 1-second bursts. The device is prominently marked as to contents and is rechargeable at the unit level.

Operational Capability/Use: The canister is designed to distribute a large quantity of formulation over a widespread area. The delivered products primarily affect the respiratory system.

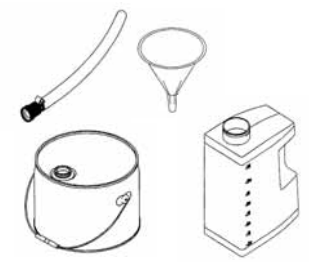
Squad Riot Control Agent Dispenser

Manufacturer: ACALA
Vendor: ACALA
Approximate Cost: $724.00

Participating Services: Army

Description: The M33A1 squad riot control agent dispenser is designed to provide crowd control and protection at the squad level.

Operational Capability/Use: This device is capable of projecting a ballistic stream of riot control agent beyond 25 feet in up to twenty-five ½-second bursts. It can be loaded with commonly used crowd control agents and is rechargeable at the unit level.



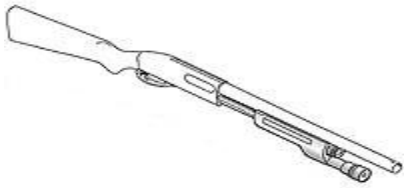
Refill Unit Riot Control Agent (Live)

Manufacturer: Defense Technology Corp.
Vendor: ACALA
Approximate Cost: $76.00

Participating Services: Army, Marines

Description: This refill unit for the squad riot control agent dispenser (M33A1) and the midsized riot control agent dispenser (M37) consists of a plastic tube to be fitted to the 3-gallon CR container, a plastic measuring container, and a plastic funnel. The refill kit for the MK–46 high-volume output, high-capacity oleoresin capsicum (OC) dispenser consists of a plastic tube to be fitted to the 3-gallon OC container, a plastic measuring container, and a plastic funnel.

Operational Capability/Use: Refill purposes only.



12-Gauge Shotgun With High-Intensity Light Kit

Manufacturer: Mossberg (shotgun); Sure Fire (light kit)
Vendor: ACALA (shotgun)
Approximate Cost: $235.00 (shotgun); $139.65 (light kit; fits Mossberg model 500 only)

Participating Services: Army (Mossberg 500 and light kit); Marines (Mossberg 500)

Description: The Mossberg 12-gauge pump-action shotgun carries seven 2¾-inch shells and is equipped with a high-intensity light kit. The light kit consists of a mounting bracket fitted to exactly replace the fore end of the Mossberg model 500 shotgun and a Sure Fire 6P xenon searchlight. The light kit requires two 3-volt lithium batteries.

Operational Capability/Use: The high-intensity light, intended for use in low-light or night conditions, can project a beam that enables users to identify individuals up to 1,900 yards away.

12-Gauge Gunstock Carrier (6 Round)

Manufacturer: Eagle Industries
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $10.75

Participating Services: Army, Marines, Air Force

Description: The 12-gauge gunstock carrier straps to the stock of a standard military shotgun and holds up to 6 rounds. It allows users to carry readily available ammunition with their weapons.

Operational Capability/Use: The gunstock carrier provides quick access to additional or different rounds. It is a valuable asset to users engaged in urban or fast-paced operations.

12-Gauge Launching Cup

Manufacturer: Combined Tactical Systems, Inc.
Vendor: Combined Tactical Systems, Inc.
Approximate Cost: $100.00

Participating Services: Marines

Description: The 12-gauge launching cup allows the user to fire a rubber sting-ball grenade approximately 75 to 100 meters.

Operational Capability/Use: The user may attach this launching cup to the barrel of a Mossberg shotgun by hand. Once the cup is attached, the user inserts a rubber sting-ball grenade and removes the safety pin. A propulsion round then launches the grenade 75 to 100 meters at an average angle of 35 degrees.

12-Gauge Utility Pouch (25 Round)

Manufacturer: Eagle Industries
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $23.65

Participating Services: Army, Marines, Air Force

Description: The 12-gauge utility pouch may be used to carry twenty-five 12-gauge shotgun rounds and may be attached to a soldier's combat gear.

Operational Capability/Use: This easily accessible pouch is durable in all types of environments.

40 mm Carry Pouch

Manufacturer: Eagle Industries
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $13.65

Participating Services: Army, Marines, Air Force

Description: This pouch can carry six 40 mm rounds. Velcro straps can secure it to a standard combat gear belt or to the user's leg.

Operational Capability/Use: The Eagle 40 mm carry pouch is designed to carry all 40 mm rounds in a cushioned pouch for greater safety and accessibility.

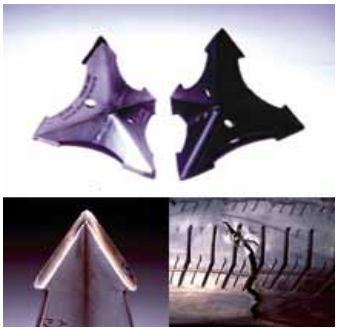
Diversionary/Rubber Ball Grenade Pouch

Manufacturer: Eagle Industries
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $47.25

Participating Services: Army, Marines

Description: This pouch can carry six rubber balls or flash grenades. Velcro straps can secure it to a standard combat gear belt or to the user's leg. The pouch is available in olive drab green and black.

Operational Capability/Use: The Eagle grenade-carrying pouch can be easily mounted on either leg and attaches quickly with Velcro.



Caltrops

Manufacturer: Aardvark Tactical, Inc.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $10.50

Participating Services: Army, Marines

Description: Caltrops are designed to deflate tires or to deny access to a designated area. They deploy in an upright position no matter how they are dispensed. Caltrops are made from heavy-gauge steel and are powder coated to prevent corrosion.

Operational Capability/Use: This tire deflation and antipersonnel device is used as a vehicle barrier. Caltrops cause irreparable, immediate, and catastrophic failure of pneumatic tires. Their "nesting" design allows them to be stacked for storage. "Stringing holes" allow groups of caltrops to be joined with 550 cord or communication wire.

Roadside Spike Strip

Manufacturer: Stinger Spike Systems
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $475.00

Participating Services: Marines

Description: The roadside spike strip is designed to be easily transportable and deployable. The spike strip punctures pneumatic tires as the vehicle makes contact. When the vehicle makes contact, the spikes pivot into the tire and the tip guards are pushed down. The spikes become deeply embedded in the tire; they pull out of the unit and remain in the tire. On the second revolution, they are pushed directly into the tire, allowing air to escape slowly without causing a blowout or sudden loss of control. The average tire picks up four to six spikes.

Operational Capability/Use: The spike strip deflates tires within 12 to 20 seconds.

Riot Training Suit With Accessories

Manufacturer: Fist, Inc.
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $638.50

Participating Services: Army, Marines, Air Force

Description: The Fist 333 riot training suit is the most comprehensive defense tactics suit available. It weighs only 15 pounds and is capable of receiving full-force blows from real-impact weapons, such as the Monadnock 23/36 riot baton. The Fist 333 comes equipped with protection for the chest, back, shoulders, biceps, forearms, groin, buttocks, thighs, and shins; a helmet; and a carrying bag. Glove attachments are not included but should be added for greater protection.

Operational Capabilities/Use: This suit provides full-body protection to those engaged in close combat training. It is designed to absorb blows inflicted by a riot baton.

Riot Training Bag

Manufacturer: Monadnock
Vendor: Aardvark Tactical, Inc.
Approximate Cost: $80.00

Participating Services: Army, Marines, Air Force

Description: The Monadnock riot training bag is designed to meet the needs of defensive tactics instruction for unarmed strikes and baton training.

Operational Capabilities/Use: This punch/striking bag is used for training purposes.

12-Gauge Dummy Round

Manufacturer: Defense Technology Corp.
Vendor: U.S. Marine Corps
Approximate Cost: $0.91

Participating Services: Army, Marines

Description: The 12-gauge dummy round, used for familiarization and training, simulates live rounds but is marked appropriately.

Operational Capabilities/Use: The dummy round is used for familiarization and training activities, including practice loading and unloading, cycling of the weapon, and discharge of expended rounds.

12-Gauge Point Round

Manufacturer: Defense Technology Corp.
Vendor: Defense Technology Corp.
Approximate Cost: $2.65

Participating Services: Army, Navy, Air Force

Description: The point target cartridge round delivers a strong blow to the body with the capability to stun individuals without penetrating the body. The round is designed to be fired at the center mass of an adult subject at distances between 10 and 20 meters.

Operational Capability/Use: This round, designed for single-target engagement, enables the user to escalate force from a safe distance before using lethal means. It is designed as a direct-fire behavior modification round, and it is fired using conventional target acquisition techniques.

12-Gauge Area Round

Manufacturer: Defense Technology Corp.
Vendor: Defense Technology Corp.
Approximate Cost: $2.80

Participating Services: Army, Air Force

Description: Eighteen rubber ball projectiles with a total weight of approximately 0.2 ounces are contained in a 12-gauge shotgun shell that is approximately 2.5 inches long. The round is prominently marked to be physically and visually identifiable during daylight hours and under conditions of reduced visibility.

Operational Capability/Use: The projectiles deliver strong blows to the body and provide the capability to stun or deter several people without penetrating the body. The round is designed to be fired at the center mass of an adult subject at distances between 10 and 20 meters. In crowd control situations, this munition gives soldiers or law enforcement officers a multishot, nonlethal capability to break contact or to enforce a buffer zone.

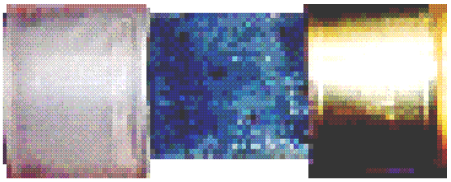
12-Gauge Diversionary/Flash-Bang Round

Manufacturer: Defense Technology Corp.
Vendor: U.S. Air Force
Approximate Cost: $5.10

Participating Services: Army, Air Force

Description: This aerial diversionary device provides the capability to distract individuals or crowds. The round is designed to be fired distances between 10 and 75 meters and is aimed about 5 meters above the heads of individuals in a crowd. Shots fired at subjects or in enclosed areas may cause serious injury.

Operational Capability/Use: This device provides a warning by delivering a flash-bang projectile over the heads of individuals in violent or potentially violent crowds. Ideally, it is used in conjunction with other distraction devices and troop maneuvers.



12-Gauge Launching Cup Cartridge

Manufacturer: MK Ballistics
Vendor: MK Ballistics
Approximate Cost: $2.16

Participating Services: Marines

Description: The 12-gauge launching cup cartridge is a blank munition that is used with a 12-gauge shotgun and an appropriate launching cup to propel a rubber ball grenade.

Operational Capability/Use: The cartridge is designed as a modification piece for a 12-gauge shotgun to allow for the use of nonlethal munitions.

12-Gauge Beanbag Round

Manufacturer: Technical Solutions Group
Vendor: Technical Solutions Group
Approximate Cost: $3.84

Participating Services: Marines, Navy

Description: The 12-gauge beanbag round, intended for use in crowd control situations, contains smokeless propellant, not black powder. The projectile consists of one lead shot-filled fabric bag. On impact, the bag collapses and the shot acts as a fluid medium, distributing its kinetic energy over 4 square inches.

Operational Capability/Use: The beanbag round is ideal for crowd control during civil disturbances, corrections situations, animal control, and window penetration.

40 mm Area Round

Manufacturer: Defense Technology Corp.
Vendor: Crane Depot
Approximate Cost: $19.00

Participating Services: Army, Marines, Navy, Air Force

Description: The 40 mm crowd dispersal round is fired from an M203 grenade launcher attached to an M16 rifle or M4 carbine. A single round contains forty-eight .48-caliber rubber balls, is 1.5 inches in diameter and 4.8 inches long, and weighs approximately 4 ounces. This round delivers strong blows without penetrating the body and has the capability to stun or deter several people. The round is designed to be fired at the center mass of an adult subject at distances between 10 and 30 meters.

Operational Capability/Use: In crowd control situations, this munition provides soldiers and law enforcement officers with a multishot, nonlethal capability to break contact or to enforce a buffer zone.

40 mm Foam Rubber Baton Round

Manufacturer: Defense Technology Corp.
Vendor: Defense Technology Corp.
Approximate Cost: $18.70

Participating Services: Marines

Description: The cartridge contains three foam rubber batons in an aluminum cartridge case. The batons have a nominal velocity of 325 feet per second at a distance of 3 feet from the muzzle of an M203 grenade launcher. The cartridge is designed to be fired at the center mass of adult subjects at distances between 5 and 15 meters.

Operational Capability/Use: In crowd control situations, this munition gives soldiers and law enforcement officers a multishot, nonlethal capability to break contact or to enforce a buffer zone.

40 mm Sponge Point Grenade

Manufacturer: AMTEC
Vendor: PM SA
Approximate Cost: $19.00

Participating Services: Army, Air Force

Description: The sponge point grenade is approximately 4¼ inches long and 1½ inches in diameter. It is prominently marked to be physically and visually identifiable during daylight hours and under conditions of reduced visibility, such as darkness, fog, or smoke. The propellant is smokeless to minimize the fouling of weapons systems.

Operational Capability/Use: In crowd control situations, this munition gives soldiers and law enforcement officers a multishot, nonlethal capability to break contact or to enforce a buffer zone.

5.56 Point Round

Manufacturer: Alliant Techsystems
Vendor: Alliant Techsystems
Approximate Cost: $88.50

Participating Services: Army

Description: This rifle-launched munition requires the user to fire a blank round to launch the multiple-ball projectiles and enables the user to switch rapidly to lethal munitions if necessary.

Operational Capability/Use: The round is designed to be fired at the center mass of an adult subject at distances between 30 and 80 meters. Shots fired at subjects closer than 20 meters or shots aimed at the head or groin may cause serious injury or death.

5.56 Area Round

Manufacturer: Alliant Techsystems
Vendor: PM SA
Approximate Cost: $90.40

Participating Services: Army

Description: This rifle-launched munition requires the user to fire a blank round to launch the multiple-ball projectiles and enable the user to switch rapidly to lethal munitions if necessary.

Operational Capabilities/Use: The round is designed to be fired at the center mass of an adult subject at distances between 30 and 80 meters. Shots fired at subjects closer than 20 meters or shots aimed at the head or groin may cause serious injury or death.

Diversionary/Flash-Bang Stun Hand Grenade

Manufacturer: Universal Propulsion
Vendor: ACALA
Approximate Cost: $107.00

Participating Services: Army

Description: This black device with green banding at the bottom is 4.89 inches long and 1.32 inches in diameter; it weighs 14.4 ounces. The device is designed to be thrown into a room (through an open door, a standard glass window, or other opening), where it delivers a loud bang and bright flash that temporarily disorient the occupants.

Operational Capability/Use: This is a hand-thrown, reusable flash-bang stun device primarily designed for special reaction team use in forced-entry scenarios. It also may be used for selected military operations in urban terrain or crowd control operations.

Rubber Ball Hand Grenade

Manufacturer: Combined Tactical Systems, Inc.
Vendor: Combined Tactical Systems, Inc.
Approximate Cost: $26.50

Participating Services: Marines, Navy, Air Force

Description: The cartridge consists of an M201A1 equivalent fuse, a separating fuse body, a black powder separation charge, a pressed black powder delay, a bursting charge of flash powder, at least 100 rubber pellets, and a rubber grenade body. It can be launched from the 12-gauge launching cup.

Operational Capability/Use: The rubber ball hand grenade is used to clear rooms and closed-in spaces and to break up unruly crowds by dissuading, disrupting, or delaying their actions.

Inert Rubber Ball Hand Grenade

Manufacturer: Combined Tactical Systems, Inc.
Vendor: Combined Tactical Systems, Inc.
Approximate Cost: $17.50

Participating Services: Marines

Description: Blue for training but otherwise identical to the rubber ball hand grenade in weight and operation.

Operational Capability/Use: Training purposes only.

Light Vehicle Obscurant Smoke System (LVOSS)

Manufacturer: Centech
Vendor: SBCCOM
Approximate Cost: $2,820.00

Participating Services: Army, Marines

Description: The light vehicle obscurant smoke system (LVOSS) (M304) is designed to provide self-protection through obscuration. This lightweight, nonlethal grenade-launching device is mounted on an armament carrier high-mobility multiwheeled vehicle. With new 66 mm nonlethal grenades that contain rubber pellets and have flash-bang features, the LVOSS expands its role in nonlethal operations.

Operational Capability/Use: This self-defense smoke/obscurant device is externally mounted on the host vehicle. It has a pushbutton arming/firing unit that allows the operator to select the direction that needs to be obscured. The LVOSS uses smoke grenades with low toxicity to minimize safety hazards to personnel and the environment.

66 mm LVOSS Canister (Rubber Ball)

Manufacturer: PW Defence (United Kingdom)
Vendor: Army Procurement
Approximate Cost: $88.00

Participating Services: Army, Marines

Description: The XM99 round, an area target munition, can be fired from the light vehicle obscurant smoke system (LVOSS) launcher that is standard on select armament carrier high-mobility multiwheeled vehicles. These rounds can be fired from any 66 mm smoke-launching system (found on most armored vehicles). Designed to be fired from 80 to 100 meters, they burst when they reach the target area and deliver a payload of rubber nonpenetrating projectiles.

Operational Capability/Use: These munitions provide convoys and crowd control formations with the ability to affect crowds beyond the range of shoulder-fired nonlethal weapons. They are designed to affect a large number of people at longer standoff distances but cannot be delivered with precision. These rounds are best used to provide supporting nonlethal fires to crowd control formations.

66 mm LVOSS Canister (Diversionary/Flash-Bang)

Manufacturer: PW Defence (United Kingdom)
Vendor: Army Procurement
Approximate Cost: $133.98

Participating Services: Army, Marines

Description: The XM98 round contains three bursting submunitions with pyrotechnic charges for audio and visual stimuli. The overall length is 25.25 cm (9.94 inches), diameter is 66 mm, and total weight is 725.7 grams (1.6 pounds). The device is green and black with a brown band.

Operational Capability/Use: This area target munition can be fired from the LVOSS launcher that is standard on selected armament carrier high-mobility multiwheeled vehicles. It can be fired from any 66 mm smoke-launching system (found on most armored vehicles). Designed to be fired from 80 to 100 meters, these rounds burst when they reach the target area and deliver a flash-bang diversionary/warning effect.

66 mm Riot Control Grenade (L96A1)

Manufacturer: PW Defence (United Kingdom)
Vendor: SBCCOM
Approximate Cost: $71.44

Participating Services: Army

Description: The L96A1 riot control grenade dispenses CS riot control agent.

Operational Capability/Use: Each L96A1 grenade contains 23 individual canisters filled with CS compound, providing a number of CS sources rather than a single plume. The grenade is launched from 66 mm vehicle-mounted dischargers in a four-grenade salvo and has an effective range of 65 to 95 meters.

66 mm Riot Control Training Grenade (L97A1)

Manufacturer: PW Defence (United Kingdom)
Vendor: SBCCOM
Approximate Cost: $56.00

Participating Services: Army

Description: This riot control training grenade contains 23 canisters filled with cinammic acid compound. The length of the round is 185 mm (7.28 inches), diameter is 66 mm, and total weight is 568 grams (1.25 pounds). This munition is blue with brown and green bands.

Operational Capability/Use: The L97A1 uses cinammic acid smoke to simulate a riot control agent.

Modular Crowd Control Munition

Manufacturer: Lone Star
Vendor: PM MCD
Approximate Cost: $420.00

Participating Services: Army

Description: The M5 modular crowd control munition is a nonlethal rubberball device housed in a casing similar to the current Claymore mine. It will stop, confuse, disorient, and/or temporarily incapacitate area targets or personnel at close range.

Operational Capability/Use: This munition is intended to be a direct-fire, low-hazard device that will produce an antipersonnel nonlethal effect on impact. It serves as a force multiplier, providing field commanders and soldiers with greater flexibility in the application of nonlethal force and increasing their effectiveness during military operations.

Portable Vehicle-Arresting Barrier (PVAB)

Manufacturer: Primex
Vendor: Army Procurement
Approximate Cost: $40,500.00

Participating Services: Army, Marines

Description: The portable vehicle-arresting barrier is capable of stopping a light truck (up to 7,500 pounds) at speeds up to 45 mph. It can be installed by two people in less than 1 hour. Total weight of the system is 646 pounds.

Operational Capability/Use: This preemplacement capture system provides quick and mobile deterrence to unauthorized and/or potentially suspicious vehicles at checkpoints or entryways to high-value assets or facilities.

Dissuader Laser Illuminator

Manufacturer: SEA Technology
Vendor: SEA Technology
Approximate Cost: $5,000.00

Participating Services: Air Force

Description: This handheld laser "flashlight" generates an extremely bright, variable-width beam of red light. The beam is certified eye-safe at all ranges and under all tactical conditions. The laser beam sends a language-independent warning and challenge that forces adversaries to signal their intent to retreat, surrender, or continue aggressive behavior. It dissuades and/or delays adversaries by producing an overpowering glare or flash blinding the individual.

Operational Capability/Use: The laser illuminator is suitable for law enforcement missions where revealing a drawn weapon is not advisable. This device can be used as handheld augmentation to sidearms carried on law enforcement missions; use of a sidearm enables quick conversion to lethal force.

III. U.S. Coast Guard Nonlethal Weapons and Equipment

The prices provided in this section reflect the approximate retail value of these items during 2001 and 2002, based on market research. The prices do not reflect market fluctuations or special price incentives for quantity or frequent purchases; individual prices may vary. In the product descriptions, the abbreviations OC, CN, CS, and CR refer to riot control agents.

Equipment

12-Gauge Rubber Fin-Stabilized Projectile Round 37
12-Gauge Rubber Stingball Round.....37
Running Gear Entanglement System.....38
Copper Solid Sabot Slugs 38
12-Gauge Peacekeeper.....39

12-Gauge Rubber-Fin Stabilized Projectile Round

Manufacturer: Technical Solutions Group, Inc.
Approximate Cost: $4.00

Participating Services/Agencies: Coast Guard

Description: This less-lethal cartridge is a fixed round of ammunition. It consists of a plastic hull shell case and a steel case base containing a propelling charge and percussion primer. A solid rubber fin-stabilized projectile body is fitted in the hull with a plastic wad spacer.

Operational Capability/Use: This round is designed for temporary incapacitation through kinetic energy impact. It has been fielded for Coast Guard use.

12-Gauge Rubber Stingball Round

Manufacturer: Technical Solutions Group, Inc.
Approximate Cost: $4.00

Participating Services/Agencies: Coast Guard

Description: This less-lethal cartridge is a fixed round of ammunition. It consists of a plastic hull shell case and a steel case base containing a propelling charge and percussion primer. Eighteen .32-caliber rubber balls are fitted in the hull with a plastic wad spacer.

Operational Capability/Use: This round is designed to provide temporary incapacitation through kinetic energy impact. It has been fielded for Coast Guard use.

Running Gear Entanglement System

Manufacturer: Diamond Nets, Inc.
Approximate Cost: $17.00 per foot

Participating Services/Agencies: Coast Guard

Description: A series of short, separate, looped polyethylene lines are attached to a single, long, polyethylene base line. The net can be delivered several ways and can be manually deployed from a soft-sided bag. The Coast Guard is developing deployment systems using compressed air for both surface craft and helicopters.

Operational Capability/Use: This entanglement net is used to foul the propellers of plaining hull small boats.

Copper Solid Sabot Slugs

Manufacturer: Remington Arms Company
Approximate Cost: $2.00

Participating Services/Agencies: Coast Guard

Description: This fixed round of ammunition consists of a .52-caliber copper projectile, plastic saboted sleeve, plastic hull shell case, and steel case base containing a propelling charge and percussion primer. It is designed to be highly accurate and to have controlled expansion with 100 percent weight retention to a range of 100 yards.

Operational Capability/Use: This round may be used to disable small boat engines. Approval is pending for Coast Guard use.

12-Gauge Peacekeeper

Manufacturer: Technical Solutions Group, Inc.
Approximate Cost: $4.00

Participating Services/Agencies: Coast Guard

Description: This fixed round of less-lethal ammunition consists of a plastic hull shell case and a steel case base containing a propelling charge and percussion primer. A cylindrical elastomer projectile body is fitted in the hull with a plastic wad spacer. The projectile contains a nontoxic liquid dye. The Coast Guard is working with the manufacturer to develop an oleoresin capsicum (pepper spray) powder fill for this round that will enable the munition to precisely deliver an incapacitating riot control agent at an extended range.

Operational Capability/Use: This round is designed to provide temporary incapacitation through kinetic energy impact and to mark the target.

IV. Civil Law Enforcement Less-Lethal Weapons and Equipment

The prices provided in this section reflect the approximate retail value of these items during 2001 and 2002, based on market research. The prices do not reflect market fluctuations or special price incentives for quantity or frequent purchases; individual prices may vary. In the product descriptions, the abbreviations OC, CN, CS, and CR refer to riot control agents.

Equipment

ARWEN® 37 mm Weapon System 41
SAGE SL–6® 37 mm Weapon System 41
SAGE SL–1® 37 mm Weapon System 42
M–26 Advanced Taser 42
40 mm Rifled Barrel Launcher With Mounted Holographic Site 43
Pyrotechnic Grenade No. 2, CS 43
Pyrotechnic Grenade No. 3, CS 44
Pyrotechnic Grenade, Triple Charger 44
37 mm Scat Shell, CS 45
37 mm Impact Munition, Stinger 45
37 mm Impact Munition (Kinetic), Foam Baton 46
12-Gauge Impact Munition, Beanbag, Super Sock™ 46
Aerosol Disburser MK–46™, OC 47
Aerosol Disburser, ProtectoJet 5™, OC/CS 47
Aerosol Disburser, OC/CS, MK–9 48
MK–4 Handheld OC Dispenser 48
T–16 OC Nonpyrotechnic Expulsion Grenade 49
No. 15 OC/CS Rubber Ball Munition 49
PepperBall™ 50
No. 15 Stinger™ Grenade 50
No. 20 37 mm Fired Foam Batons 51
37 mm Beanbag Round 51
Wooden Riot Baton 52

ARWEN® 37 mm Weapon System

Manufacturer: Royal Ordnance Defense
Approximate Cost: $1,500.00 to $2,000.00

Participating Law Enforcement: Los Angeles County Sheriff's Department

Description: The ARWEN 37 mm is a less-lethal, five-shot semiautomatic revolver shoulder weapon designed as an antiriot weapon.

Operational Capability/Use: The ARWEN can be used for intervention in riots (civil/custody) and cell extractions, selective removal of leaders or instigators in disturbances or riots, and selective intervention in use-of-force situations where escalation of force is necessary. Although considered less than lethal, the ARWEN can inflict serious or fatal injuries if improperly used.

SAGE SL–6® 37 mm Weapon System

Manufacturer: Penn Arms of Pennsylvania
Approximate Cost: $1,400.00 to $2,000.00

Participating Law Enforcement: Los Angeles County Sheriff's Department

Description: The SL–6 is a less-lethal, 37 mm, six-shot semiautomatic revolver shoulder weapon that will replace the ARWEN system.

Operational Capability/Use: This weapon can be used for intervention in riots (civil/custody) and cell extractions, selective removal of leaders or instigators in disturbances or riots, and selective intervention in use-of-force situations where escalation of force is necessary.

SAGE SL–1® 37 mm Weapon System

Manufacturer: Penn Arms of Pennsylvania
Approximate Cost: $600.00 to $1,200.00

Participating Law Enforcement: Los Angeles County Sheriff's Department

Description: The SL–1 is a less-lethal, single-shot, break-open shoulder weapon; many of its operations and functions are the same as those of the SAGE SL–6.

Operational Capability/Use: This weapon can be used for intervention in riots (civil/custody) and cell extractions, selective removal of leaders or instigators in disturbances or riots, and selective intervention in use-of-force situations where escalation of force is necessary.

M–26 Advanced Taser

Manufacturer: Taser International
Approximate Cost: $800.00 (quantity dependent)

Participating Law Enforcement: Los Angeles County Sheriff's Department, Philadelphia Special Weapons and Tactics Team

Description: The M–26 advanced taser fires two probes up to 21 feet from a replaceable air cartridge. These probes are connected to the weapon by high-voltage insulated wire. The M–26 uses a new electromuscular disruption (EMD) technology that can completely override the central nervous system and directly control the skeletal muscles.

Operational Capability/Use: When the probes make contact with the target, the taser transmits a powerful electrical pulse along the wires and into the target's body through up to 2 inches of clothing. The EMD effect causes an uncontrollable contraction of the muscle tissue that results in physical debilitation regardless of pain tolerance or mental focus.

40 mm Rifled Barrel Launcher With Mounted Holographic Site

Manufacturer: Defense Technology Corp.
Approximate Cost: $550.00

Participating Law Enforcement: Los Angeles County Sheriff's Department

Description: This launcher is designed to fire all Defense Technology Corp./Federal laboratories' 40 mm and 37/40 mm ordnance. It features a rifled bore, a single/double action trigger group, integrated sling rings, and a weaver base for optic attachments.

Operational Capability/Use: This weapon can be used for intervention in riots (civil/custody) and cell extractions, selective removal of leaders or instigators in disturbances or riots, and selective intervention in use-of-force situations where escalation of force is necessary.

Pyrotechnic Grenade No. 2, CS

Manufacturer: Defense Technology Corp.
Approximate Cost: $27.50

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team

Description: This 21.9-ounce canister-type grenade contains a pelletized chemical agent and has a fly-off fuse. The irritant discharges from one port on the bottom and from four ports on the top.

Operational Capability/Use: This grenade can be launched from a weapon or thrown by hand.

Pyrotechnic Grenade No. 3, CS

Manufacturer: Defense Technology Corp.
Approximate Cost: $26.50

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team

Description: This 16-ounce canister-type grenade contains a pelletized chemical agent and has a fly-off fuse. This medium-sized grenade is usually carried by designated less-lethal specialists but also may be carried by other tactical personnel in limited quantities. The irritant discharges from one port on the bottom and from four ports on the top.

Operational Capability/Use: This grenade is suitable for large-area coverage in outside crowd control. It may be launched from a weapon or thrown by hand.

Pyrotechnic Grenade, Triple Charger

Manufacturer: Defense Technology Corp.
Approximate Cost: $39.50

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team

Description: This 17-ounce canister-type grenade consists of three separated submunitions that enable CN or CS to be dispersed over a wide area.

Operational Capability/Use: The grenade can be launched by hand or from most 12-gauge shotguns by using an appropriate adapter and launching cartridge.

37 mm Scat Shell, CS

Manufacturer: Defense Technology Corp.
Approximate Cost: $30.00

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team (SWAT), Metropolitan Police Department of Washington, D.C., Philadelphia SWAT

Description: This pyrotechnic chemical projectile consists of five separated submunitions that can be fired from a 37 mm smooth-bore weapon designed for outdoor crowd control.

Operational Capability/Use: This shell is typically carried by a less-lethal specialist. It is suitable for projecting pyrotechnic canisters approximately 80 to 100 yards with relatively broad area coverage.

37 mm Impact Munition, Stinger

Manufacturer: Defense Technology Corp.
Approximate Cost: $19.00

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team

Description: This impact munition contains multiple projectiles consisting of either .32- or .60-caliber rubber balls.

Operational Capability/Use: This close-range, broad-area crowd control munition may be fired from a smooth-bore 37 mm weapon. It is generally effective at distances up to 20 meters.

37 mm Impact Munition (Kinetic), Foam Baton

Manufacturer: Combined Tactical Systems, Inc.
Approximate Cost: $20.00

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team, Metropolitan Police Department of Washington, D.C.

Description: This impact munition cartridge contains either three or five foam rubber or hardwood batons.

Operational Capability/Use: This close-range, broad-area crowd control munition may be fired from a smooth-bore 37 mm weapon. It is generally effective at distances up to 20 meters.

12-Gauge Impact Munition, Beanbag, Super Sock ™

Manufacturer: Combined Tactical Systems, Inc.
Approximate Cost: $7.00

Participating Services/Agencies: U.S. Marshals Service, Chicago Police Department, Metropolitan Police Department of Washington, D.C., Philadelphia Special Weapons and Tactics Team

Description: This impact munition consists of a cotton drag-stabilized Super Sock™ (Asock) containing approximately 0.4 ounces of lead shot.

Operational Capability/Use: This munition is fired from a 12-gauge shotgun and is generally effective at distances up to 30 meters. The Super Sock projectile is in its deployed state immediately after exiting the weapon barrel.

Aerosol Disburser MK–46™, OC

Manufacturer: Defense Technology Corp.
Approximate Cost: $175.00

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team (SWAT), Metropolitan Police Department of Washington, D.C. (MK–46H Horizontal), Philadelphia SWAT

Description: This large, rechargeable chemical disburser contains compressed nitrogen propellant with oleoresin capsicum (OC) chemical agent designed for crowd control. The spray pattern is a stream effective up to approximately 5 meters.

Operational Capability/Use: This lightweight device is intended for use by formations conducting crowd control and law enforcement operations. It may be operated by one individual and is easily refilled/pressurized with available maintenance equipment. The disburser provides small-unit self-defense capabilities against large crowds and an offensive capability to clear crowds from critical areas.

Aerosol Disburser, ProtectoJet 5™, OC/CS

Manufacturer: ISPRA
Approximate Cost: $800.00

Participating Law Enforcement: U.S. Marshals Service, Chicago Police Department

Description: This large, rechargeable chemical disburser contains compressed carbon dioxide propellant with either oleoresin capsicum (OC) or CS chemical agent designed for crowd control. The spray pattern is a high-velocity mist effective out to approximately 10 meters. The model 5 can provide fifteen 1-second pepper spray bursts before it requires refilling.

Operational Capability/Use: The micron-sized fog particles are effective for controlling combative behavior in correctional facilities. The mist stops fighting in seconds, reducing the possibility of injuries to staff and inmates. The narrow fog delivery pattern enables control of specific individuals or a small group and eliminates the need to affect a large group unless necessary.

Aerosol Disburser, OC/CS, MK–9

Manufacturer: Defense Technology Corp.
Approximate Cost: $26.20 (live OC)

Participating Law Enforcement: U.S. Marshals Service, Seattle Special Weapons and Tactics Team (SWAT), Philadelphia SWAT

Description: This medium-sized chemical disburser contains compressed carbon dioxide propellant with either oleoresin capsicum (OC) or CS chemical agent designed for crowd control. The spray pattern is a high-velocity mist that is effective out to approximately 5 meters.

Operational Capability/Use: This lightweight device is intended for use by formations conducting crowd control and law enforcement operations. It may be operated by one individual and is easily refilled/pressurized with available maintenance equipment. The disburser provides small-unit self-defense capabilities against large crowds and an offensive capability to clear crowds from critical areas.

MK–4 Handheld OC Dispenser

Manufacturer: Defense Technology Corp.
Approximate Cost: $7.29

Participating Law Enforcement: Seattle Special Weapons and Tactics Team, Chicago Police Department

Description: The MK–4 riot control agent dispenser contains an all-natural, water-based irritant formula consisting of oleoresin capsicum (OC). It can deliver twenty 1-second bursts out to 15 feet.

Operational Capability/Use: This individual riot control agent dispenser is intended primarily for self-defense or to keep rioters out of arm's reach of those conducting crowd control operations or engaged in missions where a noncombatant threat exists.

T–16 OC Nonpyrotechnic Expulsion Grenade

Manufacturer: Defense Technology Corp.
Approximate Cost: $39.50

Participating Law Enforcement: Seattle Special Weapons and Tactics Team, Metropolitan Police Department of Washington, D.C.

Description: This long, thin, antithrowback expulsion grenade contains pulverized chemical agents and has a carbon dioxide cartridge in the center. The oleoresin capsicum (OC) is expelled by the release of gas from the carbon dioxide cartridge after a 1-second delay. The cartridge disperses irritant through two ports along the side of the grenade and a foam bumper on the base.

Operational Capability/Use: Because it contains no pyrotechnics, this grenade is suitable for indoor/outdoor use. The irritant fills a 10- by 20-foot room in 5 seconds.

No. 15 OC/CS Rubber Ball Munition

Manufacturer: Defense Technology Corp.
Approximate Cost: $26.50

Participating Law Enforcement: Seattle Special Weapons and Tactics Team

Description: This grenade weighs 11.4 ounces and has a rubber ball body containing additional smaller rubber balls. It contains a pelletized agent and is made with a fly-off fuse.

Operational Capability/Use: This grenade can be thrown or launched from a weapon. The oleoresin capsicum (OC)/CS discharges from four ports on the side of the grenade. When deployed, the larger ball breaks into halves and disperses the smaller balls in a circular pattern. The grenade disperses 9.9 grams of OC/CS powder when it is deployed.

PepperBall™

Manufacturer: JAYCOR
Approximate Cost: $555.00 to $1,499.00 per unit

Participating Law Enforcement: Seattle Special Weapons and Tactics Team

Description: These automatic and semiautomatic rifles shoot 3-gram marble-sized balls that explode into a cloud of oleoresin capsicum (OC) on impact.

Operational Capability/Use: Frangible projectiles are enhanced by the application of OC, which can assist in the apprehension of uncooperative or violent suspects.

No. 15 Stinger™ Grenade

Manufacturer: Defense Technology Corp.
Approximate Cost: $400.00 per case of 10

Participating Law Enforcement: Seattle Special Weapons and Tactics Team, Los Angeles County Sheriff's Department

Description: This 10-ounce grenade with a rubber ball body contains an explosive charge and approximately 180 pellets.

Operational Capability/Use: When deployed, the ball breaks into halves and disperses 3/8-inch-diameter pellets in a circular pattern.

No. 20 37 mm Fired Foam Batons

Manufacturer: Defense Technology Corp.
Approximate Cost: $20.14

Participating Law Enforcement: Seattle Special Weapons and Tactics Team (SWAT), Philadelphia SWAT

Description: This dynamic energy round is used to incapacitate or distract a noncompliant or aggressive subject.

Operational Capability/Use: The foam baton is best suited for use at close distances. Lightweight foam batons lose their energy quickly and may be effective only at distances where the safety of the operator may be compromised (5 to 15 meters).

37 mm Beanbag Round

Manufacturer: Defense Technology Corp.
Approximate Cost: $21.00

Participating Law Enforcement: Seattle Special Weapons and Tactics Team

Description: This beanbag round is fired using a cartridge that contains smokeless propellant, not black powder. The projectile consists of one lead shot-filled fabric bag. On impact, the bag collapses, and the shot acts as a fluid medium, distributing its kinetic energy over 4 square inches.

Operational Capability/Use: This round is ideal for crowd control during civil disturbances, corrections situations, animal control, and window penetration.

Wooden Riot Baton

Manufacturer: U.S. Army, Defense Logistics Agency
Approximate Cost: $16.50

Participating Law Enforcement: Seattle Special Weapons and Tactics Team, Chicago Police Department

Description: These 40-inch-long riot batons are made of hickory.

Operational Capability/Use: The batons are designed to be used by police in crowd control and conflict situations. They keep people at a distance and enable fast defense.

Appendix A

Review of DoD and Civil Law Enforcement Nonlethal/Less-Lethal Technologies Programs

This equipment review is designed to provide civil law enforcement organizations with a greater understanding of DoD's nonlethal weapons program and currently used nonlethal technologies. For balance, representative descriptions of less-lethal technologies used by civil law enforcement agencies are also included.

Whatever the complexity of nonlethal/less-lethal technologies, their purpose is to improve the user's nonlethal capabilities. Nonlethal technologies generally fall into five categories: chemicals, electrical devices, blunt impact munitions, directed energy, and miscellaneous or hybrid systems.

The equipment selection process is briefly described below, and brief backgrounds of DoD and civil law enforcement nonlethal/less-lethal technologies programs are presented. Although DoD receives more funding than civil law enforcement agencies, it divides the funds among many competing and equally important requirements.

Equipment Selection Process

U.S. military, Coast Guard, and civil law enforcement agencies use widely varying approaches to identify and select effective nonlethal/less-lethal weapons and equipment. The selection process typically involves defining individual organizational requirements, conducting appropriate research and development, and reducing risk before equipping and training users. For both military and civil agencies, the duration and cost of the selection process are affected by the complexity and sophistication of the technology being considered, funding availability, and organizational regulations. For example, far less time is required to conduct research and development for 12-gauge nonlethal/less-lethal ammunition than for directed energy technology.

DoD Joint Nonlethal Weapons Program

The Joint Nonlethal Weapons Program is chartered to develop and provide for DoD a fully integrated and coordinated nonlethal weapons program that meets the intent of Congress and offers the best nonlethal technologies for U.S. operating forces. The program provides the most current and accurate information available on relative aspects of nonlethal technologies to the Joint Services, warfighting commanders, and government agencies that require nonlethal weapons for their missions. In addition, the program presents the Joint Chiefs of Staff and other responsible agencies with recommendations for applying nonlethal technologies on a global basis for research, development, production, and deployment.

DoD's Joint Nonlethal Weapons Program coordinates all nonlethal weapons research and development among the four branches of the U.S. military and the U.S. Coast Guard. All military research and development is tightly regulated through DoD Directive 5000.2, "Mandatory Procedures for Major Defense Acquisition Programs" and managed by acquisition professionals.

DoD's Joint Nonlethal Weapons Program evolved from Marine Corps General Anthony Zinni's 1995 request for nonlethal technology to protect U.N. forces' final withdrawal from Somalia. The U.S. Marine Corps and Army rapidly fielded available nonlethal technology for use in and around Mogadishu. Although the results were marginal, General Zinni's aggressive support added credibility to the nonlethal weapons effort.

In a March 1996 address before the Nonlethal Defense Conference in Washington, D.C., Marine Corps General John J. Sheehan, Commander in Chief of the U.S. Atlantic Command, examined the global requirements for use of nonlethal weapons and emphasized the need to make them standard-issue military hardware. DoD Directive 3000.3,[1] issued on July 9, 1996, directed the establishment of a joint service organization responsible for developing and employing nonlethal weapons. The directive designated the Commandant of the U.S. Marine Corps as executive agent for the DoD Nonlethal Weapons Program and assigned responsibility for providing "program recommendations and for stimulating, integrating, and coordinating nonlethal weapons requirements." The executive agent subsequently issued guidelines for a more formal organizational structure.

Program Organization

The multiservice Integrated Product Team,[2] which consists of general officers from all four branches of the military and the Coast Guard, provides program oversight. The team also reviews recommendations from the Joint Coordination and Integration Group and forwards them to the executive agent for approval. The Joint Coordination and Integration Group provides general program leadership and direction. Established in 1997, the Joint Nonlethal Weapons Directorate provides day-to-day program oversight. Located on the U.S. Marine Corps base in Quantico, Virginia, the directorate consists of three divisions: Concepts and Requirements, Technology, and Programs and Administration. The directorate is a jointly manned activity supported by active duty military, civil service, and support personnel.

Program Budget

DoD's Joint Nonlethal Weapons Program manages an annual budget of approximately $25 million. Major areas of budgetary investment include, but are not limited to, the following:

- Acquisition.

[1] Department of Defense Directive 3000.3, "Policy for Nonlethal Weapons," published July 9, 1996. The directive defines nonlethal weapons as "Weapons explicitly designed and primarily employed so as to incapacitate personnel and materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment."

[2] The team consists of representatives from appropriate functional disciplines who work together to build programs, identify and resolve issues, and provide sound and timely recommendations to aid decisionmaking.

- Concept exploration.
- Advanced concept technology demonstrations.
- Science and technology development.
- Human effects determination.
- Studies and analysis.
- Experimentation.
- Modeling and simulation.

Program Capabilities and Functional Areas

Unlike conventional lethal weapons, which destroy their targets principally through blast, penetration, and fragmentation, nonlethal weapons prevent the target from functioning by means other than gross physical destruction. They are designed to have one or both of the following characteristics:

- Relatively reversible effects on personnel and material.
- The ability to affect objects differently within their area of influence.

In 2000, the Joint Nonlethal Weapons Program sponsored and conducted a yearlong Joint Mission Area Analysis to identify and analyze known operational deficiencies, review required operational capabilities, and examine the ongoing development of nonlethal technology. The analytical process provided an opportunity to coordinate and consolidate common needs and to initiate the development of joint service requirements through review, revision, and expansion of the six original functional areas. It formed the backbone of future nonlethal weapons requirements, development, and budgetary focus by establishing the following three core capabilities and eight functional areas:

- Counterpersonnel.
  - Control crowds.
  - Incapacitate individuals.
  - Deny area to personnel.
  - Clear facilities, structures, or areas.

- Countermateriel.
  - Deny area to vehicles (land, sea, and/or airspace).
  - Disable/neutralize vehicles, vessels, aircraft, and equipment.

- Countercapability.
  - Disable/neutralize facilities and systems.
  - Deny use of weapons of mass destruction.

Beyond the structure established in DoD Directive 3000.3, all four branches of the military and the Coast Guard have established nonlethal weapons program offices and managers to define requirements and to conduct research and development in conjunction with the Joint Nonlethal Weapons Program.

U.S. Army Nonlethal Weapons Program[3]

The U.S. Army's proactive approach for exploring, preparing, and providing new nonlethal capabilities to respond to the increasing incidence of stability and support operations enabled its rapid response to urgent needs before any formal operational requirements were generated. Later, the Army built a stockpile to increase the availability of nonlethal munitions for emergencies and rapid deployment until standard nonlethal components could be developed and distributed through formal product management programs.

Since 1994, Commanders in Chief have continually issued urgent requests for materiel and training to support U.S. military operations in domestic and international environments, leading to the establishment of an Army Nonlethal Capabilities Set that includes four categories of items: protective equipment, weapons and munitions, communication enhancement and other devices, and training devices/allocations. These items are primarily designed to provide counterpersonnel capabilities, area denial capabilities, and deterrent capabilities for personnel and vehicles. They are ideally suited for use against individuals who jeopardize a unit's ability to accomplish its mission (e.g., combatants who use noncombatants as human shields or noncombatants who themselves become a threat). Nonlethal weapons and equipment enable soldiers to engage forces with the reasonable expectation of minimizing serious noncombatant casualties. In July 1999, the Office of the Project Manager for Mines, Countermines, and Demolitions was assigned the mission for the Army Nonlethal Capabilities Sets. This entity will field five sets each fiscal year from 2000 through 2005.

The Army Nonlethal Capabilities Set is specifically designed to support Army units in domestic and international ground operations where nonlethal capabilities do not exist. Future involvement in peacekeeping, peace enforcement, humanitarian assistance, and homeland security missions supports the demand for U.S. forces to retain nonlethal capabilities. The expected range of missions requires a full and flexible set of nonlethal items. Nonlethal capabilities enhance force protection and security operations by providing the commander with graduated response options for crowd control, hostage situations, and clearing of facilities. They provide commanders with weapons explicitly designed and primarily employed to incapacitate personnel or materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.

The Army Nonlethal Capabilities Set is a continually evolving entity. Its versatility and capabilities will be augmented as nonlethal capabilities and items suitable for inclusion become available through development efforts and/or commercial off-the-shelf enhancements.

Since 1995, the U.S. Army has rapidly responded to more than 20 urgent operational requests for nonlethal weapons and equipment to bridge the gap between "show of force" and lethal fire in peacekeeping missions. More than 150,000 rounds of 40 mm and 12-gauge blunt impact, small-caliber nonlethal munitions have been rapidly fielded using procedures originally established for Operation Desert Storm. These nonlethal munitions have been used by the U.S. Support Group–

[3] Program background provided by the U.S. Army Nonlethal Weapons Program Office Program Manager for Mines, Countermines, and Demolitions, Picatinny, New Jersey.

Haiti for Operation Restore Democracy, by Task Force Eagle in Operations Joint Guard in former Yugoslavia and Joint Endeavor in Bosnia, and by Task Force Falcon in Kosovo and for training within the continental United States.

Because the U.S. Army has proactively anticipated user needs and developed the ability to field urgently required materiel, it has been granted the lead role within NATO to comply with a Defense Capability Initiative to provide NATO with nonlethal capabilities by 2005.

U.S. Marine Corps Nonlethal Weapons Program

Since 1997, Marine Corps Expeditionary Units have deployed nonlethal capabilities and training worldwide. By responding to an urgent need from field commanders in 1997, the Marine Corps became the first U.S. military service to provide nonlethal capabilities to the field. The Marine Corps rapidly screened, tested, and selected nearly 50 items to be deployed within their original 14 Nonlethal Weapons Capability Sets.

Improving on their initial success, the Marine Corps pursues additional nonlethal capabilities while refining and reequipping its original Nonlethal Weapons Capability Sets. Items within each set are divided into four categories: personnel protectors, personnel effectors, mission enhancers, and training devices. Each set is configured to provide a 200-person unit with enough nonlethal equipment for training and deployment. By 2002, the Marine Corps had fielded 35 Nonlethal Weapons Capability Sets worldwide to bases and deployed forces.

The Marine Corps continues to expand its nonlethal weapons capability through continuing analysis of critical mission areas and select research and development programs. Improved range munitions, target effects studies, and other refinements have enhanced the Marines Corps' capability to deploy nonlethal weapons. Training also has become a top priority. The Marines offer a 2-week train-the-trainer nonlethal weapons instructor course at Fort Leonard Wood, Missouri, that trains more than 300 service members annually from all branches of the military and the Coast Guard.

The Marine Corps Nonlethal Weapons Program is currently spearheading the research and development of technologies that satisfy two of the Joint Nonlethal Weapons Program's core functional areas: clearing facilities and incapacitating individuals. Such technologies include a multisensory device to disable individuals within structures, a taser to incapacitate a single individual, and a mobility denial system that deploys slippery foam to impede the movement of foot and vehicular traffic.

The Marine Corps Nonlethal Weapons Program is headquartered at the Marine Corps Base in Quantico, Virginia, near the Joint Nonlethal Weapons Directorate. The program is managed by the Marine Corps Combat Development Center; its materiel developer is located at Marine Corps Systems Command.

U.S. Navy Nonlethal Weapons Program

The U.S. Navy's near-term Nonlethal Weapons Program goal is to field U.S. Navy-specific Nonlethal Weapons Capability Sets to the fleet, both on shore and afloat. The program's long-term mission is to fully integrate nonlethal weapons technology into weapons systems and platforms on shore and afloat throughout the Navy. The Navy is currently experimenting with nonlethal technologies designed to deny area to small crafts and to improve shipboard force protection options.

The U.S. Navy's Nonlethal Weapons Program is headquartered at OPNAV N75 within the Pentagon. OPNAV N75 is the Navy's flag representative to the Joint Nonlethal Weapons Program and its facilitator for nonlethal weapons requirements and resource development.

U.S. Air Force Nonlethal Weapons Program[4]

The U.S. Air Force Nonlethal Weapons Program differs from the Army and Marine Corps programs. The Air Force program has tactical roots that have been primarily tied to technology and systems being used and developed. Currently, a collaborative Air Force team effort includes operational and strategic functions. The Air Force Nonlethal Weapons Integrated Concept Team brings together all functional areas to determine Air Force requirements. A Concept of Operations has been developed to bridge current and future nonlethal weapon applications.

Near-term projects include the development and fielding of a Nonlethal Weapons Capability Set and mini-fly-away kits consisting of munitions and possibly a firing platform for Air Force Raven security force teams and aircrews. (Raven teams usually consist of two to four members who provide security to Air Force assets that land in areas where no other U.S. security elements are present.) Recently, Air Force Raven security force teams were armed with M–26 tasers to support detainee transport during Operation Enduring Freedom. The basic Nonlethal Weapons Capability Set complements a 13-person team with munitions, protective gear, and training equipment. Air Force approval has been requested for the inclusion of nonlethal munitions in all Nonlethal Weapons Capability Sets.

Long-term plans include the use of directed energy, such as microwaves and pulsed plasma systems. The Air Force is the lead service for an Office of the Secretary of Defense-funded program that will produce an Active Denial System—a 1 mm wave system designed for use by all services to determine service utility and possible procurement strategies. This system is scheduled for field use by fiscal year 2004. The Air Force is considering several platforms, including vehicle-mounted systems for tactical employment, airborne-mounted systems for operations missions, and fixed-site platforms for force protection applications and is aiding the development of a Concept of Operations for joint application.

[4] Program background provided by the Office of the Director of Security Forces, U.S. Air Force, Lackland Air Force Base, San Antonio, Texas.

The Office of the Director of Security Forces currently manages the Air Force Nonlethal Weapons Program. Day-to-day program management has been delegated to Headquarters Air Force Security Forces Center, Operations Division, at Lackland Air Force Base, San Antonio, Texas. The division is the focal point for the requirements process for the security forces career field. It hosts semiannual requirements workshops and annual equipment workshops; maintains membership on DoD panels (e.g., the Physical Equipment Security Action Group, Technical Support Working Group, and Commercial Off-the-Shelf Working Group); and serves as the work center for other groups and officers.

U.S. Special Operations Command Nonlethal Weapons Program[5]

The Special Operations Force soldier operates across the operational continuum from peacetime competition through conflict and war. The high potential for low-intensity conflict and operations other than war requires that Special Operations Force systems be capable of effective and sustained operations in all environments under restrictive rules of engagement. Although no requirements specific to Special Operations Forces have been identified (that is, required systems already exist or are being developed by other agencies), nonlethal and limited-effects weapon capabilities are required to provide Special Operations Forces performing core and essential tasks with the ability to influence the actions of adversaries without resorting to lethal or destructive force. Nonlethal and disabling weapon capabilities will provide an intermediate choice between doing nothing and responding with conventional weaponry, and such capabilities will minimize the potential for collateral damage to personnel and equipment. Man-portable, small-vehicle-mounted (on wheels, tracks, and boats), and large-platform-mounted (on aircraft and ships) capabilities are required, in addition to nonlethal capabilities that can disable personnel both individually and in groups and that can be used to neutralize or clear structures ranging from light construction to fortified bunkers.

The most common threats encountered during low-intensity conflict and operations other than war, when nonlethal and limited-effects weapon capabilities most likely would be required, are in the small arms category; however, threats may range from crowds armed with rocks and clubs to the most modern heavy weapon systems. Therefore, nonlethal and limited-effects weapon systems must not impair the Special Operations Force's ability to fight as a modern lethal force. The enemy may employ a number of systems to detect Special Operations Force personnel, such as radar, infrared, thermal, day/night visual enhancement, and acoustic sensors, but it will most likely rely on active patrols, human intelligence, and signal intelligence. Current Special Operations Force lethal weapon systems are extremely easy to detect when fired. Some nonlethal and disabling weapon systems may offer the ability to attack targets with a low probability of detection. They also should provide the ability to repel crowds without permanent, disabling injuries or fatalities, significantly reducing the threat of further violence and potential casualties among friendly or innocent bystanders.

Continuing to operate with current weapon systems under restrictive rules of engagement significantly inhibits the ability of Special Operations Forces to respond to threatening situations

[5] Program background provided by Special Operations Acquisitions Logistics-Technology (SOAL−T), U.S. Special Operations Command, Headquarters, Tampa, Florida.

during low-intensity conflict and operations other than war. Nonlethal projects currently in development include a pulsed energy projectile, which has potentially debilitating effects and represents the type of technology that may mature into an effective nonlethal weapon.

U.S. Coast Guard Nonlethal Weapons Program[6]

Identification and fielding of nonlethal capabilities to support law enforcement and national defense missions is an important Coast Guard objective. To meet this objective, in 1999 the commandant assembled staff from headquarters, area offices, and the Coast Guard Research and Development Center to form Project Erickson. Project Erickson's mission is to identify and provide a relevant and credible continuum of nonlethal capabilities for the Coast Guard and an employment doctrine and policy for the use of such capabilities. Since the project's establishment, a number of nonlethal capabilities have been identified and fielded for use, including 12-gauge fin-stabilized projectile rounds, 12-gauge stingball rounds, oleoresin capsicum pepperball guns, and manually deployed entanglement nets.

Other nonlethal capabilities being developed and tested for general Coast Guard use include 12-gauge oleoresin capsicum pepper rounds, 12-gauge engine disabler rounds, compressed air-launched entanglement nets for surface and air units, canister-deployed entanglement nets for air units, and speed inhibitors for small boats. To further assist in developing Coast Guard nonlethal capabilities, Project Erickson is working with the U.S. Marine Corps Joint Nonlethal Weapons Directorate. Current work includes investigation into the operational utility of directed energy nonlethal weapons, the incapacitation of personnel, maritime area denial, clearing of facilities, crowd control, and area denial to personnel and vehicles.

The need for nonlethal capabilities continues to expand rapidly, encompassing a wide variety of threats, including migrant interdiction, drug interdiction, homeland security, and fisheries enforcement. Project Erickson has established a formal process to ensure a systematic approach that focuses limited resources on the right priorities to meet emergent threats with appropriate risk management considerations.

The commandant is responsible for authorizing nonlethal technology to meet requirements identified through threat assessments and operational commanders' input. Validated requirements will be prioritized, and all capability development will be coordinated to ensure that only legally sound and viable capability options are pursued. If a validated requirement can be met with existing Coast Guard capabilities, an employment doctrine will be developed and supported, and training and qualification standards and an acquisition and support plan will be developed. If new requirements cannot be met with existing organic capabilities, the Coast Guard will look to the Joint Nonlethal Weapons Directorate, civilian law enforcement agencies, and, in some cases, international sources to meet the requirement.

When a capability is identified, a series of evaluations will be conducted to determine whether it can be adapted for Coast Guard use. If so, an employment doctrine supported by those results will be developed, including training and qualification standards and an acquisition and support

[6] Program background provided by the U.S. Coast Guard.

plan. If no capability exists to meet the requirement, development efforts will be pursued through liaison with the Research and Development Center, the Joint Nonlethal Weapons Directorate, and civilian law enforcement agencies. A review will be conducted to ensure that the proposed capability meets operational requirements, the new capability fits into the use-of-force continuum, policy is in place to support its use, and an appropriate legal review has occurred. When the new capabilities are completely developed, an employment proposal will be initiated. Following approval of nonlethal capabilities, allowances will be established and operational commanders advised.

Civil Law Enforcement Less-Lethal Weapons

Law enforcement officers of the 21st century encounter many of the same challenges and issues their predecessors faced during the late 20th century. Incidents involving hostage rescue, vehicle pursuit, attempted suicide, the need to detain or control unruly individuals and crowds, and domestic disturbances continue to dominate daily activities. However, technology advances have matured, and new tactics provide law enforcement officers with additional options for handling many of these situations. A difficult aspect of civil law enforcement continues to be the need to manage individuals or groups when more than a show of force or voice commands are required and deadly force is neither authorized nor the preferred method of resolution. To meet this need, many Federal and State agencies and local law enforcement departments have developed and used less-lethal technology.

In the context of civil law enforcement, less-lethal weapons are those primarily designed to temporarily disable or stop suspects without killing, thereby providing an alternative to lethal force where appropriate. These weapons are “less lethal” in a literal sense because none can be guaranteed to avoid serious injury or death. As in the military, law enforcement officers should never consider less-lethal weapons to be a replacement for the legal use of lethal force; rather, they should use less-lethal weapons as an instrument of force in the continuum between show of force or verbal commands and deadly force.

Civil law enforcement’s development and use of less-lethal weapons and equipment contributes daily to officers’ ability to engage hostile individuals and to project force at a lower response level. Within the civil law enforcement community, the costs to conduct nonlethal weapons research and development and the levels of funding available vary dramatically. In larger Federal and State agencies, budgets generally range from several thousand dollars to, in rare cases, several hundred thousand dollars. In smaller, local law enforcement departments, nonlethal weapons and equipment research and development funding is minimal at best and often nonexistent. For many years, civil law enforcement organizations have relied on the manufacturers and developers of less-lethal technology to buffer this lack of research and development funding.

The National Institute of Justice also contributes research and development funding through its annual grant process. In most cases, however, civil law enforcement organizations purchase commercial off-the-shelf items directly and conduct field testing to determine the items’ effectiveness. In most organizations, a formal acquisition board or committee examines

manufacturer information and field test results and reviews legal, ethical, and acceptability issues before determining approval for use.

Examples of less-lethal weapons presented in section IV include kinetic impact munitions, oleoresin capsicum pepper spray, electronic stun devices, and vehicle-disabling technologies. Interventions using these less-lethal systems have helped to conclude many potentially lethal use-of-force situations. The examples of less-lethal weapons and equipment provided by the U.S. Marshals Service, Los Angeles County Sheriff's Department, Seattle Special Weapons and Tactics (SWAT) team, Chicago Police Department, Metropolitan Police Department of Washington, D.C., and Philadelphia SWAT team represent technologies similar to those employed by the U.S. Department of Defense. These less-lethal technologies represent a continuing effort by civil law enforcement to protect and preserve lives—even the lives of individuals attempting to harm law enforcement officers or other citizens.

Summary

Events of the last quarter century, including the fall of the former Soviet Union in the mid-1980s, the success of Operation Desert Shield/Desert Storm in the early 1990s, and operations in places such as Panama, Haiti, and Bosnia, have created a new operational environment where few adversaries are willing to openly threaten or engage the United States or its allies through conventional warfare. Today's operational environment requires our military forces to conduct numerous small-scale operations, often in urban environments containing high concentrations of noncombatants and critical infrastructure.

DoD's Joint Nonlethal Weapons Program, in conjunction with the four service branches of the military and the U.S. Coast Guard, has defined requirements, conducted technology research and development, and successfully fielded nonlethal capabilities. DoD has introduced and used nonlethal weapons to provide field commanders with additional capabilities that augment, but do not replace, the U.S. military's highly effective lethal forces. Nonlethal weapons serve as force multipliers to discourage, delay, or prevent hostile action; limit escalation where lethal force is not the preferred option; protect U.S. forces; and temporarily disable equipment and facilities. DoD has advanced far beyond its initial focus on short-range kinetic impact devices to provide standoff capability and force protection options.

Nonlethal technologies already have proven to be highly effective. The U.S. Army used them successfully during engagements in Kosovo and Bosnia in 2000. In addition to the U.S. military, many Federal, State, and local civil law enforcement organizations have applied training, skillful deployment, and growing experience toward their use of nonlethal and less-lethal technology to reduce unnecessary loss of life and property damage. Today, military and civil law enforcement organizations continue to act as partners in developing less-lethal technologies. As witnessed by the events of September 11, 2001, the operational environment continues to change, and the United States continues to face new and complex threats that affect our safety and national security.

Appendix B

Glossary

Acoustic weapons. Devices that emit sonic frequencies causing sensations such as debilitating dizziness, motion sickness, and nausea. These devices can also generate vibrations of body organs and result in extreme pain, seizures, and even death.

Commercial off-the-shelf. Commercial items available for purchase on the open market.

Electrical weapons. Devices that stun target individuals with an incapacitating high-voltage, very low current, short-duration electrical shock.

Entanglement weapons. Used to entangle feet, tracked vehicles, and the outboard motors of boats. Entanglement weapons may be disbursed by a net gun that can entangle a human or vehicular target. One such net is 18 feet wide and has glue-coated strands. Another is 28 feet wide and, when fired from a cannon, can envelop a car or armored vehicle. Nets also may be electrified to release an electric shock when the assailant struggles.

Executive agent. Serves as primary point of contact for nonlethal weapons within DoD, coordinates nonlethal weapons requirements of warfighting commanders, provides oversight for all nonlethal weapons policy issues, and ensures coordination between acquisition and requirements communities.

Integrated Product Team. Principal role is to serve as the Joint Service representative body in establishing and directing DoD nonlethal weapons programs for joint doctrine, professional training, materiel requirements, research and development, and acquisition-related activities.

Joint Coordination and Integration Group. Acts in an oversight capacity, reviewing and recommending approval to the Integrated Product Team for new starts or the termination of unsuccessful efforts. Also coordinates and integrates nonlethal weapons programs supported by the Joint Nonlethal Weapons Program. The Joint Coordination and Integration Group catalogs and tracks progress of independent and joint nonlethal weapons programs, looking for efficiencies and leveraging opportunities.

Joint Mission Area Analysis. A thorough, end-to-end analysis of the potential contributions of nonlethal capabilities to the U.S. military. The Joint Mission Area Analysis supports the requirements generation system and outlines core capabilities.

Joint Nonlethal Weapons Directorate. Established to execute and manage the Joint Nonlethal Weapons Program and to implement operational structure. Manages the day-to-day activities and provides support to the Integrated Product Team. Ensures that funding efficiencies are in place and approaches among the divisions are coordinated and maintained. Also combines military, civil service, and support personnel tasked to implement and maintain an aggressive, energetic,

and forward-looking nonlethal weapons program. In addition, serves as the DoD single point of contact for liaison with foreign entities on matters of mutual interest concerning nonlethal weapons.

Less-lethal weapons. Weapons primarily designed to temporarily disable or stop suspects without killing, thereby providing law enforcement and corrections personnel with an alternative to lethal force where appropriate.

Light-based weapons. Weapons consisting of a laser intended to overload, destroy, or degrade optics or target acquisition electronics from the air, sea, or land. Also included are high-intensity lights designed to temporarily blind an aggressor.

Marine Expeditionary Unit. A Marine air-ground task force that is constructed around a reinforced infantry battalion, a reinforced helicopter squadron, and a task-organized combat service support element. It normally fulfills Marine Corps forward sea-based deployment requirements. The Marine Expeditionary Unit provides an immediate reaction capability for crisis response and is capable of limited combat operations.

Nonlethal Capabilities Set (NLCS). Generally comprises four categories of items: protective equipment, weapons and munitions, communication enhancement and other devices, and training devices. The primary focus of NLCS components is on counterpersonnel capabilities, area denial, and deterrent capabilities for personnel and vehicles. The NLCS components are ideally suited for use against noncombatants whose presence or acts jeopardize a unit's ability to accomplish its assigned mission.

Nonlethal projectile weapons. These include fabric sacks filled with lead shot (beanbag projectiles) that are designed to be fired from 12-gauge shotguns and 37 mm (40 mm) launchers. The bags conform to the shape of the target on impact, producing less damage than a solid hard projectile. Rubber and wooden projectiles also are delivered from riot guns to disperse unruly crowds.

Nonlethal weapons. These are explicitly designed and primarily used to incapacitate personnel and materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.

Oleoresin capsicum (OC). Also known as pepper spray, this food product is obtained from chili peppers that have been dried and ground into a fine powder. When mixed with an emulsifier, such as a mineral, vegetable, soy oil, or water, it may be sprayed from a variety of dispensers and used as an irritant to safely control violent people or vicious animals and/or to restore and maintain order.

Operational testing and evaluation. The testing and analysis of a specific end item or system, as far as practicable under service operating conditions, to determine whether quantity production is warranted considering the increase in military effectiveness to be gained and its effectiveness compared with currently available items or systems. Consideration is given to

personnel capabilities to maintain and operate the equipment; equipment size, weight, and location; and enemy capabilities in the field.

Operations other than war. Unconventional military operations, such as peacekeeping, peace enforcement, hostage rescue, and other forms of conflict not commonly associated with warfare. Other terms frequently used to describe these operations are “military operations other than war,” “support and stability operations,” and “low-intensity conflict.”

Riot control agent. Standard riot control agents are chemicals that irritate the air passages and eyes. Four chemicals in use today create this effect: oleoresin capsicum (OC), orthochlorobenzalmalonitrile (CS), CR, and CN.

About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. The Institute provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ's principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute's objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools

1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.
2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.
3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

Dissemination

4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.
5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

Agency management

6. Practice fairness and openness in the research and development process.
7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

Program Areas

In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

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